Water Quality Assessment Report

U.S. Highway 50/South Shore Community Revitalization Project

South Lake Tahoe, El Dorado County, California
Stateline, Douglas County, Nevada
03-ED-50-PM 9.00-80.44
EA 03-1E330K

March 2012

Caltrans

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U.S. Highway 50 Stateline Core/Loop Road Project

South Lake Tahoe, El Dorado County, California
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EA 03-1E330K

Prepared for:

State of California
Department of Transportation
Tahoe Transportation District
Tahoe Regional Planning Agency
City of South Lake Tahoe
Douglas County, NV

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Acronyms and Abbreviations

ACOE	Army Corps of Engineers
AP	Adopted Plan
Basin Plan	Water Quality Control Plan
BMP	Best Management Practices
BWPC	Bureau of Water Pollution Control
BWQP	Bureau of Water Quality Planning
Caltrans	California Department of Transportation
CDFG	California Department of Fish and Game
CWA	Clean Water Act
MEP	Maximum Extent Practicable
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
NWP	Nationwide Permit
ONRW	National Resource Waters
PCN	Pre-Construction Notification
LRWQCB	Lahontan Regional Water Quality Control Board
SEZ	Stream Environment Zone
State Board	State Water Resources Control Board
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Loads
TRPA	Tahoe Regional Planning Agency
TTD	Tahoe Transportation District
U.S. 50	United States Highway 50
WQAR	Water Quality Assessment Report

Chapter 1 Introduction

The Tahoe Transportation District, in cooperation with the California Department of Transportation (Caltrans), Nevada Department of Transportation (NDOT) the City of South Lake Tahoe, California and Douglas County, Nevada proposes to build a bypass road that diverts through traffic on U.S. Highway 50 (U.S. 50) around the tourist centers and emerging ski village of South Lake Tahoe and Stateline.

1.1 Project Location & Description

1.1.1 Project Location

The project site is located along the U.S. 50 corridor between Pioneer Trail in the City of South Lake Tahoe in El Dorado County, California and Nevada State Highway 207 (Kingsbury Grade) in Douglas County, Nevada. (Figure 1 and 2) The Tahoe Transportation District (TTD) is proposing to construct transportation and stormwater quality improvements for approximately 1.3 miles along existing U.S. 50 and approximately 1.3 miles primarily along Lake Parkway.

1.1.2 Project Description

The following are two build alternatives for the realignment of U.S. 50 (proposed project) as well as the no build/no action alternative.

Alternative 1

Alternative 1, the No Project/No Action alternative, assumes that the transportation system and facilities in the project area would remain unchanged. Existing roadway, pedestrian, and streetscape conditions would continue into the foreseeable future.

Alternative 2

Alternative 2 reflects the proposed action. Under Alternative 2, U.S. 50 would be realigned around the Stateline casino corridor area between Lake Parkway in Nevada and a location southwest of Pioneer Trail in California (Exhibit 2). The new U.S. 50 alignment would be four lanes (two travel lanes in each direction) with a dedicated left-turn lane and left-turn pockets at intersections, and would follow Lake Parkway south from its intersection with U.S. 50 in Nevada. Alternative 2 involves realigning U.S. 50 along Lake Parkway on the mountain side behind Montbleu and Harrah's casinos. East of the casinos, the realigned U.S. 50 would continue behind the

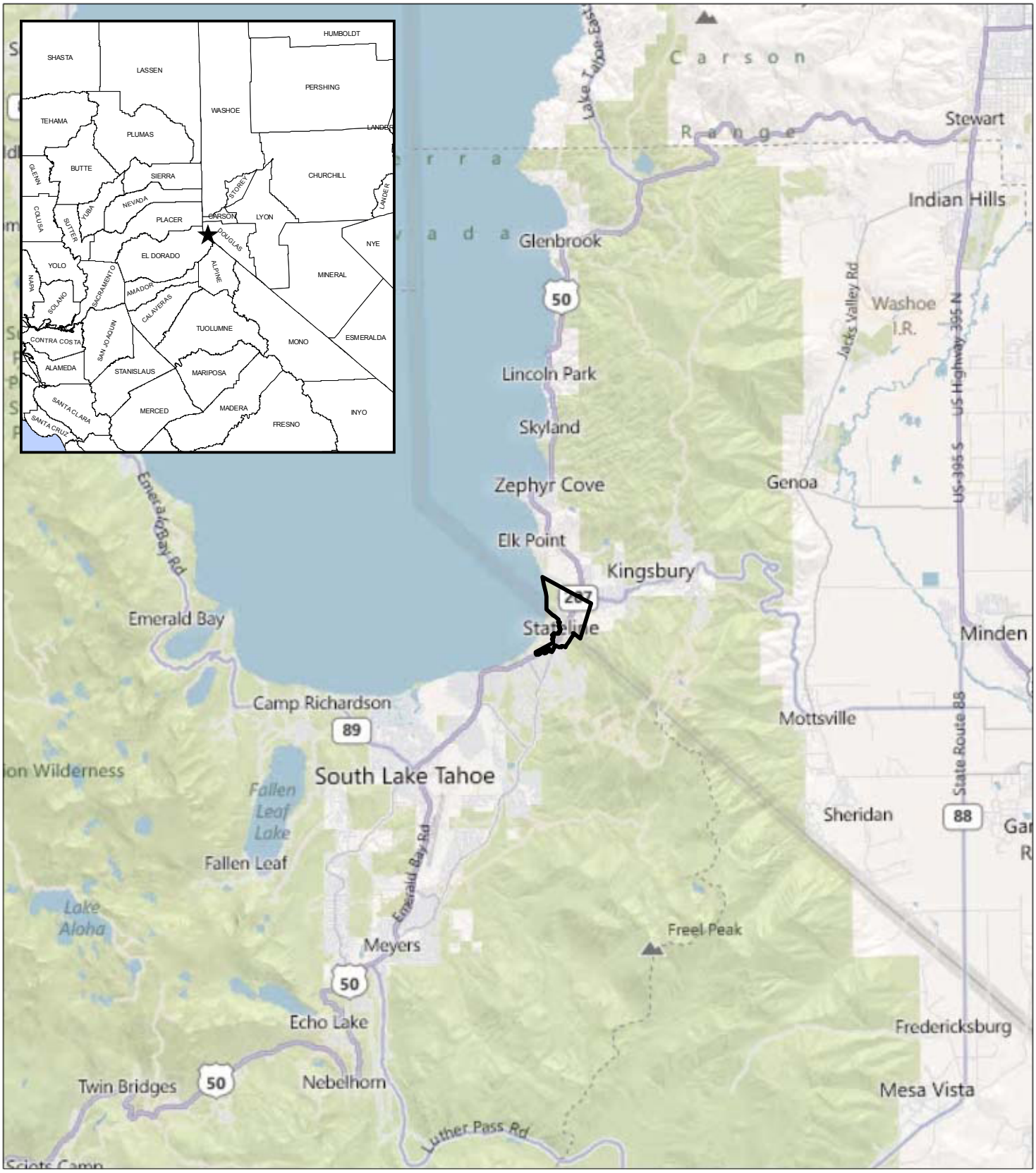

FIGURE 1

LEGEND

Project Location

0 1.5 3
MILES

SOURCE: Microsoft Bing Maps - Roads (2010)

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U.S. 50 Stateline Core / Loop Road Project

