3.10 WATER QUALITY AND STORMWATER RUNOFF

This section describes the potential impacts related to water quality and stormwater runoff resulting from the implementation of the US 50/South Shore Community Revitalization Project. The analysis includes a description of existing conditions and an analysis of changes to water quality and stormwater volumes or treatment systems. Regulations and guidelines established by the Tahoe Regional Planning Agency (TRPA) and local jurisdictions, along with the California Environmental Quality Act (CEQA) statute and guidelines, provide the regulatory background that guides the assessment of potential environmental effects to these resources.

Scoping comments were submitted on the Notice of Preparation/Notice of Intent by the City of South Lake Tahoe requesting that the EIR/EIS/EIS should describe the proposed drainage system and associated stormwater treatment, discuss the potential impacts of constructing the systems, including impacts on existing drainage and stormwater improvements; and include detailed modeling (broken down by jurisdiction) of the project's effects on Total Maximum Daily Load (TMDL) pollutants. The League to Save Lake Tahoe requested a commitment to effective and frequent road sweeping on both the loop road and the casino corridor road as mitigation for impacts of road sanding, as well as implementation of stormwater best management practices (BMPs). At the Advisory Planning Commission (APC) meeting in December 2011, Tom & Carolynn Petersen requested a discussion of the effect of the project on the City of South Lake Tahoe's completed drainage projects in the area.

Primary sources of information used in the preparation of this analysis are the Hydraulic and Floodplain Evaluation Report, U.S. Highway 50/South Shore Community Revitalization Project (TTD 2015a) and Natural Environment Study, U.S. Highway 50/South Shore Community Revitalization Project (TTD 2015b); Edgewood Lodge and Golf Course Improvement Project –Monitoring, Inspection, Maintenance and Operations Plan (Nichols Consulting Engineers 2011); Final Lake Tahoe Total Maximum Daily Load Report (Lahontan RWQCB and NDEP 2010); Storm Water Quality Handbooks: Construction Site BMPs Manual (Caltrans 2003); Nevada Contractors Field Guide for Construction Site Best Management Practices (NDEP 2008); and TRPA BMP Handbook (TRPA 2014).

Potential environmental effects related to 100-year flood hazards are addressed in Section 3.9, "Floodplains." Impacts on Stream Environment Zones (SEZs) are discussed in Section 3.11, "Geology, Soils, Land Capability, and Coverage," and in Section 3.16, "Biological Environment."

3.10.1 Regulatory Setting

FEDERAL

Federal Antidegradation Policy

The Federal Antidegradation Policy was enacted to provide protection to high-quality water resources of national importance. It directs states to develop and adopt statewide antidegradation policies that include protecting existing instream water uses and maintaining a level of water quality necessary to protect those existing uses and the water quality of high-quality waters. In the U.S. Environmental Protection Agency's (EPA's) Clean Water Act regulations regarding water quality standards (40 CFR Chapter 1, Section 131.12[a][3]), the criteria for requiring an antidegradation standard includes: "where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected." EPA has designated Lake Tahoe an Outstanding National Resource Water (ONRW). ONRWs are provided the highest level of protection under EPA's Antidegradation Policy, stipulating that states may allow some limited activities that result in temporary and short-term changes to water quality, but such changes

should not adversely affect existing uses or degrade the essential character or special uses for which the water was designated an ONRW. EPA interprets this provision as a prohibition to prohibit new or increased discharges to ONRWs that would degrade water quality.

Clean Water Act (Public Law 92-500)

Section 404

The Clean Water Act (CWA) consists of the Federal Water Pollution Control Act of 1972 and subsequent amendments. The CWA provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation's waters. Section 404 of the act prohibits the discharge of fill material into waters of the United States, including wetlands, except as permitted under separate regulations by the U.S. Army Corps of Engineers (USACE) and EPA. To discharge dredged or fill material into waters of the United States, including wetlands, Section 404 requires projects to receive authorization from the Secretary of the Army, acting through the USACE. Waters of the United States are generally defined as "…waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; territorial seas and tributaries to such waters."

Section 401

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification for the discharge. The certification must be obtained from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over the affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401. Water quality certification requires evaluation of potential impacts in light of water quality standards and CWA Section 404 criteria governing discharge of dredged and fill materials into waters of the United States. The federal government delegates water pollution control authority under CWA Section 401 to the states. In California, CWA administration is provided by the Regional Water Quality Control Boards (RWQCBs) in California and the Nevada Division of Environmental Protection (NDEP) in Nevada.

Section 402

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit program to regulate discharges of pollutants into waters of the United States. An NPDES permit sets specific discharge limits for point sources discharging pollutants into waters of the United States and establishes monitoring and reporting requirements, as well as special conditions. Two types of nonpoint source discharges are controlled by the NPDES program: discharges caused by general construction activities and the general quality of stormwater in municipal stormwater systems. The goal of the NPDES nonpoint-source regulations is to improve the quality of stormwater discharged to receiving waters to the maximum extent practicable. The RWQCBs in California and NDEP in Nevada are responsible for implementing the NPDES permit system (see the discussion of state regulations below).

Section 303

Section 303(d) of the CWA requires states to develop lists of water bodies that do not attain water quality objectives after implementation of required levels of treatment by point source dischargers (municipalities and industries). Section 303(d) requires that the state develop a total maximum daily load (TMDL) for each of the listed pollutants. The TMDL is the amount of the pollutant that the water body can receive and still be in compliance with water quality objectives. The TMDL is also a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. EPA must either approve a TMDL prepared by the state or disapprove the state's TMDL and issue its own. NPDES permit limits for listed pollutants must be consistent with the waste load allocation prescribed in the TMDL. After implementation of the TMDL, it is anticipated that the problems that led to listing of a given pollutant on the Section 303(d) list would be remediated. The Lake Tahoe TMDL is administered at the state level by Lahontan RWQCB and the Nevada Division of Environmental Protection and is discussed below.

TAHOE REGIONAL PLANNING AGENCY

Lake Tahoe Regional Plan

Regional Plan priorities and policies include accelerating water quality restoration by targeting environmental redevelopment and Environmental Improvement Program opportunities, retaining the current regional growth system that prevents unchecked overdevelopment and encourages preservation of open space, and integrating with the Regional Transportation Plan to address congestion and support pedestrian and bike improvement projects that reduce vehicle dependency.

Goals and Policies

TRPA has established a number of goals and policies related to water quality. Goals include supporting the Lake Tahoe TMDL through the reduction of sediment and nutrients to Lake Tahoe and the elimination or reduction of other pollutants; comprehensive water quality planning and coordination with public agencies and the private sector; and maximizing the efficiency and effectiveness of water quality programs. Policies address a range of issues including snow removal, wastewater spill prevention, underground storage tanks, dredging, and reduction of impacts from motorized watercraft.

Code of Ordinances

The TRPA Code contains the requirements and standards intended to achieve water quality thresholds, goals, and policies. Chapter 60 of the TRPA Code is directed specifically at water quality, but a number of other chapters and sections contain provisions related to design and installation of best management practices (BMPs) and standards for grading and excavation (Table 3.10-1).

Table 3.10-1 Water Quality Code Requirements Related to the Action Alternatives

Ordinance	Requirement
Section 60.4	Runoff shall be controlled with implementation of BMPs.
Chapter 35	Regulations pertaining to recognition of natural hazards, including floodplains, prevention of damage to property, and protection of public health relating to such natural hazards. The TRPA Code prohibits development, grading or filling of lands within 100-year floodplains with certain exceptions, including specific public outdoor recreation facilities, public health or safety facilities, access to buildable sites across a floodplain, and erosion control projects or water quality control facilities when it can be proven there are no viable alternatives and all potential impacts can be minimized (TRPA 2012a).
Section 33.4	Requirements for special investigations, reports, and plans, determined to be necessary by TRPA to protect the environment against significant adverse effects from grading projects.
Section 33.5	Requirements for grading and construction schedules when grading or construction is to occur pursuant to a TRPA permit.
Chapter 33.3	Standards for grading and excavation. Grading is permitted only between May 1 and October 15.
Section 60.1	Discharge standards for runoff and discharge to surface and groundwater.
Section 60.2	For projects that result in increased impervious coverage, implementation of off-site water quality control or stream environment zone mitigation projects is required; or payments into the Water Quality Mitigation Fund.

Source: TRPA 2012a

Numerical discharge standard limitations are specified in the TRPA Code for nitrogen, phosphorus, iron, turbidity, suspended sediments, and grease and oil. Pollutant concentrations in surface runoff may not exceed the concentrations listed in Table 3.10-2 at the 90th percentile for discharge to surface waters. Surface runoff infiltrated into soils may not exceed the concentrations listed in Table 3.10-2 for discharge to groundwater. In addition to numerical discharge limits, TRPA Code also restricts the discharge of wastewater and toxic substances, sets requirements for snow removal, sets requirements for salt and abrasive use, and sets criteria for pesticide use and fertilizer control.

Table 3.10-2 TRPA Discharge Limits for Surface Runoff and Discharge to Groundwater

Constituent	Maximum Concentration
Surface Runoff	
Dissolved Inorganic Nitrogen as N	0.5 mg/l
Dissolved Phosphorus as P	0.1 mg/l
Dissolved Iron as Fe	0.5 mg/l
Grease and Oil	2.0 mg/l
Suspended Sediment	250 mg/l
Discharge to Groundwater	
Total Nitrogen as N	5 mg/l
Total Phosphate as P	1 mg/l
Iron as FE	4 mg/l
Turbidity	200 NTU[1]
Grease and Oil	40 mg/l

Source: TRPA 2012a

[1] NTU = Nephelomteric Turbidity Unit

Environmental Threshold Carrying Capacities

Water quality standards adopted by TRPA set a target to return the lake to the transparency observed in the late 1960s. Six major indicator themes are currently used by TRPA to assess the water quality of Lake Tahoe and its tributaries. Table 3.10-3, TRPA Summary of Findings by Threshold Category (Water Quality), lists each threshold category, indicator reporting category (indicator theme), and generalized characterization of current status, trend, and confidence (TRPA 2016).

Table 3.10-3 TRPA Summary of Findings by Threshold Category (Water Quality)

Threshold Category	Indicator Reporting Category (Indicator Theme)	Generalized Characterization of Current Status and Trend[1]
Water Quality	Pelagic Lake Tahoe(open waters of Lake Tahoe)	Indicators range from somewhat worse than target to somewhat better than target, trending toward little or no change[1]. The exception to this is the indicator for Phytoplankton Primary Productivity, which is described as considerably worse than target with a trend toward rapid decline.
Water Quality	Littoral Lake Tahoe (nearshore waters of Lake Tahoe)	Indicators are at or somewhat better than target with insufficient data to determine trend. There is insufficient data to determine the status or trend for Attached Algae or Aquatic Invasive Species.
Water Quality	Tributaries	Suspended sediment concentrations in tributaries are considerably better than target however Phosphorus and Nitrogen concentrations are still worse than target for most tributary streams. There is insufficient data to determine the status of sediment and nutrient loading in tributaries, however these indicators are trending toward no change or moderate improvement.
Water Quality	Surface Runoff (stormwater runoff to surface waters)	There is insufficient data to determine status or trend of Surface Runoff indicators.
Water Quality	Groundwater (stormwater runoff to soil)	There is insufficient data to determine status or trend of Groundwater indicators.
Water Quality	Other Lakes (Fallen Leaf Lake)	There is insufficient data to determine status or trend of indicators for Other Lakes.

[1] Range of Qualifiers from best to worst:
Possible Status Categories: Considerably better than, at or somewhat better than, somewhat worse than, considerably worse than, and insufficient data to determine status or no target established.
Possible Trend Categories: Rapid movement, moderate improvement, little or no change, moderate decline, rapid decline, and insufficient data to determine trend.
Source: TRPA 2016

Nearshore Water Quality

The quality of water in the nearshore area, the primary point of contact for most residents and visitors to the lake, is tracked by measuring turbidity, which is an indication of the cloudiness of water expressed in Nephelometric Turbidity Units (NTU). Higher turbidity measurements indicate cloudier water. TRPA maintains standards for nearshore turbidity, <3NTU in areas influenced by stream discharge, and <1NTU in areas not influenced by stream discharge. Nearshore turbidity monitoring completed between November 2014 and November 2015 did not result in a single value that exceeded the <1NTU standard (TRPA 2016).

Deep Water (Pelagic) Transparency and Clarity

Long-term changes to the transparency and clarity of Lake Tahoe are influenced by the amount of particulate material in the water, which includes inorganic particles that scatter light (e.g., fine sediment suspended in the water column) and organic particles that absorb light (e.g., suspended algae). Tahoe's transparency is currently 25 feet worse than 1968 values, based on average annual Secchi disk measurement (TERC 2016). In 2015, the average annual Secchi disk visibility depth measured from the surface of the lake was 73.1 feet, which is a decrease in clarity of 4.8 feet from the previous year, but still 9 feet greater than the lowest value recorded, which was an average annual measurement of 64.1 feet in 1997 (TERC 2016). These measurements confirm the long-term halt in clarity degradation; however, year-to-year fluctuations are expected (TERC 2015).

Deep Water Primary Productivity

Primary productivity measures the rate at which algae grow. Measurements of primary productivity are expressed as grams of carbon per square meter (gC/m^2). The phytoplankton primary productivity indicator is used to determine compliance with TRPA's Lake Tahoe phytoplankton productivity standard of 52 $gC/m^2/yr$, which is based on data collected over 4 years (1968-1971). Phytoplankton primary productivity has remained well above the standard since it was established in 1982 (TRPA 2016).

Other Thresholds

In addition to water quality thresholds and standards that specifically measure the water quality of Lake Tahoe, additional thresholds are used by TRPA to assess the quality of water in tributary streams to Lake Tahoe or other waters directly discharged to Lake Tahoe. These thresholds include standards that define: maximum allowable pollutant concentrations for various constituents in tributaries to Lake Tahoe; surface runoff concentrations discharged to surface waters; surface runoff concentrations discharged to land surfaces for infiltration; stormwater runoff to soil (affecting groundwater); and the quality of other lakes in the Tahoe Region. Table 3.10-3, above, provides the current status for these additional Water Quality Indicator Reporting Categories.

Tourist Core Area Plan

The City of South Lake Tahoe, in conjunction with and approval from TRPA, adopted the Tourist Core Area Plan (TCAP) on October 15, 2013, which replaced the Stateline/Ski Run Community Plan of 1994. The tourist core stretches approximately 2 miles along US 50 extending from Fairway Drive to the California and Nevada State Line and along Ski Run Boulevard from Lake Tahoe to Pioneer Trail. This area functions as the primary visitor and tourist district in the City of South Lake Tahoe and provides direct access to recreation opportunities such as Heavenly Ski Resort, Edgewood Golf Course, Ski Run Marina, Lakeside Marina, and Van Sickle Bi-State Park. TCAP policies applicable to the action alternatives are discussed below.

Natural and Cultural Resources

TCAP goals and policies applicable to water quality and stormwater management are found in the Natural and Cultural Resources section. Water quality policies include a requirement for installation of BMPs on all projects identified in the Memorandum of Understanding (MOU) between TRPA and the City of South Lake Tahoe (Policy NCR-3.1); continued collaboration with Lahontan to update and refine pollutant load reduction targets beyond 2016 and to update the Pollutant *Load Reduction Plan* as necessary to achieve the Lake Tahoe TMDL targets (Policy NCR-3.4); and continued collaboration with Caltrans to implement water quality improvement projects along US 50 (NCR-3.5). The full text of these policies and the overarching goal of protecting and enhancing the clarity of Lake Tahoe and water quality in other water bodies (Goal NCR-3),

along with a discussion of the project's consistency with these policies and goal, is included in Appendix E, "Goals and Policies Consistency Analysis."

South Shore Area Plan

Douglas County, in conjunction with and with approval from TRPA, prepared and approved the South Shore Area Plan (SSAP) on November 21, 2013. The SSAP replaced the Stateline Community Plan, Kingsbury Community Plan, and a portion of Plan Area Statements 070A (Edgewood), including Special Area #1 (C-070A SA1), and a portion of Plan Area Statement 080 (Kingsbury Drainage), including Special Area #2 (R-080 SA2). The SSAP was designed to be consistent with the goals and policies in the 2012 Regional Plan. The SSAP includes four separate components that are integrated into Douglas County planning documents, including the Douglas County Master Plan, Zoning Map, Development Code, and Design Criteria and Improvement Standards.

STATE

California

Lahontan Regional Water Quality Control Board

The Porter-Cologne Act created the California State Water Resources Control Board (SWRCB) and nine RWQCBs in California. The SWRCB protects water quality by setting statewide policy, coordinating and supporting RWQCB efforts, and reviewing petitions that contest RWQCB actions. The RWQCBs issue waste discharge permits, take enforcement action against violators, and jointly administer federal and state laws related to water quality in coordination with EPA and USACE.

The Tahoe Region is located within the jurisdiction of the Lahontan RWQCB. The Lahontan RWQCB Region is approximately 570 miles long, covering an area of 33,131 square miles, from the California-Oregon border to the Antelope Valley watershed in Los Angeles and San Bernardino Counties. In addition to the Tahoe Region, the Lahontan Region includes Death Valley, Mount Whitney, Owens Valley, Mono Lake, and portions of Lassen and Modoc Counties.

On the California side of the Tahoe Region, Lahontan RWQCB implements the CWA, the California Water Code (including the Porter-Cologne Act), and a variety of laws related to control of solid waste and toxic and hazardous wastes. Lahontan RWQCB has authority to set and revise water quality standards and discharge prohibitions. It issues federal permits, including NPDES permits and Section 401 water quality certifications, and state waste discharge requirements or waivers of waste discharge requirements. Its planning and permitting actions require compliance with the California Environmental Quality Act (CEQA).

Water Quality Control Plan for the Lahontan Basin

Water quality standards and control measures for surface and ground waters of the Lahontan Region are contained in the Water Quality Control Plan for the Lahontan Region (Basin Plan). The Basin Plan designates beneficial uses for water bodies. It establishes water quality objectives, waste discharge prohibitions, and other implementation measures to protect those beneficial uses. Chapter 5 of the Basin Plan, Water Quality Standards and Control Measures for the Lake Tahoe Basin, summarizes a variety of control measures for the protection and enhancement of Lake Tahoe.

The Basin Plan was first adopted in 1975, and most recently updated in 2014. The Basin Plan contains both narrative and numeric water quality objectives for the region. The 2014 Basin Plan amendments include additional language related to: "mixing zones" for dilution of discharged water; compliance schedules for NPDES permits; discharge prohibition exemptions for low treat discharges such as incidental runoff from landscape irrigation or construction dewatering; simplification of existing prohibition exemptions; and the removal of language describing programs administered by TRPA (Lahontan RWQCB 2014).

Waste Discharge Prohibition for the Lake Tahoe Hydrologic Unit

The Basin Plan prohibits the discharge of any waste or deleterious material to the surface waters of Lake Tahoe, the 100-year floodplain of any tributary to Lake Tahoe, or any SEZ within the Lake Tahoe hydrologic unit. The Board may grant an exception for public service facilities provided that the following findings can be made:

- the project is necessary for public health, safety, or environmental protection;
- there is no reasonable alternative, including spans that avoids or reduces the extent of encroachment;
- the impacts are fully mitigated;
- SEZ lands are restored in an amount of 1.5 times the area of SEZ developed or disturbed by the project; and
- wetlands are restored in an amount at least 1.5 times the area of wetland disturbed or developed. Certain wetlands may require restoration of greater than 1.5 times the area developed or disturbed.

General Permit for Stormwater Discharges Associated with Construction Activity in the Lake Tahoe Basin

The Lahontan RWQCB adopted the NPDES Construction Stormwater Permit for the Lake Tahoe Basin in April 2011. Projects disturbing more than 1 acre of land during construction must file a Notice of Intent with the Lahontan RWQCB to be covered under this permit. Construction activities subject to the Lake Tahoe Construction Stormwater Permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce non-stormwater discharges to storm sewer systems and other waters. A storm water pollution prevention plan (SWPPP) must be developed and implemented for each site covered by the permit. The SWPPP must include BMPs designed to prevent construction pollutants from contacting stormwater and keep products of erosion from moving off-site into receiving waters throughout the construction and life of the project; the BMPs must address source control and, if necessary, pollutant control. Under this General Permit any stormwater generated from the construction site must meet the effluent limits shown in Table 3.10-4, Lake Tahoe Stormwater Effluent Limits.

Table 3.10-4 Lake Tahoe Stormwater Effluent Limits

Parameter	Units	Maximum Daily Effluent Limitations for Discharge
Total Nitrogen (as N)	Mg/L	0.5
Total Phosphorus (as P)	Mg/L	0.1
Total Iron	Mg/L	0.5
Turbidity	NTU	20*
Grease and Oil	Mg/L	2

*Note: For Active Treatment Systems use 10 NTU as daily average and 20 NTU for any single sample

Source: Lahontan RWQCB 2011c

Statewide Stormwater Permit for the State of California Department of Transportation

Section 402(p) of the CWA requires storm water permits for discharges from municipal separate storm sewer systems (MS4s). The EPA defines an MS4 as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutter, ditches, man-made channels, or storm drains) owned or operated by a State (40 CFR 122.26(b)(8)). The California Department of Transportation (Caltrans) is responsible for the design, construction, and maintenance of the State highway system and related properties, including the Caltrans MS4 facilities that receive stormwater runoff from the State owned right-of-way. Initially, all Caltrans MS4 discharges were issued individual NPDES permits. In 1999, the SWRCB issued a statewide permit that regulated all discharges from Caltrans MS4s. This statewide permit was renewed in 2013. The Caltrans Statewide Stormwater Permit is implemented through the Statewide Stormwater Management Plan (SWMP) that describes the procedures and practices used to reduce or eliminate the discharge of pollutants to storm drainage systems and receiving waters.

The Caltrans Statewide Stormwater Permit (in compliance with Section 402 of the CWA) requires the use of stormwater BMPs to control and abate the discharge of pollutants to the Maximum Extent Practicable (MEP). Monitoring of effluent and receiving waters is required to determine the effectiveness of BMPs. If stormwater discharges are found to be causing or contributing to an exceedance of an applicable Water Quality Standard, Caltrans is required to revise its BMPs. Additionally, the MEP standard does not apply to TMDL-based requirements. Caltrans must implement all controls necessary to meet the Waste Load Allocations assigned to it through an adopted TMDL.

El Dorado County and City of South Lake Tahoe Municipal NPDES Permit.