Project Vicinity

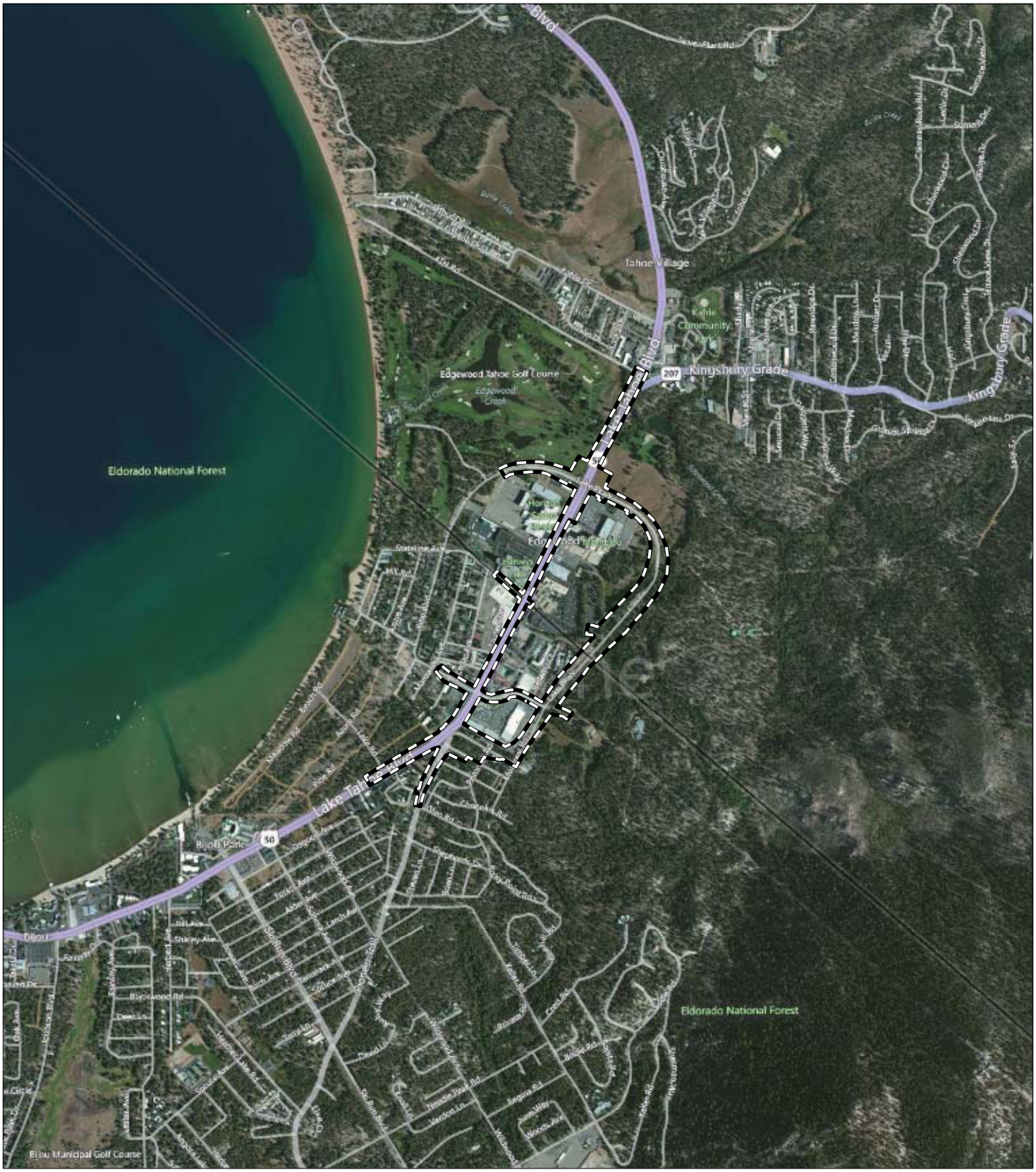

FIGURE 2

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LEGEND

Project Area

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0 1000 2000
FEET

SOURCE: Microsoft Bing Maps - Aerial (2010)

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U.S. 50 Stateline Core / Loop Road Project

Project Vicinity

Heavenly Village Center (Raley's Shopping Center) and then along a new alignment between Fern and Echo Roads, rejoining U.S. 50 at its intersection with Pioneer Trail. Two new cul-de-sacs would be constructed at the end of Echo and Montreal Roads. The new U.S. 50 would require right-of-way acquisition from private property owners and state-owned land from Van Sickle Bi-State Park along Lake Parkway and Montreal Road, and the connection between Montreal Road and the Pioneer Trail/U.S. 50 Intersection would displace existing residences and businesses southwest of the Heavenly Village Center (Exhibit 2). The number of residences and businesses to be displaced is unknown at this time.

Between Pioneer Trail and Lake Parkway within the casino corridor, U.S. 50 would become a local street and would be converted to two lanes, one way in each direction, with a landscaped median and turn pockets at major driveways and intersections. The respective sections of this stretch of existing U.S. 50 would be relinquished to the City of South Lake Tahoe and Douglas County. Expanded sidewalks, bicycle lanes, and traffic signals would be installed to improve the flow of traffic, improve pedestrian safety, and encourage the use of alternative transportation modes along the roadway. The project also includes landscaped buffers between U.S. 50 and the sidewalks, streetscape amenities (e.g., light fixtures, trash receptacles, and seating areas), and use of more aesthetic road materials such as pavers or colored concrete in certain locations. Landscape improvements would include native plants. The narrowing of U.S. 50 through the casino corridor may involve existing right-of-way to be relinquished.

Under Alternative 2, the existing signalized U.S. 50/Lake Parkway intersection would be replaced with a two-lane roundabout (Figure 3). The proposed roundabout would be constructed with the intention of creating a gateway experience into the Stateline casino corridor area and would be designed to provide pedestrian and bicycle safety and crossing ease.

The Alternative 2 roadway improvements would also include new curb and gutter, striping, retaining wall structures, and other stormwater drainage, capture, and treatment facilities. The proposed improvements could result in the relocation of existing utility lines.

Alternative 3

Alternative 3 proposes the same overall design and improvements included under Alternative 2 with one exception. Under Alternative 3, the existing signalized U.S. 50/Lake Parkway intersection would be retained (Figure 4).

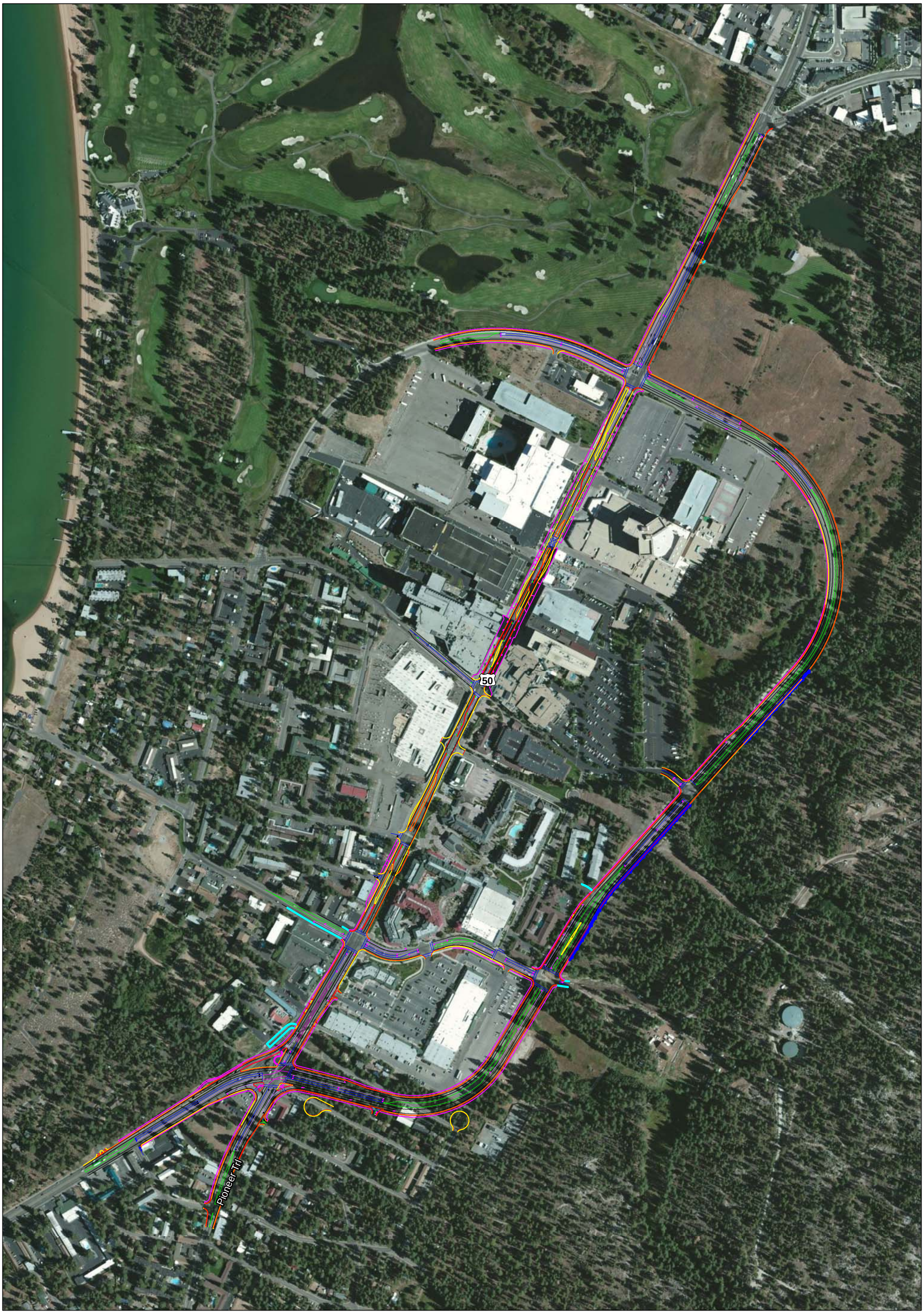

FIGURE 3

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N

0 250 500
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U.S. 50 Stateline Core / Loop Road Project