Portions of El Dorado County and Placer County and the entire jurisdiction of the City of South Lake Tahoe lie with the Lake Tahoe Hydrologic Unit. Because Lake Tahoe is an Outstanding National Resource Water and is negatively affected by urban runoff from these municipalities, the Lahontan RWQCB adopted a Phase 1 NPDES program to regulate these MS4s in 1992. The NPDES (CAG616001) is generally updated every five years with the most recent update occurring in 2011. The current permit (Order No. R6T-2011-0101) includes: numeric effluent limits for fine sediment, total nitrogen, and total phosphorus; requirements for comprehensive Stormwater Management Plans; Pollutant Load Reduction Plans (as required by the Lake Tahoe TMDL); assessment of load reduction requirements using the Lake Tahoe Clarity Crediting Program Handbook; and effectiveness monitoring.

Nevada

Nevada Division of Environmental Protection

The Bureau of Water Quality Planning (BWQP) is part of the NDEP and is responsible for several water quality protection functions in the state. These 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 four branches: water quality standards, monitoring, nonpoint source pollution management, and the Lake Tahoe management program. The branches are responsible for the following duties and responsibilities:

- The Water Quality Standards Branch is responsible for developing and reviewing water quality standards; determining total maximum daily loads and wasteload allocations from point sources; and determining load allocations from non-point sources.
- The Monitoring Branch is responsible for administering the state's water quality monitoring program. This branch maintains and updates water quality data for the national water quality database (Water Quality Exchange Network - WQX) and is responsible for preparation of Nevada's Water Quality Assessment Report, which is required under Section 305(b) of the Clean Water Act (CWA).
- The Nonpoint Source (NPS) Pollution Management Program aims to control nonpoint sources of pollution in Nevada. NPS pollution results from a variety of diffuse and dispersed human activities.
- The Lake Tahoe Watershed Program unit collaborates with Lahontan RWQCB to develop the Total Maximum Daily Load for Lake Tahoe.

Nevada relies on EPA criteria when establishing numeric water quality standards for toxics. Water quality standards are contained in the Nevada Administrative Code (NAC), chapter 445A.119 – 445A.225. Lake Tahoe water quality standards for Nevada are prescribed in 445A.191. Similar to the California requirements under the Lahontan RWQCB, the NDEP stipulates that a Stormwater General Permit must be obtained, which includes the development of a SWPPP. SWPPPs must demonstrate adequate BMP selection and installation for any construction project that is to disturb one or more acres. When the receiving waters of the discharge are Section 303(d) Impaired Water Bodies with an established TMDL, such as in the case of the Lake Tahoe Region, the project must comply with all applicable TMDL requirements.

Lake Tahoe TMDL

The Lake Tahoe TMDL was developed as a partnership between Lahontan RWQCB and the NDEP and approved by the EPA in 2011. The TMDL addresses the declining clarity and transparency of Lake Tahoe. Each TMDL represents a goal that may be implemented by adjusting pollutant discharge requirements in individual NPDES permits or establishing nonpoint source controls. Because California and Nevada must comply with, administer, and enforce their own state laws and policies, each state has developed its own Lake Tahoe TMDL to address the impairment of Lake Tahoe as addressed in each state's Section 303(d) filings with EPA. The following items highlight the differences in implementation approaches between the two states:

- California's Lake Tahoe TMDL (dated November 2010 and approved by EPA in 2011) requires attainment of the California transparency objective for Lake Tahoe over a 65-year implementation period. Based on California law, Lahontan RWQCB has the obligation to implement and enforce the California Lake Tahoe TMDL through NPDES discharge permits (over which EPA has jurisdiction) issued to California government entities (City of South Lake Tahoe, Placer County, El Dorado County, and the California Department of Transportation).

- Nevada's Lake Tahoe TMDL (dated August 2011 and approved by EPA in 2011) is a modified version of the California Lake Tahoe TMDL. The Nevada Lake Tahoe TMDL clarifies Nevada's regulatory structure and approach to implementation and emphasizes that the proposed implementation timelines may need to be adjusted for a variety of reasons, but particularly based on the availability of future funding. NDEP's stated plan for implementing the Lake Tahoe TMDL for Washoe County and Douglas County is through Memorandum of Agreement (MOA) with each jurisdiction. MOAs are a collaborative, legally non-binding approach to implementing a TMDL. NDEP regulates the Nevada Department of Transportation NPDES discharge permit.

LOCAL

City of South Lake Tahoe Municipal Code

As a provision of the NPDES permit, the City of South Lake Tahoe in partnership with Placer County and El Dorado County developed a Storm Water Management Plan that describes the process and procedures the City will take to move towards greater compliance with the TRPA and Lahontan RWQCB's water quality requirements. The City of South Lake Tahoe developed a 2008 Drainage Master Plan that identifies specific drainage improvement and stormwater quality facilities. Section 8-6 of the City Code describes requirements for the preparation and submittal of grading plans and standards to ensure the proposed construction does not damage adjoining properties or streets due to increases in flow or flooding.

The City of South Lake Tahoe adopted the 2030 General Plan on May 17, 2011. The 2030 General Plan is the City's policy document containing elements that guide land use, transportation, public facilities and services, recreation, natural resources, and other decisions in compliance with the Regional Plan. General Plan Policies applicable to the action alternatives are discussed below.

Douglas County Code

Douglas County provides drainage design requirements and guidance through Douglas County Code Section 20.100 and the Storm Drainage section of its Design Criteria and Improvements Standards Manual (Douglas County 2008). This manual does not allow for any increase in the peak rate of flow from development, and emphasis is given to the use of detention facilities sized to minimize runoff to pre-developed levels. Retention and infiltration facilities are permitted for projects in the Tahoe Basin with approval by TRPA (Douglas County 2008).

3.10.2 Affected Environment

SURFACE WATER QUALITY

Edgewood Creek and Golf Course Creek flow through the study area. Golf Course Creek joins with Edgewood Creek for approximately 1,200 feet before entering Lake Tahoe.

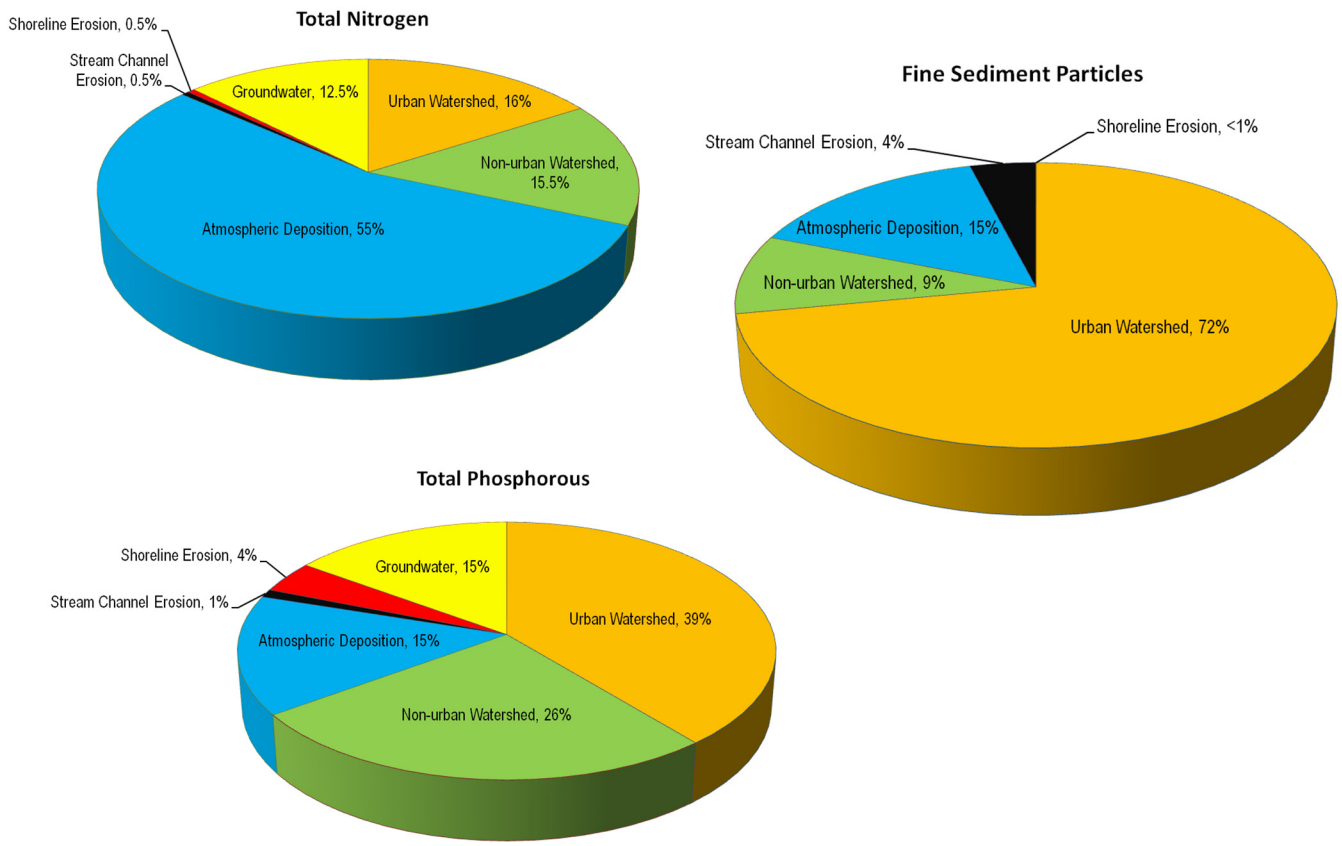
Lake Tahoe

Lake Tahoe is classified by limnologists as an oligotrophic lake, which means the lake has very low concentrations of nutrients that can support algal growth, leading to clear water and high levels of dissolved oxygen (TERC 2011: p. 6.15). The exceptional transparency of Lake Tahoe results from naturally low inputs of nutrients and sediment from the surrounding watersheds. The most recent scientific research points to inorganic fine sediment particles (particles defined as less than 16 micrometers in diameter) as the primary pollutant of concern impairing Lake Tahoe's transparency. This finding is based on the ability of inorganic fine sediment particles to efficiently scatter light and decrease observed transparency. Swift et al. (2006) determined that light scattering by inorganic particles for the period between 1999 and 2002 was responsible for approximately 55 to 60 percent of measured light attenuation in the lake. Additional pollutants of concern include phosphorus and nitrogen, which stimulate algal growth in the lake contributing to declines in transparency and the quality of the near-shore environment.

Research during the development of the Lake Tahoe TMDL included an analysis of pollutant sources to identify the magnitude of pollutant loads to Lake Tahoe from specific source categories. These categories were defined as: surface runoff from developed lands (urban watershed); atmospheric deposition; forested runoff (non-urban watershed); stream channel erosion; groundwater; and shoreline erosion. Exhibit 3.10-1 displays the relative distribution of average annual pollutant loading to Lake Tahoe for each pollutant of concern among the source categories (Lahontan RWQCB and NDEP 2010). As shown in Exhibit 3.10-1, the Lake Tahoe TMDL identifies surface runoff from developed lands as the most significant source of pollutant loading for fine sediment particles and phosphorus. For example, developed lands are estimated to deliver over 70 percent of the average annual fine sediment particle load and approximately 40 percent of the average annual phosphorus load to the lake. For nitrogen, atmospheric deposition is identified as the most significant source of loading to the lake, contributing 55 percent of the average annual load.

The Lake Tahoe TMDL established the goal of restoring Lake Tahoe's historic deep water transparency to 29.7 meters (97.4 feet) annual average Secchi depth (Lahontan RWQCB and NDEP 2010). The deep-water transparency water quality objective for Lake Tahoe has not been met since its adoption. 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. It is anticipated that attainment of these load reduction standards will take 65 years from implementation (Lahontan RWQCB and NDEP 2010).

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. To attain the goals of the Clarity Challenge, implementation efforts must reduce basin-wide fine sediment particle, phosphorus, and nitrogen loads by 32 percent, 14 percent, and 4 percent, respectively.



Source: Adapted from Lahontan RWQCB and NDEP 2010

Exhibit 3.10-1 **Lake Tahoe TMDL Pollutant Sources**

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 Tahoe 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 study area and flows east to west under US 50, ultimately discharging into Lake Tahoe. Edgewood Creek supports a relatively well-developed riparian canopy upstream of US 50; however, downstream of US 50 the creek flows through a golf course and, as a result, has been substantially modified. Water quality in Edgewood Creek is impacted by increased runoff volumes associated with increased impervious cover; 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 affects water quality since the snow contains significant volumes of de-icing abrasives.

The upper reaches of Edgewood Creek (from the source to Palisades Drive) are designated as a 303(d) Impaired Waterbody due to high iron levels, which constitutes an impairment for aquatic life. The Nevada Administrative Code has established separate water quality standards for the upper and lower reaches of Edgewood Creek. The project site crosses the lower portion (from Palisades Drive to Lake Tahoe) and the water quality standards are described in Table 3.10-5.

Table 3.10-5 Water Quality Standards for Lower Edgewood Creek

Parameter	Requirements to Maintain Existing Higher Quality	Water Quality Standards for Beneficial Uses
Temperature (˚C)		Oct. – May ≤ 10.0 June – Sept. ≤ 20.0
pH	7.0 – 8.4	6.5 – 9.0
Dissolved Oxygen (mg/L)		≥ 6.0
Total Phosphates (mg/L)	≤ 0.065	Annual Average ≤ 0.05
Nitrogen Species (mg/L)	Total Nitrogen ≤ 0.4	Nitrate ≤ 10.0 Nitrite ≤ 0.06
Unionized Ammonia (mg/L)		≤ 0.004
Total Suspended Solids (mg/L)	≤ 17.0	≤ 25.0
Turbidity – NTU		≤ 10.0
Color – PCU	No increase > 10	≤ 75.0
Total Dissolved Solids (mg/L)		Annual Average ≤ 500.0
Chloride (mg/L)		≤ 250.0
Sulfate (mg/L)		≤ 250.0
Sodium – SAR		Annual Average ≤ 8.0
E. coli – No./100 mL		≤ 126.0

Source: Nevada Administrative Code Section 445A.1666

The in-line pond system at Edgewood Tahoe Golf Course was constructed to provide irrigation water storage and golf course amenities; however, the series of ponds and wetlands also provides water treatment. Ongoing monitoring of Edgewood Creek indicates that on an average monthly basis, all on and off-site nitrogen, phosphorus, and total suspended sediment entering the Edgewood pond system is treated to within TRPA and NDEP water quality standards; however, during storm events, nitrogen and phosphorus levels within the creek at the outfall to Lake Tahoe exceed water quality limits (Nichols Consulting Engineers et al. 2011:86 - 87).

Golf Course Creek

Golf Course Creek is located in the eastern portion of the study area in Nevada. The creek has two forks that converge immediately east of Lake Parkway, flow under the road via a culvert, and through a montane meadow before entering underground drains near the resort-casinos. Golf Course creek is piped beneath the resort-casinos and comingled with stormwater runoff before emerging in an earthen ditch that runs adjacent to the cart path on the eighth fairway at Edgewood Tahoe Golf Course. Golf Course Creek joins with Edgewood Creek approximately 1,200 feet above the outfall to Lake Tahoe. The flow of Golf Course Creek is managed via headgates between resort-casinos—Harvey's and the Hard Rock Hotel. Currently, the system is configured to direct baseflow through the Edgewood Tahoe Golf Course pond system (see discussion of stormwater management systems below), and the remnant reach of Golf Course Creek only flows during large storm events when it receives bypass stormwater from the SSWA system.

STORMWATER MANAGEMENT

Stormwater runoff within the project site is managed by the three independent systems described below. Exhibit 3.10-2 provides an overview of the existing stormwater infrastructure.

Exhibit 3.10-2 **Existing Stormwater Collection and Treatment**

Rocky Point Stormwater System

Drainage from the Fern Road, Echo Road, and Moss Road area is collected via storm drains and enters two drainage basins at the Fern Road/Pioneer Trail intersection. Overflow from these basins is routed west for additional treatment in the Upper and Lower Pine basins before discharging via the North Ditch to Lake Tahoe. In addition to drainage basins, several undeveloped lots within the Fern Road area were purchased by the California Tahoe Conservancy (CTC) as part of the Rocky Point Erosion Control Project. These lots provide a natural infiltration area for runoff from adjacent impervious areas and reduce the volume of runoff that must be treated in the drainage basin system. Any development on these parcels that affects their ability to accomplish this purpose would require mitigation.

Pine Boulevard Stormwater System

Stormwater runoff from the California portion of US 50 in the Tourist Core is currently conveyed through a series of storm drains and drainage basins west of US 50, known as the Pine Boulevard Stormwater System or the North Ditch, before being discharged to Lake Tahoe. Flow from Stateline Creek crosses Montreal Road and enters the same storm drain system through a 42-inch reinforced concrete pipe and headwall near the southeast portion of the project site.

Stateline Stormwater Association

Runoff from the Stateline casino corridor and Golf Course Creek is commingled beneath the resort-casinos. A diversion structure located between the Harvey's property and the Hard Rock Hotel directs approximately 10 percent of the flow in the piped system to Golf Course Creek and approximately 90 percent to a series of sediment vaults under the Horizon parking lot. Runoff that passes through the vaults is then routed to pond 6 and then pond 10 on the Edgewood Tahoe Golf Course. Pond 6 is a constructed wet basin and is the final treatment component of the SSWA treatment system. Flows from pond 6 are then discharged to pond 10, before entering pond 1, which is an in-line pond on Edgewood Creek. The Desert Research Institute monitored the effectiveness of the SSWA treatment system for 2 years in the early 2000s. The final report summarized research findings as follows (Desert Research Institute 2004):

- Over the 2 years of monitoring, 25 storm events were sampled. The average reduction of pollutants from the treatment vaults were: 34 percent of the total nitrogen, 23 percent of the ammonia, 31 percent of the phosphate, and 46 percent of the total suspended solids. Through chemical reactions that occurred in the treatment vaults, an increase in nitrate by 34 percent and orthophosphate by 9 percent was observed.

- The pond/constructed wet basin treatment system on the Edgewood Tahoe Golf Course (ponds 6 and 10) was sampled on a monthly basis in the spring and summer 2004. The wet basin system further reduced the nutrients and sediment due to the low-energy environment, which allows settling of fine particles and uptake by vegetation.

Additional water quality analyses of the wet basin treatment component of the SSWA treatment system (ponds 6 and 10) were conducted during the environmental review process for the Edgewood Lodge and Golf Course Improvement Project. This analysis used the Lake Tahoe Pollutant Load Reduction Model to develop a representation of the stormwater management system and well as physical measurements of sediment capture in the treatment ponds. The results indicate that the wet basin treatment system retains approximately 83,000 pounds of total suspended sediment per year. Almost 14,000 pounds per year of the retained sediment is estimated to be fine sediment particles (Nichols Consulting Engineers et al. 2011:26–41).

SNOW STORAGE

Snow storage along existing US 50 is limited due to right-of-way constraints. Snow management activities conducted by the City of South Lake Tahoe, Douglas County, NDOT, and Caltrans along the roadway affect 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;
- use of high-efficiency sweepers to remove traction sand;
- 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 performed 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 transported 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 snow melt drains back to the roadway and into the storm drainage systems. Snowmelt 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 contain trash, nutrients, fine sediments, salt, sand, pollutants from vehicles such as petroleum hydrocarbons, antifreeze, oil, or heavy metals and materials from road and tire wear.

GROUNDWATER

The most extensive and productive groundwater reservoirs (aquifers) in the Lake Tahoe Basin are composed of course textured alluvial deposits and deposits of glacial till and outwash. Five aquifers have been defined around the Lake Tahoe Basin, generally based on surface contact between basin fill and bedrock. The project site is located within the South Lake Tahoe/Stateline aquifer, which extends from Emerald Bay on the southwest side of the lake, to north of Stateline, Nevada on the southeast side (USGS 2007). The thickness of deposits, including the unsaturated zone, is highly variable within the South Lake Tahoe/Stateline aquifer. The portion of the aquifer located beneath the project site contains sand and gravel deposits extending 40 to 50 feet from the land surface, underlain by a sequence of clays with a similar thickness, followed in turn by more sand and gravel 50 or more feet thick. Because of the interbedded nature of coarse and fine-grained deposits, the aquifer is likely to include a shallow water table aquifer (perched above the first clay deposit) and one or more deeper confined aquifers (USGS 2007). Industrial pollutants (MTBE) have had a major impact on the groundwater supply in the South Lake Tahoe area. Low concentrations of volatile organics, primary inorganics, and radiological constituents have rendered 12 South Tahoe Public Utility District wells useless and have forced a reduction in pumping in one well (DWR 2013). Monitoring wells within the tourist core area indicate that the depth to groundwater is typically between 20 and 34 feet (Parikh Consultants 2011).

3.10.3 Environmental Consequences

METHODS AND ASSUMPTIONS

This evaluation of potential water quality and stormwater management impacts was based on a review of documents pertaining to the project site, including: previous studies conducted for the watersheds within the study area; other environmental review documents; background reports prepared for plans and projects in the study area; and published and unpublished hydrologic literature. The information obtained from these sources was reviewed and summarized to understand existing conditions and to identify potential environmental effects, based on the thresholds of significance. In determining the level of significance, the analysis assumes that the project would comply with relevant federal, state, and local laws, regulations, and ordinances.

SIGNIFICANCE CRITERIA

NEPA Criteria

An environmental document prepared to comply with NEPA must consider the context and intensity of the environmental effects that would be caused by or result from the locally preferred action. Under NEPA, the significance of an effect is used solely to determine whether an EIS must be prepared. The factors that are taken into account under NEPA to determine the significance of an action in terms of the context and the intensity of its effects are encompassed by the CEQA criteria used for this analysis. No specific factors related to water quality and stormwater management are contained in NEPA, CEQ Regulations Implementing NEPA, or FHWA NEPA regulations in 23 CFR 771 et seq.

TRPA Criteria

The "Water Quality" criteria from the TRPA Initial Environmental Checklist were used to evaluate the water quality and stormwater runoff impacts of the alternatives. The project would result in a significant adverse impact if it would:

- result in discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity;
- create changes in currents, or the course or direction of water movements;
- change in the amount of surface water in any water body;
- create changes in absorption rates, drainage patters, or the rate and amount of surface water runoff so that a 20 year 1-hour storm runoff (approximately 1 inch per hour) cannot be contained on the site;
- alter the direction or rate of flow of groundwater;
- result in the potential discharge of contaminants to the groundwater or any alteration of groundwater quality; or
- adversely affect the quality of a drinking water source.

CEQA Criteria

In accordance with Appendix G of the State CEQA Guidelines, an alternative was determined to result in a significant impact related to water quality and stormwater runoff if it would:

- violate any water quality standards or waste discharge requirements;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in substantial erosion, siltation or flooding on- or off-site;
- create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage, infiltration, and treatment systems or facilities resulting in increased sources of pollutants reaching surface waters or causing detrimental flooding to property or infrastructure;
- substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted); or
- otherwise substantially degrade water quality.