Project Design - Alternative C

SOURCE: Basemap - Microsoft Bing Maps - Aerial (2010); Mapping - Wood Rodgers Engineering (2011)

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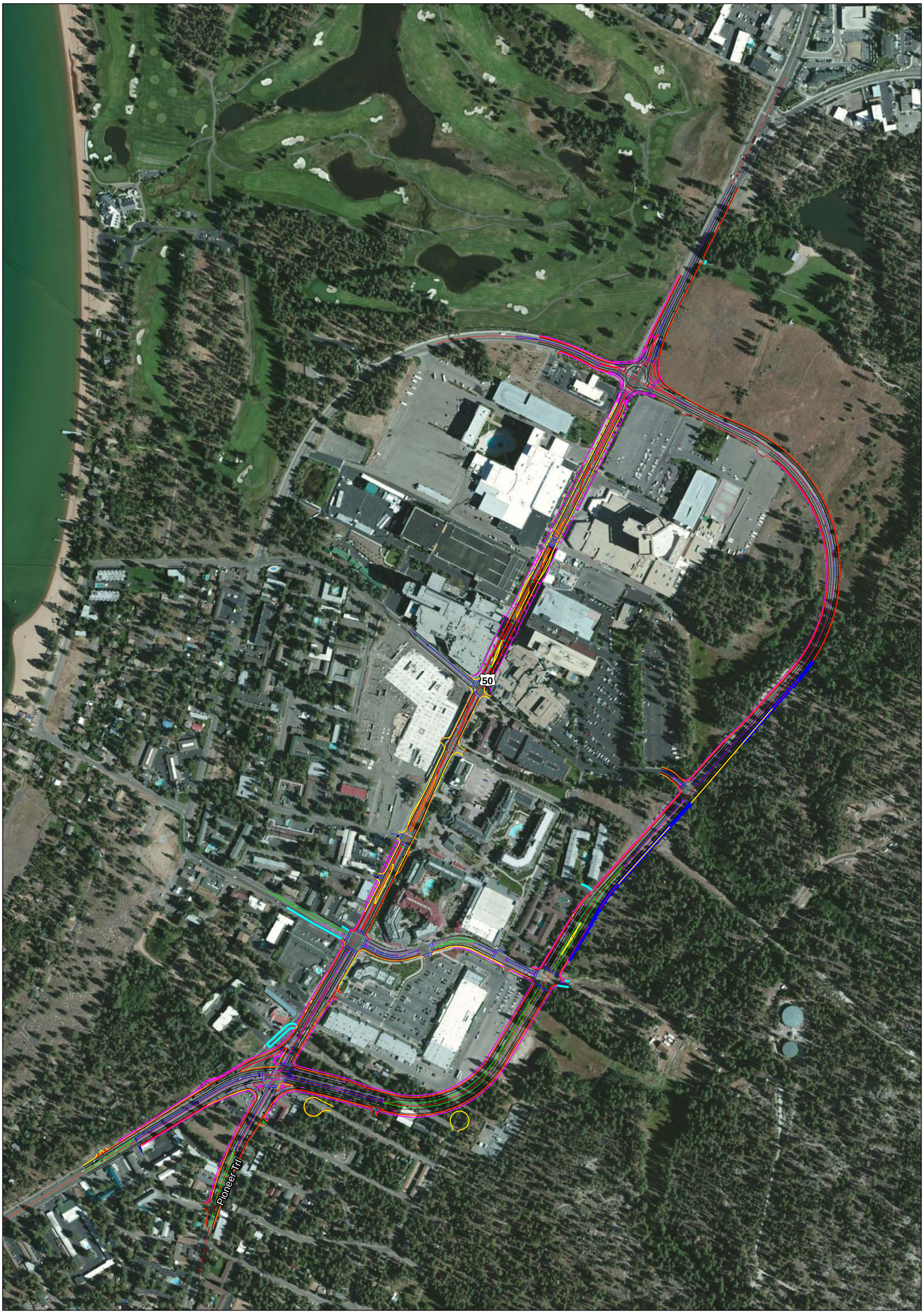

FIGURE 4

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U.S. 50 Stateline Core / Loop Road Project

Project Design - Alternative D

SOURCE: Basemap - Microsoft Bing Maps - Aerial (2010); Mapping - Wood Rodgers Engineering (2011)

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1.1.3 Project Description & Purpose and Need

U.S. 50 is one of two major east-west connections between Northern California and Northern Nevada. Currently, the majority of the roadway consists of two lanes in either direction with a center turn lane with limited sidewalks on both sides and no designated bicycle or pedestrian facilities. The highway corridor between Pioneer Trail and Kingsburry Grade is often congested during peak travel times and does not readily support transit or provide safe or appealing conditions for motorists, transit riders, pedestrians, or cyclists. The project intends to improve these conditions.

The US 50/South Shore Community Revitalization ProjectUS 50/South Shore Community Revitalization Project is intended to complete the Loop road and address future transportation needs along the U.S. 50 corridor between Pioneer Trail in the City of South Lake Tahoe, California and Nevada State Highway 207 (Kingsbury Grade) in Douglas County, Nevada. There is a need in the corridor to create a better balance between pedestrians, bicyclists, transit services, and private vehicle uses. The transportation system components to be addressed include roadways, transit, parking, and bicycle and pedestrian facilities and amenities.

The TTD is proposing to construct transportation and stormwater quality improvements for approximately 1.3 miles along existing U.S. 50 and approximately 1.3 miles primarily along Lake Parkway. Please refer to Figure 1 for the Project Vicinity Map and Figure 2 for the Project Location Map.

Chapter 2 Approach to Water Quality Assessment Report

The purpose of this Water Quality Assessment Report (WQAR) is to evaluate potential impacts of the proposed project on water quality and associated beneficial uses as defined by the Lahontan Regional Water Quality Control Board (LRWQCB) and Tahoe Regional Planning Agency Water Quality Thresholds. The WQAR identifies impacts on surface water and groundwater resources resulting from this project, and describes mitigation measures to reduce any significant impacts to less than significant levels.

The WQAR determines if project induced effects would have a significant impact on water quality. Significance is based on whether discharges to receiving waters would cause exceedences of existing water quality objectives or have an adverse impact to the beneficial uses identified by the LRWQCB.

For the purpose of this WQAR, an impact is considered adverse if the proposed project would:

- Violate any water quality standards or waste discharge requirements;
- Substantially alter the existing drainage pattern of the site or area, including alteration of a stream or river in a manner that would result in substantial erosion or siltation on or off-site;
- Create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems, or cause substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;

This report describes the environmental and regulatory setting, the environmental impacts of the project, and measures to minimize adverse impacts on water quality.

Chapter 3 Regulatory Setting

The primary federal law regulating water quality is the Clean Water Act (CWA). The United States Environmental Protection Agency has delegated to the State Water Resources Control Board (State Board) the enforcement of the CWA in California. The State Board's policies are implemented through regionally tailored Basin Plans, also reflecting the Regional Board's own policies.

Surface water and groundwater resources, and their associated water quality, are regulated in both California and Nevada through many different applicable laws, regulations, and ordinances administered by local, state, and federal agencies. These regulations ensure that the hydrologic and qualitative characteristics of surface water and groundwater resources are considered, so that existing and potential beneficial uses they provide are not threatened.

All project activities need to be in compliance with, at a minimum, the following: the Federal Clean Water Act, the Porter Cologne Water Quality Control Act (California Water Code), and the Water Quality Control Plan (Basin Plan) for the LRWQCB.

3.1 Federal/State Requirements

3.1.1 Section 401

Section 401 of the CWA specifies that any applicant for a federal license or permit to conduct any activity (including but not limited to the construction or operation of facilities that may result in any discharge into navigable water) shall provide the federal licensing or permitting agency with a certification. The certification must be issued by the state agency with jurisdiction over the waters from which the discharge originates or will originate. In this case, the state agency is the LRWQCB. The certification must convey that the project will comply with water quality standards including beneficial uses, water quality objectives, and the state antidegradation policy.