ENVIRONMENTAL EFFECTS OF THE PROJECT ALTERNATIVES

Impact 3.10-1: Potential for degradation of surface water quality due to construction activities

Alternatives B, C, and D would include construction and operational activities that could result in contaminants being carried into storm drains and adjacent surface waters. Degradation of surface water quality could result from construction activities and pollutant loading in surface runoff. Because TRPA, Lahontan RWQCB, and NDEP regulations are in place to minimize erosion and transport of sediment and other pollutants during construction, and appropriate project-specific measures would be defined to secure necessary permits and approvals, project-related impacts would be minimized and would not result in substantial adverse effects on water quality. Alternative E could require construction dewatering; however, compliance with Lahontan RWQCB, NDEP, and TRPA regulations would minimize the potential threat to water quality. Alternative A is the no build alternative and would not impact these resources.

NEPA Environmental Consequences:	The design features of Alternatives B, C, D, and E would avoid or minimize the degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement; No Impact for Alternative A
CEQA/TRPA Impact Determinations:	Less Than Significant for Alternatives B, C, D, and E; No Impact for Alternative A

Alternatives B, C, and D would include the removal of existing roadway surfaces, grading and ground disturbance for modification of the existing roadbed, demolition and removal of up to 76 housing units, excavation, extension of culverts at Edgewood and Golf Course Creeks, temporary stockpiling of soil, and realignment of storm drain systems. These activities would create ground disturbance that could accelerate soil erosion. Soils exposed during rain events could generate sediment that could be carried in runoff into storm drains and surface waters. Vehicle traffic into and out of construction areas could carry sediment onto roadways where it could be ground into fine sediments. The amount of temporary and permanent soil disturbance for each alternative is shown in Table 3.10-6 below. Temporary disturbance areas would be stabilized and revegetated following construction as required by TRPA Code Section 61.4.

Alternative A: No Build (No Project)

Alternative A is the no build alternative and would not result in land disturbance or the potential for increased erosion or sedimentation. For this reason, Alternative A would have **no impact** on water quality for purposes of NEPA, CEQA, and TRPA.

Table 3.10-6 Acres of Ground Disturbance by Alternative

Alternative/Segment	Acres of Ground Disturbance		
	Temporary	Permanent	Total
Alternative A: No Build (No Project)	0	0	0
Alternative B: Triangle	22.50	33.99	56.49
Alternative C: Triangle One-Way	24.20	28.00	52.20
Alternative D: PSR Alternative 2	19.88	32.51	52.39
Alternative E: Skywalk	0.76	0.03	0.79

Source: Adapted by Ascent Environmental in 2015

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

Alternative B transportation improvements would require the demolition and removal of 76 housing units and would disturb 56.49 acres of soil, which could adversely affect water quality through construction activities (including accidental spills and possibly dewatering), changes to stormwater runoff patterns, or pollutant loading in stormwater runoff (including melt water from snow storage areas). This is the highest amount of soil disturbance that would be created by any build alternative.

With respect to construction water quality, all projects that disturb one or more acres of soil would be subject to the relevant NDEP and Lahontan RWQCB NPDES permits (depending on the portion of the project site, this may include the NDEP Stateline Stormwater Association NPDES Discharge Permit, the Caltrans Statewide NPDES Permit, and Lake Tahoe Basin Construction General NPDES Permit from Lahontan RWQCB). A condition of all the NPDES permits would be the preparation of a SWPPP. The SWPPP would be prepared by a qualified SWPPP practitioner and/or a qualified SWPPP developer that identifies water quality controls consistent with Lahontan RWQCB and TRPA requirements, and would ensure that runoff quality meets TRPA water quality requirements under the TRPA Code and maintains the beneficial uses of Lake Tahoe and Edgewood Creek. The SWPPP would describe the site controls, erosion and sediment controls, means of waste disposal, implementation of approved local plans, control of post-construction sediment and erosion control measures, and management controls unrelated to stormwater. BMPs identified in the SWPPP would be implemented during all site development activities. All construction site BMPs would follow the latest edition of the Caltrans *Storm Water Quality Handbooks: Construction Site BMPs Manual* (Caltrans 2003), the *Nevada Contractors Field Guide for Construction Site Best Management Practices* (NDEP 2008), and the *TRPA BMP Handbook* (TRPA 2014) to control and minimize the impacts of construction-related activities, materials, and pollutants on the watershed. The following would be required elements of the SWPPP:

- Temporary BMPs to prevent the transport of earthen materials and other construction waste materials from disturbed land areas, stockpiles, and staging areas during periods of precipitation or runoff, including: filter fence, fiber roll, erosion control blankets, mulch (such as pine needles and wood chips), and temporary drainage swales and settling basins.

- TRPA pre-grade inspection a minimum of 48 hours prior to commencement of construction-related activities to ensure proper and adequate installation of the temporary erosion control measures.

- Designated contractor staging areas for materials and equipment storage outside of SEZ areas. Designated staging and storage areas would be protected by construction fencing and/or silt barriers, as appropriate. Following project completion, all areas used for staging would be restored in accordance with TRPA Code Section 61.4.

- Temporary BMPs to prevent the tracking of earthen materials and other waste materials from the project site to offsite locations, including stabilized points of entry/exit for construction vehicles/equipment and designated vehicle/equipment rinse stations, and sweeping.

- Temporary BMPs to prevent wind erosion of earthen materials and other waste materials from the project site, including routine application of water to disturbed land areas and covering of stockpiles with plastic or fabric sheeting.

- Earthmoving activities would be limited to May 1 through October 15, unless a grading ordinance exemption is granted by TRPA. At the end of the grading season or before completion of the project, all surplus or waste earthen materials from the project site would be removed and disposed of at a TRPA-approved disposal site or stabilized on-site in accordance with TRPA regulations.

- A spill prevention and containment plan would be prepared and implemented. Project contractors would be responsible for storing on-site materials and temporary BMPs capable of capturing and containing

pollutants from fueling operations, fuel storage areas, and other areas used for the storage of hydrocarbon-based materials. This would include maintaining materials on-site (such as oil absorbent booms and sheets) for the cleanup of accidental spills, drip pans beneath construction equipment, training of site workers in spill response measures, immediate cleanup of spilled materials in accordance with directives from NDEP, Lahontan RWQCB, and TRPA, and proper disposal of waste materials at an approved off-site location that is licensed to receive such wastes.

- Temporary BMPs to capture and contain pollutants generated by concrete construction including lined containment for rinsate to collect runoff from washing of concrete delivery trucks and equipment.
- Protective fencing to prevent damage to trees and other vegetation to remain after construction, including tree protection fencing and individual tree protection such as wood slats strapped along the circumference of trees.
- Temporary BMPs for the containment and removal of drilling spoils generated from construction of bridge foundations and abutments.
- Daily inspection and maintenance of temporary BMPs. The prime contractor would be required to maintain a daily log of temporary construction site BMP inspections and keep the log on site during project construction for review by NDEP, Lahontan RWQCB, and TRPA.
- Tree removal activities, including the dropping of trees, would be confined to the construction limit boundaries.
- Construction boundary fencing to limit disturbance and prevent access to areas not under active construction.

Construction associated with Alternative B would also require the use and handling of hazardous materials such as fuels, lubricants, coolants, hydraulic fluids, and cleaning solvents. The use and handling of these materials presents the potential to degrade water quality through accidental spills. Implementation of the hazardous materials spill response plan (a required component of the NPDES permit SWPPP) would reduce the potential of directly and indirectly effecting water quality through construction-related hazardous material spills.

Excavation for construction of the pedestrian bridge pilings would range from 20 to 60 feet deep, depending on the footings selected during final design. Excavation at these depths could encounter groundwater, and may require dewatering. The Lake Tahoe Hydrologic Unit Construction General allows dewatering operations provided that the dewatering discharge cannot be eliminated, complies with the BMPs described in the SWPPP, is filtered or treated, does not exceed numeric action levels for pH and turbidity, and would not cause or contribute to a violation of water quality standards (SWRCB 2009). Dewatering under this NDPES permit must not be used to clean up failed or inadequate construction or post-construction BMPs designed to keep materials onsite. The potential water quality effects resulting from these actions would be minimized through compliance with the applicable permits and regulations described above. Therefore, the potential for Alternative B transportation improvements to affect water quality would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative B would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any

residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The Alternative B mixed-use development, including replacement housing, would involve ground disturbance related to site preparation and excavation, vegetation removal, and removal of existing structures as necessary. The mixed-use development sites under consideration all exceed 1 acre in size and would therefore be required to meet the NDEP and Lahontan RWQCB NPDES permit requirements described above.

Because TRPA, Lahontan RWQCB, and NDEP regulations are in place to minimize erosion and transport of sediment and other pollutants during construction, and appropriate project-specific measures would be defined to secure necessary permits and approvals, project-related impacts would be minimized and would not result in a substantial adverse effect on water quality. Therefore, the potential for Alternative B mixed-use development, including replacement housing, to affect water quality would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative B would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential degradation of surface water quality from construction activities as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential water quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on water quality.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative B would minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

Alternative C transportation improvements would require the demolition and removal of 71 housing units, and would disturb approximately 52.20 acres of soil (4.0 acres less than Alternative B). Alternative C would be subject to the same permitting requirements, including completion of a SWPPP and installation of permanent and temporary BMPs, as with Alternative B.

The potential for adverse effects to water quality during rehabilitation would be minimized through compliance with the permits and regulations described above. For the same reasons described for Alternative B, the potential impact on surface water quality resulting from implementation of Alternative C transportation improvements would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative C would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative C would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The mixed-use development, including replacement housing, considered with Alternative C is similar to that evaluated for Alternative B. The mixed-use development would be required to comply with the TRPA and Lahontan RWQCB NPDES permit conditions described for Alternative B. For the same reasons described for Alternative B, the potential impact on surface water quality resulting from implementation of Alternative C mixed-use development, including replacement housing, would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative C would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential degradation of surface water quality from construction activities as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential water quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on water quality.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative C would minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

Alternative D transportation improvements would require the demolition and removal of 68 housing units, and would disturb approximately 52.39 acres of soil (4.3 acres less than Alternative B). Alternative D would be subject to the same permitting requirements, including completion of a SWPPP and installation of permanent and temporary BMPs, as with Alternative B.

The potential for adverse effects on water quality during rehabilitation would be minimized through compliance with the permits and regulations described for Alternative B above. For the same reasons described for Alternative B, the potential impact on surface water quality resulting from implementation of Alternative D transportation improvements would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative D would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative D would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The mixed-use development, including replacement housing, considered with Alternative D is similar to that evaluated for Alternative B. The mixed-use development would be required to comply with the TRPA and Lahontan RWQCB NPDES permit conditions described for Alternative B. For the same reasons described for Alternative B, the potential impact on surface water quality resulting from implementation of Alternative D mixed-use development, including replacement housing, would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative D would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential degradation of surface water quality from construction activities as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential water quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on water quality.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative D would minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

Implementation of Alternative E would require excavation for the installation of footings and pilings to support the skywalk structure, resulting in approximately 0.79 acre of ground disturbance. Deep excavation within the project site could intercept groundwater and require dewatering activities during the construction phase. Water pumped from excavation activities would contain suspended sediments and other solids, but would not be discharged directly into SEZs, wetlands, or municipal storm drains.