3.1.2 Section 402

Direct discharges of pollutants into Waters of the United States are not allowed, except in accordance with the National Pollutant Discharge Elimination System (NPDES) program established in Section 402 of the CWA. The main goal of the NPDES program is to protect human health and the environment. Pursuant to the

NPDES program, permits that apply to stormwater discharges from municipal storm drain systems, specific industrial activities, and construction activities that disturb one acre or more have been issued. NPDES permits establish enforceable effluent limitations on discharges, require monitoring of discharges, designate reporting requirements, and require the permittee to implement Best Management Practices (BMPs). Municipal permits are governed by the maximum extent practicable (MEP) or the best available technology/best control technology application of BMP.

3.1.3 Section 404

The United States Army Corps of Engineers (ACOE) regulates discharges of fill into Waters of the United States under Section 404 of the CWA via a nationwide permit (NWP) or an individual permit program. NWPs can be used for projects with minor impacts that fall under specific categories. A pre-construction notification (PCN) to the ACOE District Engineer is required for most activities covered by NWPs. The ACOE reviews each PCN on a case-by-case basis to determine whether the adverse effects of the proposed work on the aquatic environment are minimal. The ACOE will also determine whether a particular drainage has a significant nexus to Waters of the United States and is, therefore, subject to regulation under Section 404.

3.1.4 Section 303

Section 303 of the CWA requires that the state adopt water quality objectives for surface waters. The Basin Plan contains water quality objectives that are considered necessary to protect the specific beneficial uses it identifies. Section 303(d) specifically requires the state to develop a list of impaired water bodies and subsequent numeric Total Maximum Daily Loads (TMDLs) for constituents that impair a particular water body (see section 4.4.1 Lake Tahoe for further discussion of TMDLs, Section 303(d) and deep water transparency). These constituents include:

- Chemical compounds (inorganic and organic)
- Metals
- Sediment
- Biological

3.1.5 California Department of Fish and Game (CDFG)

CDFG, through provisions of the California Fish and Game Code Section 1602, is empowered to issue agreements for any alteration of a river, stream, or lake where

fish or wildlife resources may be adversely affected. Streams and rivers are defined by the presence of a channel bed and banks and at least an intermittent flow of water. CDFG typically extends the limits of their jurisdiction laterally beyond the channel banks for streams that support riparian vegetation. In these situations, the outer edge of the riparian vegetation is generally used as the lateral extent of the stream and CDFG jurisdiction.

California Fish and Game Code Section 1602 requires any person, state or local governmental agency, or public utility to notify CDFG before beginning any activity that will result in one or more of the following:

- Substantially obstruct or divert the natural flow of a river, stream, or lake;
- Substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

California Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state.

3.1.6 California Mandates and Thresholds

In California, the State Water Resources Control Board sets statewide policy for implementing state and federal water quality laws and regulations. In the Tahoe region, the Lahontan Regional Water Quality Control Board adopts and implements the Basin Plan. The Basin Plan establishes water quality standards for surface and ground waters based on designated beneficial uses of water, and identifies narrative and numerical objectives to protect those uses.

Water quality problems threatening beneficial uses are identified, along with recommended or required control measures and prohibitions to certain types of discharges. In addition, Lahontan issues NPDES permits for a variety of discharges to surface waters, to the three local municipalities and Caltrans.

The Basin Plan includes Water Quality Objectives (Chapter 3), Implementation (Chapter 4), and Water Quality Standards and Control Measures for the Tahoe Basin (Chapter 5)[1]. Lake Tahoe is one of California's few designated Outstanding National

[1] See http://www.swrcb.ca.gov/rwqcb6/ for a copy.

Resource Waters (ONRW) under federal anti-degradation regulations (40 CFR § 131.12 and 48 Fed. Reg. 51402). The ONRW designation does not allow permanent or long-term reduction in water quality.

Along with Section 303, California has adopted a deep water transparency water quality objective for Lake Tahoe, which is the average annual Secchi depth measured between 1967 and 1971, equivalent to an annual average Secchi depth of 97.4 feet (29.7 meters).

3.1.7 Nevada Mandates and Thresholds

In Nevada, the Nevada Division of Environmental Protection sets statewide policy for implementing state and federal water quality laws and regulations. Two main Bureaus are responsible for the protection of the quality of Nevada's Waters; these are the Bureau of Water Quality Planning (BWQP) and the Bureau of Water Pollution Control (BWPC).

Bureau Of Water Quality

The Bureau of Water Quality Planning[1] is responsible for several water quality protection functions, which include collecting and analyzing water data, developing standards for surface waters, publishing informational reports, providing water quality education and implementing programs to address surface water quality. The BWQP is divided into three branches: Water Quality Monitoring, Water Quality Standards and Nonpoint Source Program.

The Water Quality Monitoring Branch is responsible for the State of Nevada's water quality monitoring program. This branch maintains and updates water quality data for U.S. Environmental Protection Agency's (EPA) national water quality database, and is responsible for preparation of Nevada's Water Quality Assessment Report, which is required under Section 305(b) of the CWA. To ensure federally permitted activities do not cause water quality impairment, this branch issues certifications under Section 401 of the CWA. Additionally, this branch reviews environmental impact statements, environmental assessment documents, clearinghouse documents and permits for the Army Corps of Engineers, the Federal Energy Regulatory Commission and the Nevada Division of State Lands.

The Water Quality Standards branch is responsible for developing and reviewing water quality standards; determining wasteload and load allocations from point and

[1] See information at (http://ndep.state.nv.us/bwqp/bwqp01.htm)

nonpoint sources (respectively); and developing TMDLs. Water quality management plans and the "impaired waters listing" required under sections 208 and 303(d) of the Clean Water Act, as well as the Continuing Planning Process, are prepared by this branch. Frequent violations of standards for Lake Tahoe and a number of its tributaries will result in their listing on Nevada's 303(d) List 2006 for clarity and TMDL-High Priority.

The Nonpoint Source (NPS) Program is responsible for all NPS planning, including developing and updating the state management plan, the state assessment report and the Best Management Practices Handbook. Using grant monies available under Section 319(h) of the Clean Water Act, this branch solicits, selects and manages projects that help to control and minimize NPS pollution. A number of these projects feature restoration actions or the implementation of BMP. Other projects focus on public outreach and education that promote environmental stewardship. The NPS staff also coordinates activities with other agencies to minimize pollution derived from land uses that have a high potential for NPS generation.

The Bureau of Water Pollution Control is responsible for protecting the quality of Nevada waters from the discharge of pollutants. This is accomplished by issuing discharge permits, which define the quality of the discharge necessary to protect the quality of the waters of the State, enforcing the state's water pollution control laws and regulations, and by providing technical and financial assistance to dischargers.

The BWPC issues National Pollutant Discharge Elimination System (NPDES) Permits for discharge to surface waters, ground water permits for discharges that may impact subsurface waters, Underground Injection Control permits for injection through wells, and Stormwater Permits. Additionally, the BWPC performs engineering reviews of the designs of permitted facilities, inspects permitted facilities and investigates violations of water pollution statutes and regulations.

3.1.8 Tahoe Regional Planning Agency Mandates and Thresholds

Tahoe Regional Planning Agency's (TRPA) water quality thresholds address regional algal growth potential, clarity, turbidity, phytoplankton productivity, phytoplankton biomass, zooplankton biomass, periphyton biomass, dissolved inorganic nitrogen loading, and nutrient and sediment loading in general.

Chapter 32 of the TRPA Code of Ordinances also requires a five year reporting and review of the threshold and the status of attainment. The last review was completed in

2002[1]. The water quality data in this report covers 2001 and 2002 data since the threshold release. State standards for such parameters as toxic substances, taste and odor, and trace metals, also apply to Lake Tahoe.

California and Nevada have adopted statewide anti-degradation policies, consistent with federal requirements, which require the maintenance of existing high quality waters. Federal regulations specifically state that waters which constitute 'Outstanding National Resource Waters', such as Lake Tahoe, shall be maintained and protected.

In the 1982 Threshold Resolution (82-11) Water Quality Management Plan for the Lake Tahoe Region, (TRPA, 1982) TRPA identified the specific indicators TRPA would monitor to assess attainment of threshold standards for turbidity, clarity, and phytoplankton primary productivity (see Appendix A).