Because ground disturbance would be less than 1 acre, construction activities for Alternative E would not be subject to NDEP or Lahontan RWQCB NPDES permits or the associated SWPPP measures; however, for projects that create less than 1 acre of disturbance, TRPA holds the regulatory responsibility for erosion control and water quality protection. TRPA requires the use of temporary water quality BMPs in accordance with the *TRPA BMP Handbook* and disposal of materials in a location approved by TRPA. Potential temporary BMPs may include measures similar to those required in a SWPPP as well as:

- Inlet Protection – Storm drain inlets would be installed to prevent sediment from entering the stormwater management system. Inlet protection devices that could be used include fiber rolls, gravel

bag barriers, geotextile fabric or pre-made device, silt fence, or block and gravel filter. Drain inlet protection devices would be inspected and maintained prior to forecast rain events, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the dry season.

- Stock Pile Management – Stock piles would be located on paved areas away from drain inlets and SEZs. All stock piles would be protected from stormwater runoff using temporary perimeter sediment barriers, such as berms, dikes, fiber rolls, silt fences, or gravel bags. Stock piles would be covered with tarp, plastic, or other waterproof material overnight when precipitation is forecast.

- Sweeping – This BMP includes daily sweeping of paved areas when grading activities are taking place. Sediment would be disposed of at a TRPA-approved location or removed from the Lake Tahoe Region.

Because Alternative E would disturb less than 1 acre and would be subject to TRPA oversight and the permit requirements discussed above, the potential for Alternative E to adversely affect surface water quality would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative E would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Impact 3.10-2: Potential for degradation of surface water quality due to operational activities

TRPA, Lahontan RWQCB, and NDEP regulations require the installation and maintenance of water quality BMPs, which would minimize the potential water quality effects of the transportation improvements. Also, TRPA Code provisions would require fertilizer management and snow storage BMPs to prevent potential adverse effect from these activities. In addition, Alternative B, C, and D include several water quality improvements that would resolve preexisting detrimental conditions within the project site and add supplemental capacity to water quality treatment basins above required volumes. Alternative E would minimize the potential effects to water quality by implementing required stormwater infrastructure. Alternatives A is the no build alternative and would have no impact relative to these resources.

NEPA Environmental Consequences:	The design features of Alternatives B, C, D, and E would avoid or minimize the degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement; No Impact for Alternative A
CEQA/TRPA Impact Determinations:	Beneficial for Alternatives B, C, and D; Less Than Significant for Alternative E; No Impact for Alternative A

Alternative A: No Build (No Project)

Alternative A is the no build alternative; it would be a continuation of existing conditions and would not result in a change in land use or modification of roadways systems that could result in changes to water quality. For this reason, Alternative A would have **no impact** for the purposes of NEPA, CEQA, and TRPA. Importantly, taking no action, as with Alternative A, would not result in implementation of the beneficial water quality improvements associated with Alternatives B, C, and D.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

Alternative B transportation improvements would result in a net increase of between 5.47 acres (with roundabout at US 50/Lake Parkway) and 7.62 acres (with signal at US 50/Lake Parkway) in land coverage within the project site (see Impact 3.11-1 in Section 3.11, “Geology, Soils, Land Capability, and Coverage”). The runoff generated by the roadway portions of the project could contain sediment, crushed road abrasives,

nutrients, organic compounds, trash and debris, oxygen-demanding substances, oil and grease, fluids from accidents and spills, landscape care products, and metals. In addition, the roadway abrasives used during winter are ground down by the vehicle traffic and become suspended in stormwater runoff. For these reasons, paved roadways are the primary source of the fine sediment particles that are impairing the clarity of Lake Tahoe (Lahontan RWQCB and NDEP 2010). The NPDES permits required for the project state that BMPs must be implemented to reduce the potential discharge of these pollutants to the maximum extent practicable. Both the effluent and the receiving water must be monitored to ensure that the BMPs are effective and that the discharge is not causing or contributing to an exceedance of a Water Quality Standard. The results of monitoring efforts must be used to make adjustments or revisions to the BMPs as appropriate (SWRCB 2013, NDOT 2013).

Alternative B would include landscaping of roundabout centers and roadway medians, and revegetation of disturbed areas. Fertilizers or organic amendments used in landscaping and restoration projects can move into surface and groundwaters and degrade water quality. These impacts can be avoided or minimized through proper handling and application of fertilizers and amendments and the selection of plant species that are appropriate for the site. All projects that include landscaping or revegetation must develop a fertilizer management program as described in TRPA Code Section 60.1.8.A. Additionally, projects requiring revegetation must submit a revegetation plan that specifies the use of approved plant species and a schedule of the amount and method of application of any necessary fertilizers in accordance with TRPA Code Section 61.4.5. TRPA Code of Ordinances section 36.7 and the TRPA Handbook of Best Management Practices (TRPA 2011) require that landscaped areas use native or adapted plant species that require little water and fertilizer and are appropriate for the site conditions. Because Alternative B would be required to comply with these provisions as a condition of permit approval, the risk to water quality from the migration of fertilizers or organic amendments would be minimized.

Melt water from snow storage areas carries concentrated amounts of nutrients, fine sediments, salt, sand pollutants from vehicles such as petroleum hydrocarbons, oil, or heavy metals and materials from road and tire wear. Snow storage areas along the existing US 50 alignment are limited due to right-of-way constraints. Provision of adequate snow storage is required by Douglas County, City of South Lake Tahoe, and TRPA regulations. The proposed US 50 alignment would provide potential for snow storage within some parcels acquired for right-of-way purposes. All potential snow storage locations would be designed to drain to BMP facilities capable of treating large sediment loads. In accordance with TRPA Code Section 60.1.4, all snow storage areas would meet the site criteria and management standards in the TRPA Handbook of Best Management Practices (TRPA 2014). In addition, snow storage areas may not be located within SEZs. The location of snow storage areas within the City of South Lake Tahoe would be shown on all site plans or a snow removal plan would be included with the improvement plan submittal.

In addition to the water quality protections in the required NPDES permits, TRPA has established numeric water quality standards for discharges to surface and ground waters. Section 61.1 of the TRPA Code specifies that water discharged to surface waters or infiltrated into soils should not contain excessive amounts of nutrients, sediment, or oil and grease. The TRPA numeric discharge limits are shown in Table 3.10-2 above. Where there is a direct hydrologic connection between ground and surface waters, discharge to groundwater must meet surface water discharge standards. The existence of a direct hydrologic connection is assumed to exist when, due to proximity to surface water, slope, or soil characteristics, the discharged water does not remain in the soil long enough to remove pollutants.

Water Quality Enhancement

Through coordination with stakeholders and a review of the strengths and weaknesses of the existing stormwater management systems within the project area, the project design team identified several measures that would enhance the ability of existing systems to protect water quality, and would create water quality benefits through the capture of currently untreated stormwater runoff. These enhancements are included as part of Alternative B and are described below:

- US 50 /SR 207 Stormwater Improvements: The portion of US 50 from the intersection of Lake Parkway to State Route 207 currently discharges directly into Edgewood Creek without treatment. The proposed water quality improvements include a treatment train that consists of sediment traps, an underground storm drain system to convey flows, and an stormwater basin located to the southwest of the US 50/Lake Parkway intersection (B-11 on Exhibit 3.10-3) The basin site has sufficient room to provide the required capacity for the water quality volume. The required regulatory water quality volume (20-year/1-hour storm) is approximately 27,000 cubic feet and the potential basin volume is 91,000 cubic feet.

- Stateline Avenue Stormwater Improvements: Currently, the north side of Stateline Avenue contains no water quality treatment features. Alternative B would improve water quality by installing curb and gutter and stabilizing previously bare shoulders. The existing area drain at the intersection of Stateline Avenue and Lake Parkway is surrounded by unstable soils and frequently clogs, allowing stormwater to be directly discharged to Lake Tahoe via the overflow pipe (Burke, Pers. Com. 2016). Alternative B would improve the functionality of this system and would direct runoff from the intersection area and Stateline Avenue to a new stormwater basin located northeast of the Lake Parkway/Pine Boulevard and Stateline Avenue intersection (displayed as B-13 on Exhibit 3.10-3). The basin would be located downstream of the improvements along Stateline Avenue and would be designed to accommodate the existing trees in the area. The required water quality volume is approximately 7,200 cubic feet and the potential basin volume is 27,000 cubic feet. A second option to treat runoff from Stateline Avenue would be to modify the existing Stateline Stormwater Association (SSWA) treatment system. There is an existing basin along Lake Parkway within the Harvey's Lake Tahoe property. This basin serves the existing SSWA treatment system. Runoff from Stateline Avenue can be routed to this basin and modifications can be made to the facility to accommodate the increase in flow.

- Azure Avenue Stormwater Improvements: Currently, stormwater runoff from the residential block of Azure Avenue between Pine Boulevard and Stateline Avenue is discharged directly to Lake Tahoe without treatment (Burke, pers. comm., 2016). The project would assess the potential for capturing this runoff and diverting it to proposed basin B-13 via an underground storm drain system. The City of South Lake Tahoe has identified this as a need, but cannot confirm the location or depth of the Azure Avenue storm drain pipe. During the project design phase, a survey would be completed to verify that the Azure Avenue storm drain pipe is at a shallow enough depth to connect to proposed basin B-13. If this connection is feasible, the basin would be sized to accommodate both the uncaptured runoff from Stateline Avenue and the untreated runoff from a portion of the residential neighborhood south of Azure Avenue. This improvement could provide treatment for approximately one-third of the stormwater from the residential neighborhood and could trap up to 1,300 pounds of fine sediment annually (City of South Lake Tahoe 2016). As needed, facilities to collect runoff on Azure Avenue and divert it to the basin would be constructed by the City of South Lake Tahoe as part of a separate project.

- Sediment Traps: All existing drainage inlets within the project site would be modified to include a sediment trap to remove sediment and applied roadway abrasives (i.e., traction sand). These sediment traps would provide a "Treatment Train" by removing heavy sediments prior to storm water discharges. Approximately 85 new sediment traps would be included with the proposed transportation improvements.

- Existing US 50 Stormwater Infrastructure Improvements: The portion of the existing US 50 alignment between Stateline Avenue and Park Avenue currently has very few drainage inlets. Although subsurface storm drains exist along Friday Avenue, no inlets have been constructed. This requires stormwater to travel over-ground along the unimproved road shoulder to drainage inlets near the intersection of Manzanita Avenue and Friday Avenue. The conversion of existing US 50 to a local street and planned pedestrian improvements would include the addition of storm drain infrastructure including curb and gutter, drainage inlets spaced approximately 250 feet apart, and subsurface storm drain pipe along existing US 50. This system would connect to the Friday Avenue storm drain system via drainage inlets near the junction of existing US 50 and Friday Avenue and would prevent stormwater runoff from running

down Friday Avenue in an open system. Although these enhancements would not create a reduction in stormwater runoff. Rather, they would direct stormwater to stormwater basins through an efficient system that reduces stormwater contact with unstabilized road shoulders.