3.1.9 Summary of Involved Agencies

Throughout project development, a number of agencies were and will continue to be directly and indirectly involved with design review. The following agencies were involved or will have input in the project development process:

- Tahoe Regional Planning Agency (TRPA) – TRPA is actively involved with the roadway design as well as the stormwater treatment strategies for the project. Specifically TRPA regulates the following; development within a stream environmental zone (SEZ), tree removal, impervious surface coverage, and requires a soil hydrologic analysis in areas where infiltration facilities are proposed to ensure there is 5 feet of separation between the invert of the infiltration facility and the seasonally high ground water elevation. Soil hydrologic analysis is typically completed during the design phase. TRPA also reviews project development to ensure protection (no adverse impact or enhancement) of nine environmental thresholds which include: water quality; air quality; scenic; soil; fish; vegetation; wildlife habitat; noise; and recreation.
- RWQCB, Lahontan Region – The LRWQCB may require the issuance of a Water Quality Certification (Section 401) to certify a 404 permit (if required) and to certify that the project will not result in an exceedance of water quality standards. Construction of the project will also require the LRWQCB NPDES Permit for Construction activity within the Lake Tahoe Hydrologic Unit.

[1] Available online at http://www.trpa.org/News/2001_Thresholds.html.

- Nevada Division of Environmental Protection (NDEP) – NDEP may require the issuance of a Water Quality Certification (Section 401) to certify a 404 permit (if required) and to certify that the project will not result in an exceedance of water quality standards. Construction of the project will also require the NPDES Permit for Construction activity within the Lake Tahoe Hydrologic Unit.
- Douglas County/City of South Lake Tahoe – Existing Lake Parkway/Montreal Avenue will become U.S. 50 with project implementation. The City and the County will become responsible for runoff from existing U.S. 50 in the casino core.
- United States Army Corp of Engineers – ACOE may require the issuance of a 404 Permit if the project will result in impacts to water features that are considered jurisdictional.
- California Department of Fish and Game – A Streambed Alteration Agreement Permit (Section 1601) may be required.
- Douglas County (Encroachment Permit and Site Improvement Permit) – An encroachment permit and site improvement permit will be required for any work that is to be performed within County R/W.
- City of South Lake Tahoe (Encroachment Permit) – An encroachment permit will be required for any work that is to be performed within City R/W.
- California State Parks (Encroachment Permit) – An encroachment permit will be required to complete any work that occurs within the limits of any California State Parks such as the adjacent Van Sickle Bi-State Park.
- Federal Highway Administration – May review this project due to the fact that U.S. 50 is part of the National Highway System.

3.2 Water Quality Objectives

Under the guidance of the Porter-Cologne Water Quality Control Act, LRWQCB has established water quality objectives for surface and groundwater in the region. As mentioned above, these water quality objectives are listed in Basin Plans designated for respective regions. Water quality objectives consist of both narrative and numerical goals and are established to preserve existing and potential future beneficial uses of regional water bodies. The water quality objectives must comply with the State Anti- Degradation Policy (State Board Resolution No. 68-16). The potential existing uses within the hydraulic area are Municipal and Domestic Supply, Agricultural Irrigation, Ground Water Recharge, Freshwater Replenishment,

Navigation, Recreational (both contact and non-contact), Commercial and Sport fishing, Cold Freshwater Habitat, Wildlife Habitat, Preservation of Biological Habitats of Special Significance, Migration of Aquatic Organisms, Spawning/Reproduction/Development, Water Quality Enhancement, and Flood Peak Attenuation/Flood Water Storage.

Chapter 4 Affected Environment

The quality of water in an area depends upon several factors, including land use, topography, geology, soils, surface and groundwater hydrology, and climate. Following is a brief description of these general characteristics in the project area and surroundings.

4.1 Land Use

In California, El Dorado County adopted a new General Plan in 2004, which provides a land use blueprint for long-term growth in the County. Existing land uses in the project area is Adopted Plan (AP) land. This category recognizes areas for which specific land use plans have been adopted. The plans recognized by the AP category do not include the now superseded Area Plans that comprised the County's General Plan prior to the adoption of the new General Plan. Currently, this area is heavily developed and is primarily commercial (with hotels, shopping, restaurants, and casinos).

In Nevada, Douglass County adopted an update for the County Master Plan in 2007. According to the Douglass County Master Plan the proposed project area is listed in both the Lake Tahoe Area and Sierra Planning Area. Currently, this area is heavily developed and is primarily commercial (with hotels, shopping, restaurants, and casinos).

TRPA has recently updated their Regional Plan (December 2011). The Regional Plan Update is focused on promoting environmental redevelopment in key locations as a strategy for more rapid environmental gain and increase economic opportunity. The Plan strives to increase TRPA's attention to regionally-significant environmental initiatives and streamline regulations. The Regional Plan Goals and Policies presents the overall approach to meeting the previously set thresholds and goals, as well as, meet new statutory requirements including the Lake Tahoe TMDL, California's SB 375 Sustainable Communities Strategy, and Nevada's SB 271. The land use element of the Plan identifies the fundamental philosophies directing land use and development in the Lake Tahoe Basin and was consulted in preparation of this document.

4.2 Topography/Geology/Soils

The Lake Tahoe Basin consists of a "bowl-shaped" watershed, characterized by steep mountain ranges to the east and west, which generally run in a north/south direction with Lake Tahoe occupying nearly 40 percent of the total Basin area. Basin elevations range from 6,223 feet at Lake water level to over 10,000 feet in the mountain ranges. The Lake Tahoe Basin has 63 individual watersheds within the basin that contribute their flow to Lake Tahoe, or 110 watersheds when including the intervening areas that flow directly to the lake. Lake Tahoe is the dominant feature of the 506 square mile watershed, covering 191 square miles of surface water.

National Resource Conservation Service publishes soil data for many areas of the country. The soil data for the Tahoe Basin Area was originally published in 1974 and was recently updated in 2007[1]. The soil data include for the project area include the following soils:

- Tahoe complex, 0-12% slopes. Depth to water table: About 0-10 inches. Drainage class: Very poorly drained
- Urban land
- Cagwin-Rock outcrop complex, 5-15% slopes, extremely stony. Depth to water table: More than 80 inches. Drainage class: Somewhat excessively drained.
- Cassenai gravelly loamy coarse sand, 5-15% slopes, very stony. Depth to water table: More than 80 inches. Drainage class: Somewhat excessively drained.
- Christopher-Gefo complex, 0-5% slopes. Depth to water table: More than 80 inches. Drainage class: Somewhat excessively drained.
- Jabu coarse sandy loam, 0-9% slopes. Depth to water table: About 39-79 inches. Drainage class: Well drained.
- Mara loamy coarse sand, 0-5% slopes. Depth to water table: About 12-30 inches. Drainage class: Poorly drained.
- Oneidas coarse sandy loam, 0-5% slopes. Depth to water table: About 8-18 inches. Drainage class: Poorly drained.
- Oneidas coarse sandy loam, 5-15% slopes. Depth to water table: About 8-18 inches. Drainage class: Poorly drained.

[1] Information available at: http://soils.usda.gov/.

4.3 Climate

Climatic conditions in the Lake Tahoe basin consist of long winters with short, dry summers. Average temperature for the region ranges from highs in the low 80's (between late July to early August) to lows around 16-17 degrees (between December to early February). Most of the area's precipitation comes in the form of snow with occasional thunderstorms during the summer months. Precipitation that falls between June and September accounts for less than 20 percent of the annual total.

The western portions of the basin receive between 35 and 80 inches of precipitation per year, while the eastern portions receive between 20 and 35 inches. Higher amounts of precipitation occur in the upper elevations and typically increase one inch of precipitation per 1,000 feet of increase in elevation (Murphy and Knopp 2000).

4.4 Water Resources

This section deals with the surface water and groundwater present in the area, and discusses its quality from both regional and project level perspectives.

4.4.1 Surface Water

There two known water resources within close proximity to the proposed project area; Edgewood Creek and Lake Tahoe. Edgewood Creek runs through the edge of the Nevada side of the project area and Lake Tahoe sits approximately 1/4+ miles from the project area.

Lake Tahoe Basin

The Lake Tahoe Basin tributary includes sixty-three perennial streams (in 506 square miles), and fifty-four intervening areas (without stream channels) that contribute runoff directly to the lake. Lake Tahoe is a tributary watershed drainage element within the Truckee River Basin, and its sole outlet is the Truckee River, which continues on to discharge to Pyramid Lake.

The upper 6 feet of the lake forms the largest storage reservoir in the Truckee River Basin that serves the cities of Reno and Sparks, Nevada. The dam is operated by the U.S. District Court Water Master under a complex set of legal agreements and operating rules to maintain levels between a set maximum and minimum level. During drought years the lake level can fall below the rim and during wet years the lake level can rise higher than the legal maximum.

Urbanization of a watershed increases sediment and nutrient yields by providing new sources of sediments and nutrients and interfering with removal mechanisms and water storage. Urbanization of the watershed of Lake Tahoe has led to five new direct sources of nutrients and sediment: (1) fertilizers being used largely to support non-native vegetation and not taken up by vegetation; (2) exfiltration from sewer lines and sewage spills from increased development; (3) leachate from land disposal of sewage in the past prior to state laws requiring sewage export; (4) in-Basin contributions of nitrogen and phosphorus to the atmosphere; and (5) increased erosion especially in disturbed areas and use of traction sand in the winter. A 1982 study (Glancy, U.S. Geological Survey) in the Tahoe Region found that urbanization could increase sediment yields up to 100 times that of the undeveloped areas above Incline Village.

Minimizing concentrations of sediments and nutrients in surface water runoff depends on: (1) a healthy vegetative cover for nutrient uptake and incorporation or an adequate duff or mulch layer to assist in infiltration (Grismer and Hogan, 2004; 2005); (2) denitrification for nitrogen removal; (3) absorptivity for phosphorus removal; and (4) filtration and settling for removal of sediment and nutrients associated with particles. Riparian and wetland areas are believed to be critical to good water quality due to their high rates of nutrient and sediment removal compared to surrounding vegetation; however, a recent literature review concludes that bioavailable nutrient removal efficiency of wetlands in Tahoe is predicted to be lower than reported because nearly all of the loading occurs during the dormant season, when biological removal processes are at a minimum (Hydroscience, 2000). In contrast, a field monitoring study of urban stormwater treatment by a constructed wetland system in Tahoe City found that bioavailable nutrients concentration were substantially reduced throughout the year, although winter efficiency appeared somewhat lower compared to summer (Heyvaert et al, 2004). Denitrification does not require that plants are active, only the denitrifying bacteria and availability of a carbon source in the soil and anaerobic conditions. Furthermore, these wetland areas also function in flow attenuation and reduction of runoff, which is likely to yield additional benefits in water quality and flood protection.

Edgewood Creek Watershed/Edgewood Creek

The Edgewood Creek Watershed lies predominantly within Douglas County, Nevada, with a small upper portion within California. The watershed drains an area of about 6.6 square miles where it feeds into Lake Tahoe. The land within the watershed has a variety of uses including the Stateline Casino area, Edgewood Golf Course, Heavenly

Ski Resort, state and interstate highways, local roads, utility right-of-way corridors, residential neighborhoods, and public lands (state and federal).

Edgewood Creek is a perennial stream that is located at the north end of the project area and flows east to west under U.S. 50, ultimately discharging into Lake Tahoe.

The target pollutants of concern in the Lake Tahoe Basin are fine grained sediments and dissolved nutrients. The majority of these target pollutants originate from disturbed watershed areas and runoff associated with roadway and parking areas. The increased runoff volumes, associated with increases impervious cover in the watershed, also exacerbate the problem by transporting these pollutants to Edgewood Creek and Lake Tahoe.

Water quality in Edgewood Creek is impacted by these factors and changes to morphology; alteration of riparian vegetation; in-stream ponds and sediment basins; the frequency and extent of maintenance activities; addition of dissolved iron of natural origin; and the discharge of potentially untreated stormwater from roadways. Use of the Creek and the riparian zone for snow storage also impacts water quality since the snow contains significant volumes of de-icing abrasives

Lake Tahoe

Lake Tahoe is 192 square miles and has an average depth of 1,000 feet. The maximum depth is approximately 1,646 feet, making Lake Tahoe the tenth deepest lake in the world. Since 1874, the outflow of Lake Tahoe (into the Truckee River) has been regulated by a dam at Tahoe City, CA. The Lake Tahoe Basin is divided by the Nevada-California State line, with about one-third of the basin in Nevada and two-thirds in California. The California part of the lake is designated by EPA as an Outstanding Natural Resource Water, which provides that no further degradation of Lake Tahoe can be allowed. Under Nevada Pollution Control Regulations, the Nevada part of Lake Tahoe has a designated beneficial use as a water of extraordinary ecological and/or aesthetic value, which is also a nondegradation standard.

Lake Tahoe is one of the clearest lakes of its size in the world. The water quality of the lake, and its tributaries, significantly contributes to the scenic quality of the Lake Tahoe Basin. The focus of water quality protection in the Basin is to minimize human disturbance, and to reduce or eliminate the addition of pollutants that result from development. Impervious land coverage, land disturbance, and atmospheric deposition are typical products of development that impact the Lake’s nutrient and sediment load. Since Lake Tahoe does not constantly “refresh” from runoff coming in

at the same rate as water draining out, correcting Lake Tahoe's imbalanced nutrient and sediment load is a difficult task. Most large lakes have a water-turnover (where the entire volume of the lake exchanges) approximately every eight years. This entire volume exchange is referred to as a "residence time." In contrast, Lake Tahoe has a very long residence time of 650 years (average), making the Lake behave like a sink without a drain.

As stated in the Regulatory Section 303(d), California has adopted a deep water transparency water quality objective for Lake Tahoe. This objective seeks to restore Lake Tahoe to its average annual Secchi depth of 97.4 feet (29.7 meters, as measured between 1967 and 1971. The deep water transparency water quality objective for Lake Tahoe has not been met since its adoption. In 2009 the annual average Secchi depth was approximately 68.1 feet (20.8 meters), or 29.3 feet (8.9 meters) from the standard. Nevada and California have both adopted a clarity standard to protect Lake Tahoe's water clarity, which specifies the vertical extinction coefficient must be less than 0.08 per meter at any depth below one meter. This clarity standard is also not in attainment. Because pollutants are responsible for Lake Tahoe's deep water transparency loss, Lake Tahoe is listed under Section 303(d) as impaired by input of nitrogen, phosphorus, and sediment. The goal of the Lake Tahoe TMDL is to set forth a plan to restore Lake Tahoe's historic deep water transparency to 29.7 meters annual average Secchi depth.

The ongoing decline in Lake Tahoe's deep water transparency and clarity is a result of light scatter from fine sediment particles (primarily particles less than 16 micrometers in diameter) and light absorption by phytoplankton. The addition of nitrogen, phosphorus, and sediment to Lake Tahoe contributes to phytoplankton growth. This accelerated growth of phytoplankton is also known as cultural eutrophication, which is the Lake's response to accelerated inputs of nutrients to the Lake due to development of the Basin.

A pollutant source analysis conducted by the Water Board and Nevada Division of Environmental Protection identified urban uplands runoff, atmospheric deposition, forested upland runoff, and stream channel erosion as the primary sources of fine sediment particle, nitrogen, and phosphorus loads discharging to Lake Tahoe. The largest source of fine sediment particles to Lake Tahoe is urban stormwater runoff, comprising 72 percent of the total fine sediment particle load. The urban uplands also provide the largest opportunity to reduce fine sediment particle and phosphorus contributions to the lake.

To achieve the transparency standard, estimated fine sediment particle, phosphorus, and nitrogen loads must be reduced by 65 percent, 35 percent, and 10 percent, respectively. Achieving these load reductions is expected to take 65 years.

A 20-year interim transparency goal, known as the Clarity Challenge requires basin wide pollutant load reductions to be achieved within 15 years, followed by five years of monitoring to confirm that 24 meters of Secchi depth transparency has been reached. Implementation efforts must reduce basin-wide fine sediment particle, phosphorus, and nitrogen loads by 32 percent, 14 percent, and 4 percent, respectively.

Since Lake Tahoe does not constantly “refresh” from runoff coming in at the same rate as water draining out, correcting Lake Tahoe’s imbalanced nutrient and sediment load is a difficult task. Most large lakes have a water turnover (where the entire volume of the lake exchanges) approximately every eight years. The entire volume exchange is referred to as “residence time.” In contrast, Lake Tahoe has a very long residence time of 700 years, making the lake behave like a sink without a drain. Therefore, TMDL levels are very carefully monitored by several agencies and government programs.