- **Fern Basin Enhancements:** Drainage from the Fern Road, Echo Road, and Moss Road area is collected via storm drains and enters two drainage basins at the intersection of Fern Road and Pioneer Trail. These basins are currently undersized and only capture 77 percent of the 20-year, 1-hour stormwater runoff volume (City of South Lake Tahoe 2016). The proposed roadway alignment may require reconstruction or relocation of these basins. Both the existing basins (EX-01 and -02) and the proposed basin configuration (B-09) are shown on Exhibit 3.10-3. Alternative B would redirect approximately 100,200 cubic feet/year of stormwater runoff generated by the realigned US 50 from the Fern Basins to proposed basins B-02, B-04, B-05, B-07, and B-08. However, even with this volume reduction, preliminary calculations indicate that the Fern Basins would still be undersized (Wood Rodgers 2016). For this reason, Alternative B would reconstruct (enlarge and deepen) the Fern Basins in their current location so that they are able to fully accommodate the stormwater runoff generated by their tributary area during the 20-year/1-hour storm. The capacity of the existing basins combined is approximately 48,000 cubic feet. The potential capacity of the proposed reconstructed basins is approximately 80,000 cubic feet (Wood Rodgers 2016). If further studies indicate against the reconstruction of the basins on site, the project would also consider the possibility of relocating the Fern Basins or adding an additional basin to the system.

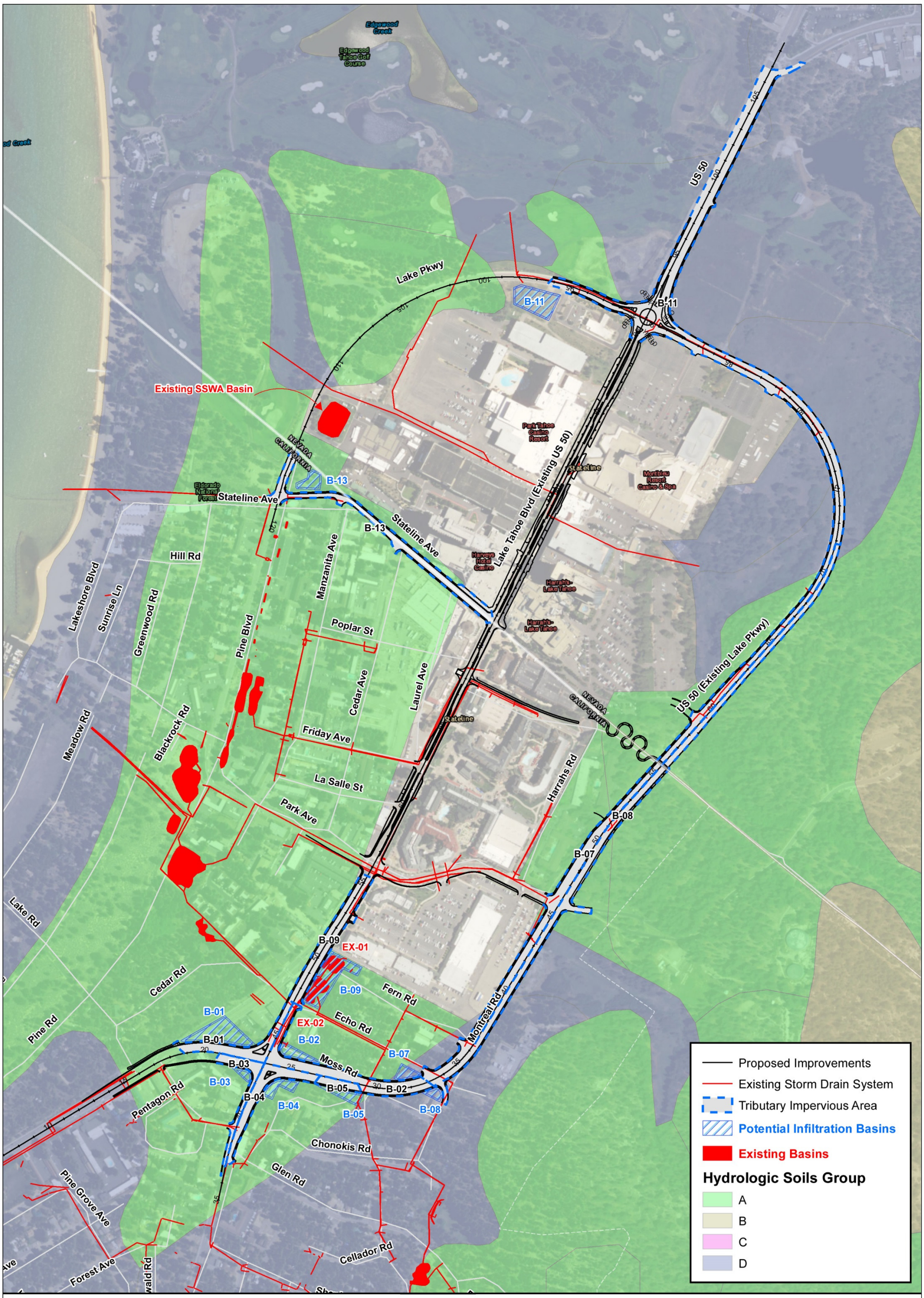
- **Oversized Stormwater basins:** The project would generate excess right-of-way, which can be utilized for features such as linear parkways and stormwater stormwater basins. The area available for stormwater basins surpasses the amount of area necessary to contain the required water quality volume. The depth of all basins proposed for the project was assumed to be three feet and all stormwater basins would have a preliminary side slope of 3:1. TRPA requires all projects to infiltrate or retain the volume of stormwater runoff generated by a 20-year, 1-hour storm on the project site. The preliminary design of the project's stormwater basins indicates that, on average, they can accommodate five times the regulatory requirement (Wood Rodgers 2016) and are therefore able to accept flows from a much larger storm.

For these reasons, implementation of Alternative B transportation improvements would result in a **beneficial** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative B would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The mixed-use development, including replacement housing, would include landscaping and snow removal, which could result in the migration of urban pollutants into surface and groundwater. The TRPA Code provisions cited above in regard to the transportation-related components of the project would also apply to the mixed-use development sites. Because all landscaping and snow storage areas would be required to comply with these water quality protections, the operation of the mixed-use development site would not have an adverse effect on water quality.



Source: Wood Rodgers 2016

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Exhibit 3.10-3 **Alternative B – Potential Stormwater Basin Locations**

TRPA, Lahontan RWQCB, and NDEP regulations require the installation and maintenance of water quality BMPs, which would minimize the potential water quality effects of the transportation improvements. Also, TRPA Code provisions would require fertilizer management and snow storage BMPs to prevent potential adverse effects from these activities. In addition, Alternative B includes several water quality improvements that would resolve preexisting detrimental conditions within the project site and add supplemental capacity to stormwater treatment basins above required volumes. Therefore, the implementation of Alternative B mixed-use development, including replacement housing, would result in a **beneficial** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative B would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential degradation of surface water quality from operations as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential water quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **beneficial** impact on water quality.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative B would minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

Alternative C transportation improvements would result in a net increase of 1.06 acres (with signal at US 50/Lake Parkway) in land coverage within the project site (see Impact 3.11-1 in Section 3.11, “Geology, Soils, Land Capability, and Coverage”). Alternative C would be subject to the same permitting requirements, including completion of a SWPPP, installation of permanent and temporary BMPs, and TRPA fertilizer use restrictions as with Alternative B. In addition, Alternative C would include similar water quality improvements as those described for Alternative B (shown on Exhibit 3.10-4).

The potential water quality effects of Alternative C would be the same as those for the transportation improvement portion of Alternative B, described above. For these reasons, implementation of Alternative C transportation improvements would result in a **beneficial** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative C would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative C would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any

residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The water quality effects of the mixed-use development, including replacement housing, considered under Alternative C would be the same as those evaluated for Alternative B, above.

For the same reasons described above in regard to Alternative B, the implementation of Alternative C mixed-use, including replacement housing, would have a **beneficial** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative C would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential degradation of surface water quality from operations as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential water quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **beneficial** impact on water quality.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative C would minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

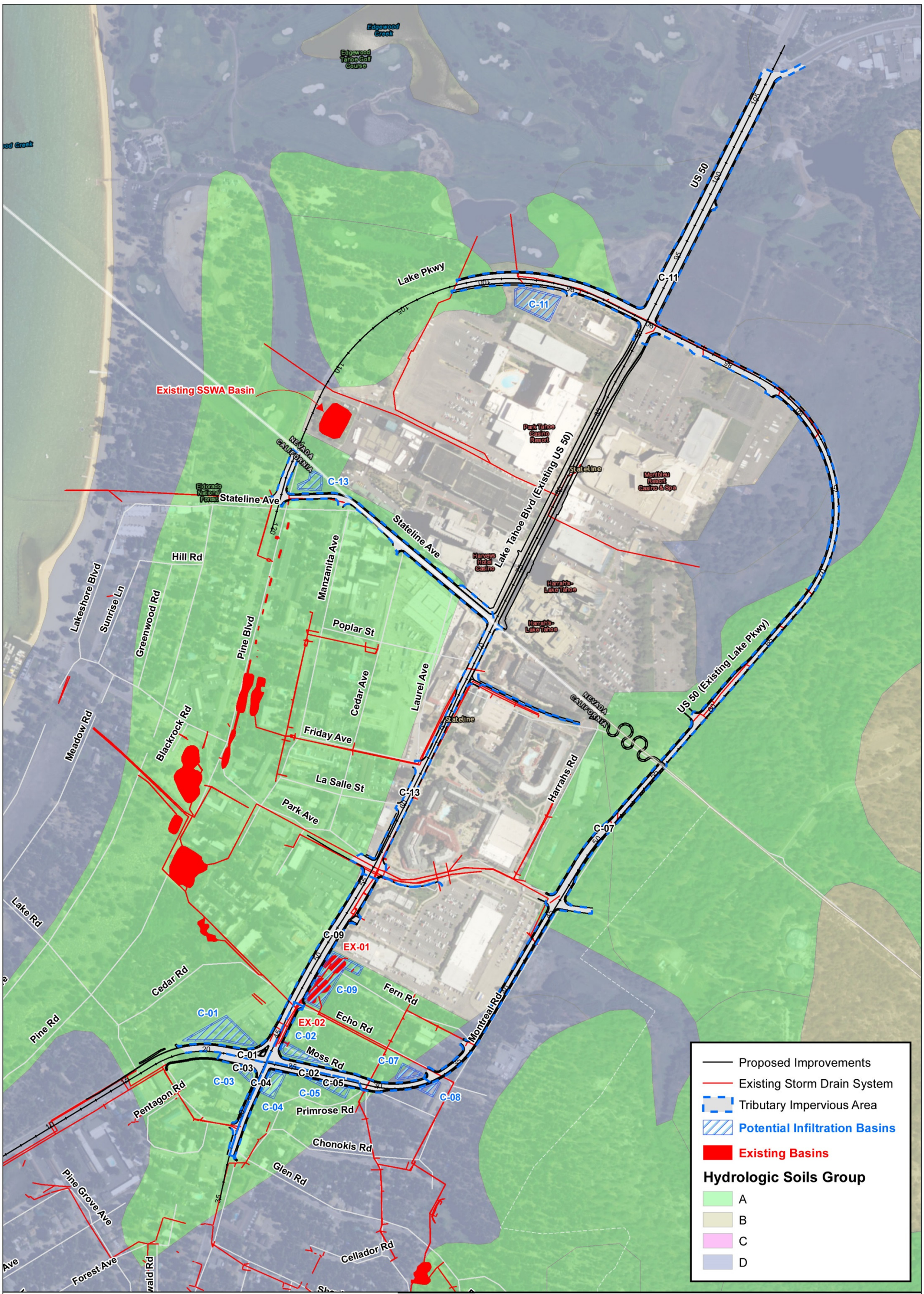
Alternative D: Project Study Report Alternative 2

Transportation Improvements

Alternative D transportation improvements would result in a net increase of 5.76 acres (with roundabout at US 50/Lake Parkway) and 7.91 acres (with signal at US 50/Lake Parkway) in land coverage within the project site (see Impact 3.11-1 in Section 3.11, “Geology, Soils, Land Capability, and Coverage”). Alternative D would be subject to the same permitting requirements, including completion of a SWPPP, installation of permanent and temporary BMPs, and TRPA fertilizer use restrictions as with Alternative B. In addition, Alternative D would include similar water quality improvements as those described for Alternative B (shown on Exhibit 3.10-5).