4.4.2 Runoff

Runoff along the Nevada portion of U.S. 50 in the casino core (from the intersection of Lake Parkway and U.S. 50 to the state line) is currently conveyed to a common storm water treatment facility located west of the Horizon Casino parking lot that also receives runoff from portions of Lake Parkway and casino properties bounded by Lake Parkway. Runoff is conveyed from the common treatment facility through a series of ponds on the Edgewood Golf Course before being discharged to Edgewood Creek and Lake Tahoe.

Runoff from Lake Parkway east of U.S. 50 and flow from Golf Course Creek is commingled and routed through the casino core to the common storm water treatment facility. Golf Course Creek passes under Lake Parkway through a culvert and travels to the stormdrain system just south of Montbleu Resort. A small portion of the Golf Course Creek flow is diverted to an existing SEZ on Golf Course Creek near Fairway 8 of the golf course.

Runoff along the California portion of U.S. 50 in the casino core is currently conveyed through stormdrain to drainage basins west of U.S. 50 before being discharged to Lake Tahoe. Flow in an unnamed creek crossing Montreal Road enters

the same stormdrain system through a 42” reinforced concrete pipe and headwall near the southeast portion of the project area.

Runoff from the Rocky Point neighborhood on the south end of the project area is routed through a series of two drainage basins located near the intersection of U.S. 50 and Pioneer Trail before being routed west for additional treatment before discharging to Lake Tahoe.

There are multiple SEZ locations throughout the project area. A significant portion of existing Lake Parkway (proposed U.S. 50) travels through SEZ areas as designated and defined by TRPA.

Snow Management

Snow management activities conducted by El Dorado County, Douglass County, NDOT, and Caltrans along the roadway impact the timing and amount of runoff. In response to snow and freezing rain events, Caltrans performs one or more of the following activities:

- Application of sand and salt to aid in traction;
- Plowing the snow off the active traffic lanes which is then stored in the two-way center turn lane;
- Collecting the snow from the right of way and trucking it to an off-site disposal yard, a practice typically preformed in the urban area of South Lake Tahoe; and
- Returning after a snow event to remove any remaining snow from the roadway, shoulder and gutter.

The application of sand and salt causes the snow and ice to melt at lower temperatures and sometimes runoff is produced during periods when the air temperature is at or below freezing. The plowing and collecting of snow to remove it from the surface of the roadways reduces the amount of snow available to generate runoff. The majority of the snow is typically removed from the roadway before it has a chance to melt. The roadway snow is collected and trucked to a TRPA and LRWCQB approved disposal site; blown well into the woods adjacent to the roadway; or plowed beyond the curb and out of the drainage area so very little melt water drains back to the roadway and into the storm drainage systems. Snow melt is often a very slow process that occurs over several days with only a small amount of runoff generated on each of those days. Snow piles can contian trash, nutrients, fine

sediments, salt, sand, pollutants from vehicles such as petroleum hydrocarbons, antifreez, oil, or heavy metals and meterials from road and tire wear.

4.4.3 Groundwater

Groundwater in the Lake Tahoe Basin is a valuable source for domestic and municipal water supplies. In most places throughout the basin, ground water is withdrawn from alluvial deposits. These deposits may be in single or multiple layers and may be hydraulically connected to each other and to the underlying bedrock. However, in areas where alluvial deposits are thin or absent, ground water is often obtained from fractured-rock aquifers. The amount of ground water that can be withdrawn from fractured rock depends on the degree of fracturing and jointing of the rock. Although widely used as a source of water in the basin, the spatial extent, thickness, and distribution of these aquifers is either not well known or not available in a format to conduct a basin wide ground-water assessment.

In 1990, the U.S. Geological Survey and TRPA established a ground-water monitoring network with 32 sampling sites to provide a long-term data base on ground water. The monitoring provides scientific data on stream discharge and quality and ground-water levels, quality, and flow paths. Monitioring results show that the Upper truckee River has the largest load of suspended sediment and all nutrients. This is because the Upper Truckee River Basin is the largest basin and contributes the most flow. The Logan House Creek Basin contributes the smallest sediment and nutrient loads. Watersheds on the western side of the basin (California) have higher loads of sediment and nutrients than the sites on the eastern side (Nevada) due to increased development, smaller drainage areas, and less precipitation on the eastern side.

Due to the relative newness of the ground-water monitoring programs, not a lot of long-term data is available at this time. Long-term water quality data will help regulatory agencies assess the effectiveness of both current and new projects and regulations. Continued water quality monitoring is necessary to provide the basis for accurate quantification of nutrient loads and water quality within the Lake Tahoe Basin.

Chapter 5 Water Quality Impacts

Potential impacts to water quality can be attributed to soil erosion and suspended solids being introduced into surface waters. Minimization measures for construction and long-term impacts will focus on the control of sediment and suspended solids from entering waterways. The construction activities necessary to complete the proposed project may have an impact on the water quality of waterways without adequate mitigation measures. Commonly used construction activity BMPs will be required to minimize any potential impacts and will be outlined in the Stormwater Pollution Prevention Plan (SWPPP).

5.1 Short-Term (temporary) Water Quality Impacts

During construction, the proposed project has the potential to cause temporary water quality impacts due to grading activities, traffic detours, and removal of existing vegetation, which can cause increased erosion. Stormwater runoff from the proposed project may transport pollutants into the current stormwater drainage system if BMP's are not properly implemented and maintained.

Fueling or maintenance of construction vehicles will also occur within the proposed project site during construction resulting in a risk of accidental spills or releases of fuels, oils, or other potentially toxic materials. An accidental release of these materials may pose a threat to water quality if contaminants enter storm drains, open channels, or surface water receiving bodies therefore a spill contingency plan should be developed and included in the SWPPP. The magnitude of the impact from an accidental release depends on the amount and type of material spilled and the response to the spill.

5.2 Long-Term (permanent) Water Quality Impacts

After the completion of the project, there is potential for adverse long term impacts to water quality. These impacts would be caused by runoff from project operations and maintenance activities.

Long term water quality impacts are due to changes in stormwater drainage. Because the project will result in a permanent (although minor) increase of impervious surfaces (as shown in Table A below), it will also result in a small, permanent increase in runoff and pollutant loading. The primary pollutants are sediments, petroleum distillates, and metals. These substances are washed off the roadway

surfaces by rainfall and snow melt, becoming runoff. Runoff in significant quantities occurs only during heavy rain storms (one inch in one hour); rain on snow events, or large snow melts. The proposed project design will incorporate permanent stormwater collection (detention basins and other approved BMP's) to ensure that the proposed project will not over inundate the existing stormwater drainage facilities or threaten degradation to existing water quality standards.

Table A: Increase In Impervious Area

Design Alternative	Existing Impervious Area (ac)	Net Added Impervious Area (ac)
C	18.46	8.31
D	16.94	6.42

El Dorado County, Douglass County, NDOT, and Caltrans currently have implemented Storm Water Management Plans (SWMP). The SWMPs will address runoff impacts on water quality standards, development of TMDLs, and watershed planning. The SWMPs will also be used to characterize runoff from roadway facilities and from storm drain systems owned or operated by Caltrans or NDOT and to aid Caltrans and NDOT in determining appropriate and adequate BMP.

The proposed project design will incorporate permanent erosion control and source control elements to ensure that storm water runoff does not cause soil erosion. Implementation of the project-specific long-term mitigation measures, design BMP, and if necessary, treatment BMP, would also reduce or avoid impacts on water quality. Several forms of treatment are proposed for potential use within the project area including sand traps, bio filtration strips, infiltration basins and media filters. (See Chapter 6)

5.3 Impacts to Beneficial Uses of Surface Water

As stated in Section 2.3.2, the proposed project is not located in close proximity to any creeks, streams, rivers, or wetlands. The closest water body to the project area is Lake Tahoe (approximately 1/4 mile from project site). However, with implementation of the proposed mitigation measures, the proposed project will not have any significant impacts to Lake Tahoe. Therefore, the project does not have the potential to impact the beneficial uses of the lake.

Chapter 6 Avoidance, Minimization, and/or Mitigation

This project will have less than significant impacts to water quality with incorporation of the following avoidance, minimization, and proposed mitigation measures.

Caltrans' SWMP is the guidance for compliance with the NPDES Permit requirement for discharge. As part of Caltrans' Project Delivery Stormwater Management Program described in the SWMP, selected Construction Site, Design Pollution Prevention, and Treatment Control BMP will be incorporated into the final design of the proposed project. Compliance with the standard requirements of the SWMP for potential short and long term impacts (listed below in Measures WQ-1 through WQ-4) as well as mitigation measures outlined in the Natural Environment Study (December 2011) are required.

WQ-1 Preparation and implementation of Construction site BMP in compliance with the provisions of Caltrans' Statewide NPDES Permit and any subsequent permit as they relate to construction activities for the project. This will include submission of a Notice of Construction (NOC) to the LRWQCB at least 30 days before the start of construction, preparation and implementation of a Stormwater Pollution Prevention Plan, and submission of a Notice of Construction Completion to the LRWQCB upon completion of construction and stabilization of the project site.

WQ-2 Incorporation of Design Pollution Prevention and Treatment Control BMP for the project in accordance with the procedures outlined in the Stormwater Quality Handbooks, Project Planning and Design Guide will be followed. This will include coordination with the LRWQCB with respect to feasibility, maintenance, and monitoring of Treatment Control BMP as set forth in Caltrans' Statewide SWMP.

WQ-3 Stormwater treatment strategies for each treatment location are preliminary and will require more detailed analysis as the project progresses. The proposed treatment strategies will be consistent with the treatment strategy typically agreed upon by TRPA, NDEP, the LRWQCB, NDOT, and Caltrans.

WQ-4 The following project components will also reduce potential water quality impacts and include:

Several forms of treatment are proposed for potential use within the project area including sand traps, bio filtration strips, infiltration basins and media filters. The following outlines the approach and basis for each treatment application:

Sand Traps

The entire paved roadway along the U.S. 50 proposed project is subject to snow accumulations during the winter months. In order to promote safer traffic conditions, NDOT and Caltrans apply traction sand to the roadway. This sand accumulates and collects along the roadway until the snow melts and the sand can be collected by sweeping and/or warmer rains create conditions capable of transporting the sand off the roadway. One of the primary objectives of this project is to capture the sand before it is allowed to discharge into nearby creeks or streams that discharge to Lake Tahoe.

The method for trapping sand is a function of the contributing tributary area being directed to the catchment facility and the sand application rate. Other factors include the effectiveness of sweeping removal and the expected number of sand trap cleanings per year. Sand trap may be placed as modified drainage inlets along the project.

Biofiltration Swale

Biofiltration or vegetated swales may be used to provide infiltration, sand interception, and sand recovery. Vegetated swales are sized by determining the required Water Quality Flow , depth and residence time using the roughness characteristics, and site dimensions (slope/area) available. Possible vegetated swale locations are shown on the Onsite Watershed Maps located in Appendix B.

Infiltration Basins

Infiltration devices are basins or trenches that store runoff and allow it to infiltrate into the ground. Infiltration prevents pollutants in the captured runoff from reaching surface waters. In areas of high sediment loads, pretreatment may be required. Providing infiltration may be a preferred method where feasible due to the increase in impervious area in proposed conditions. Potential infiltration locations are shown on maps located in Appendix B.

Specific treatment BMP were selected based upon the identified targeted design constituents. A detailed analysis of the project's BMP will be conducted during final design.

Chapter 7 Conclusions and Recommendations

Short-term and long-term impacts may occur with implementation of the proposed project. The potential for accidental spills, erosion, and associated stormwater quality degradation do exist; however, implementation of the above mitigation measures along with Caltrans design standards and practices would reduce these impacts to a less than significant level.

Chapter 8 References

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Appendix A Specific Indicators as Listed in the 1982 Threshold Resolution

Table 1. Water Quality Thresholds And Proposed Project Units Of Benefit					
Threshold	Description	Parameter	Standard	Interim Targets	Units of Benefit
WQ-1	Shallow waters of Lake Tahoe	Turbidity, shallow waters of Lake Tahoe	Decreases sediment load as required to attain turbidity values not to exceed 3 NTU in littoral Lake Tahoe. In addition, turbidity shall not exceed 1 NTU in shallow waters of Lake Tahoe not directly influenced by stream discharges.	Not applicable since threshold is in attainment.	Reductions in sediment/ nutrient discharge to the lake.
WQ-2	Deep waters of Lake Tahoe	Clarity, winter, pelagic Lake Tahoe	Average secchi depth, December-March, shall not be less than 33.4 meters. (Secchi)	Annual average Secchi depth shall be no less than 24.0 m, winter average, and 23.0 m for the annual average (Also see WQ-2-A and WQ-2-B compliance forms for additional mitigation interim targets for this threshold indicator).	Reductions in sediment/ nutrient discharge. Watersheds where clarity model applied based on needed load reductions.
WQ-2A	Capital Improvement Program	Deep waters of Lake Tahoe	Clarity, winter, pelagic Lake Tahoe. (CIP; C. Road BMP; D. Trail BMP; E. Slope Stabilization/Revegetation; F. Runoff Treatment)	Project applications will include the units of benefit identified for EIP, and will be evaluated on a yearly basis as part of the water quality scores update process. There will be no less than 50% WQ EIP implementation in each jurisdiction for the next evaluation period.	Acres treated for source control. Miles of roads BMP. Miles of trail BMP. Acres of source control treated. Miles of drainage conveyance treated, should change to load reductions.
WQ-2B	Best Management Practices	Deep waters of Lake Tahoe	Clarity, winter, pelagic Lake Tahoe. (Res. BMP)	By December 31, 2006 projected for 80% of developed parcels in priority 1 and priority 2 watersheds that need site evaluations and potentially BMP implementation (based on known developed parcels, security returns, and known BMP implementation)	% of BMP's installed by jurisdiction
WQ-3	Water quality	Phytoplankton Primary Productivity	Annual mean phytoplankton primary productivity shall not exceed 52gC/m^2/yr.California: algal productivity shall not be increased beyond levels recorded in 1967-1971, based on a statistical comparison of seasonal and annual mean values.	The proposed interim target is 170 gm C/m2/yr. This is a more realistic and achievable target until the completion of the clarity model. This target was met in 1994-1997, and almost met in 2003. (177)	Load reductions for Nitrogen, Phosphorus, and Iron.

Table 1. Water Quality Thresholds And Proposed Project Units Of Benefit					
Threshold	Description	Parameter	Standard	Interim Targets	Units of Benefit
WQ-4	Tributaries	Tributary water quality	California: total nitrogen (0.19mg/l), total phosphorus (0.15mg/l) and total iron (0.03mg/l annual average). Nevada: soluble phosphorus not to exceed 0.007mg/l annual average, soluble inorganic nitrogen not to exceed 0.025mg/l annual average. TRPA: attain a 90th percentile value for suspended sediment of 60mg/l.	Meet tributary average standards for N, P, and set uniform standards for these and suspended sediment with the Lahontan RWQCB and Nevada Division of Environment Protection. By the update of the Regional Plan, 2007, TRPA should prepare a report and a recommendation to include any TMDL's established for the Tahoe Region.	% of watershed treated (BMPs, SEZ; water quality; slope stabilization)
WQ-5	Stormwater runoff quality	Surface discharge to surface water	TRPA threshold-dissolved inorganic nitrogen, 0.5mg/l; dissolved phosphorus, 0.1mg/l; dissolved iron, 0.5mg/l; suspended sediment, 250mg/l; grease and oil, 2 mg/l.	By December 2006 TRPA shall target source control and runoff treatment at limiting Phosphorus and fine sediment sources to meet discharge standards. The monitoring focus will be on flow weighted samples and event loading from runoff, and correlate samples based on land use.	Miles of roadways treated; acres of intervening areas treated;
WQ-6	Stormwater runoff quality	Surface discharge to protect groundwater	Surface water infiltration into the groundwater shall comply with the Uniform Regional Runoff Guidelines. For total nitrogen, 5mg/l; total phosphorus, 1mg/l; total iron, 4mg/l; turbidity, 200 NTU; and grease and oil, 40 mg/l.	By December 2004 TRPA shall target source control and runoff treatment at limiting Phosphorus and Nitrogen loading reductions to groundwater and Lake Tahoe in order to meet discharge standards. The current monitoring for project effectiveness shall be evaluated to include in the design of new projects.	Same as above and: volume of runoff infiltrated, add quality of pretreatment and water quality of infiltrated water (characterization of urban runoff).
WQ-7	Other Lakes	California-Nevada Other Lakes	There is no standard for most of the Other Lakes at this time, due to be established by 2006.	TRPA will use the results from the USGS study on Other Lakes (Draft due 2004) to evaluate a non-degradation standard.	To be determined from 2002-2004 USGS Other Lakes study.

Appendix B Proposed Bioflitration and Basin Locations