The potential water quality effects of Alternative D would be the same as those for the roadway portion of Alternative B, described above. For these reasons, implementation of Alternative D transportation improvements would result in a **beneficial** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative D would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.



Source: Wood Rodgers 2016

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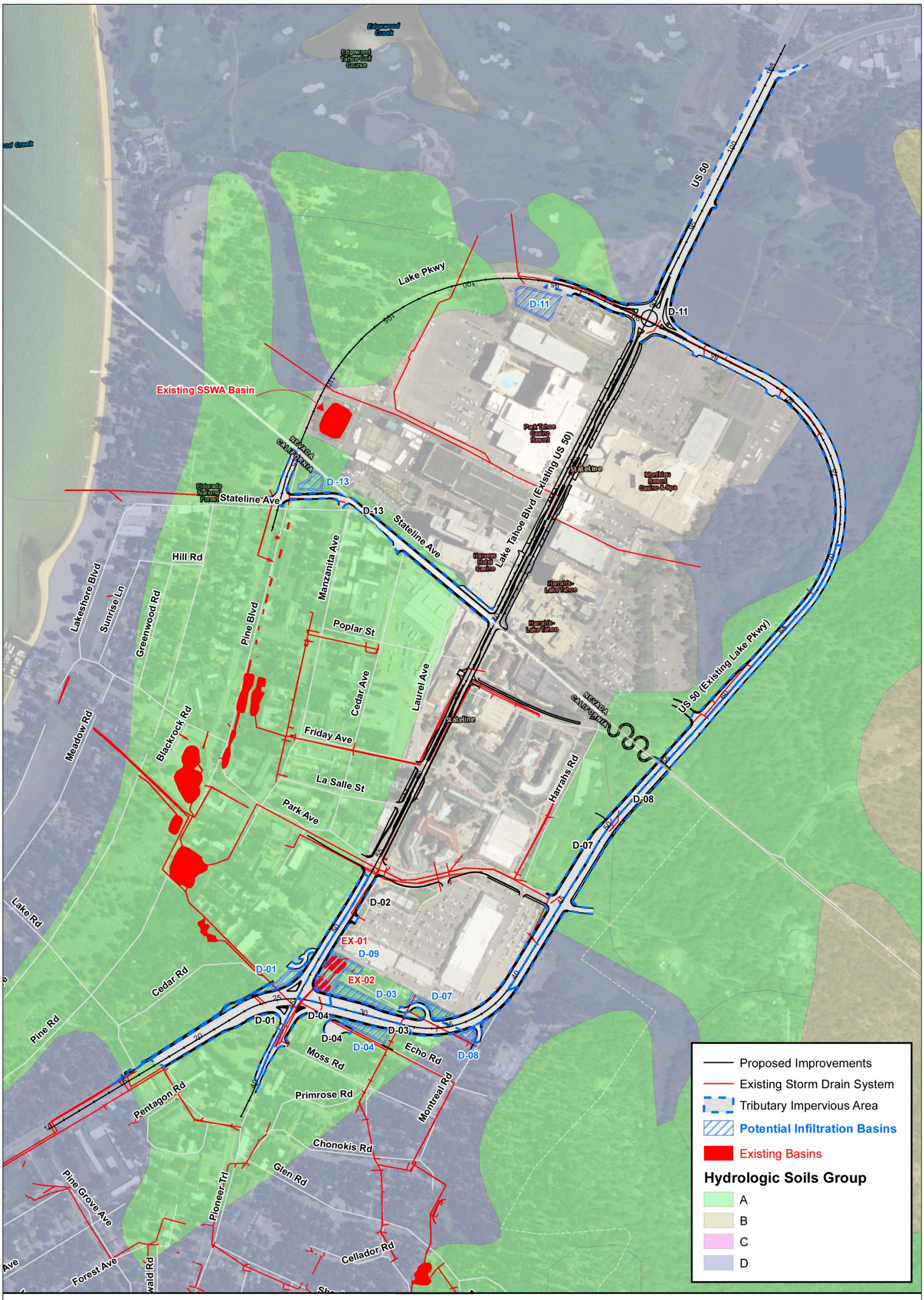
Exhibit 3.10-4 **Alternative C – Potential Stormwater Basin Locations**



Source: Wood Rodgers 2016

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Exhibit 3.10-5 **Alternative D – Potential Stormwater Basin Locations**

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative D would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The water quality effects of the conceptual mixed-use development considered under Alternative D would be the same as those evaluated for Alternative B, above.

For the same reasons described above in regard to Alternative B, the implementation of Alternative D mixed-use development, including replacement housing, would have a **beneficial** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative D would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential degradation of surface water quality from operations as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential water quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **beneficial** impact on water quality.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative D would minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

The operational water quality effects of Alternative E would be minimal. Stormwater runoff from the pedestrian deck would not contain the roadway pollutants described for Alternative B and landscaping would be limited to container plantings. Additionally, all stormwater generated by the pedestrian deck would be treated by the existing SSWA system. Therefore, the operation of Alternative E would have a **less-than-significant** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative E would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Impact 3.10-3: Stormwater runoff

Alternatives B, C, and D would create an increase in impervious surfaces: 5.47 to 7.62 acres for Alternative B; 1.06 acres for Alternative C; and 5.76 to 7.91 acres for Alternative D. The project would be required to comply with stringent SWRCB, Lahontan RWQCB, NDEP, and TRPA post-construction stormwater controls. Storage, infiltration, and treatment measures are required to minimize runoff flows and volumes and any stormwater discharge would be required to comply with Lahontan RWQCB, NDEP, and TRPA water quality standards and the Lake Tahoe TMDL. Because the implementation of these alternatives could require use of existing stormwater management infrastructure (Rocky Point stormwater easement parcels and Fern Road stormwater basins) for transportation improvements and/or mixed-use development, an impact on stormwater runoff management is recognized at this time, which would be mitigated by replacing affected facilities with equivalently or more effective stormwater infrastructure, as defined during detailed project design. Alternatives A and E would not result in changes to runoff volumes or stormwater infrastructure and would therefore have no impact relative to these resources.

NEPA Environmental Consequences:	Mitigation Measure 3.10-3 have been incorporated into Alternatives B, C, and D to further reduce to the extent feasible the environmental consequences related to stormwater runoff; No Impact for Alternatives A and E
CEQA/TRPA Impact Determinations:	Less Than Significant for Alternatives B, C, and D after implementation of Mitigation Measure 3.10-3; No Impact for Alternatives A and E

The amount of stormwater runoff generated from an area is affected by development through conversion of vegetated or pervious surfaces to impervious surfaces and by the development of drainage systems that connect these impervious surfaces to streams or other water bodies. In this way, development can increase the rate of runoff and eliminate storage and infiltration that would naturally occur along drainage paths. As water runs off the land surface, it collects and carries materials and sediment, which can be potentially harmful to downstream receiving waters. Additionally, stormwater runoff that becomes concentrated can cause erosion and increased sediment transport.

Alternatives B, C, and D would include realignment of US 50, widening of existing roadways, construction of a pedestrian path, modifications to the existing US 50 to become a local street, and realignment of neighborhood streets to connect with the highway. Table 3.10-7 (below) provides the estimated increase in impervious area by alternative.

As shown in Table 3.10-7, Alternatives B, C, and D would result in an increase in impervious surfaces within the project site and a corresponding increase in runoff volume. These alternatives would also relocate or change the configuration of the existing storm drain systems (refer to Exhibit 3.10-2). Where the existing storm drain systems affected by each action alternative are undersized or under-designed, they would be improved. Inlets and pipes would be relocated to accommodate the different roadway configurations and sized per regulatory and code requirements.

Alternative A: No Build (No Project)

Alternative A is the no build alternative and would not create increased impervious coverage or alter existing stormwater infrastructure. For this reason, Alternative A would have **no impact** on stormwater runoff for purposes of NEPA, CEQA, and TRPA.

Table 3.10-7 Increase in Impervious Surfaces by Alternative

Alternative	New Impervious Surface	Affected Storm Drain Systems
Alternative A: No Build (No Project)	NA	NA
Alternative B: Triangle	5.47 to 7.62 acres	CSLT Fern Road Stormwater Basins (2) CTC Rocky Point Stormwater Treatment Parcels: 029-331-12, 029-331-11, and 029-332-01 CTC Rocky Point Stormwater Easements: 029-170-05, 029-170-04, 029-351-22, 029-341-04, and 029-363-07 Existing Storm Drains: 2.5 miles
Alternative C: Triangle One-Way	1.06 acres	CSLT Fern Road Stormwater Basins (2) CTC Rocky Point Stormwater Treatment Parcels: 029-331-12, 029-331-11, and 029-332-01 CTC Rocky Point Stormwater Easements: 029-170-05, 029-170-04, 029-351-22, 029-341-04, and 029-363-07 Existing Storm Drains: 2.1 miles
Alternative D: PSR Alternative 2	5.76 to 7.91 acres	CSLT Fern Road Stormwater Basins (2) CTC Rocky Point Stormwater Treatment Parcels: 029-331-12, 029-331-11, and 029-332-01 CTC Rocky Point Stormwater Easements: 029-170-05, 029-170-04, 029-343-17, and 029-341-04 Existing Storm Drains: 2.4 miles
Alternative E: Skywalk	NA	NA

CTC = California Tahoe Conservancy; CSLT = City of South Lake Tahoe; NA = not applicable

Source: Wood Rodgers 2015; adapted by Ascent Environmental in 2016

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

Alternative B transportation improvements would create an increase in impervious surfaces of 5.47 acres with the proposed roundabout at the existing US 50/Lake Parkway intersection or 7.62 acres if that intersection were signalized. This would result in a corresponding increase in runoff volume and pollutant loading. The additional runoff generated by the project would be conveyed to the existing storm drain systems, as well as new storm drain systems that would be developed as components of the project.

A Stormwater Data Report would be prepared for the project and would evaluate all required BMPs for implementation. All runoff from Alternative B would be conveyed through permanent BMPs and Low Impact Development (LID) features to properly manage and treat the increased runoff velocity and volume. The types of BMPs that would be included in the project design are pollution prevention, runoff treatment, and temporary construction site BMPs. Specific treatment BMPs under consideration for this project include sand traps, biofiltration swales, and stormwater basins. Exhibit 3.10-3 shows the potential locations of stormwater basins installed to capture stormwater runoff from the Alternative B roadways. These basins would be located in the available right-of-way. The area available for water quality basins surpasses the amount of area necessary to contain the required water quality volume. Given the available area for stormwater basin and an assumed basin depth of three feet, the potential volume of stormwater that could be captured by the basin far exceeds the regulatory requirements. As required by Section 60.4.6 of the TRPA Code, the project would be designed to meet the infiltration requirements of a 20-year, 1-hour design storm event. The Lahontan RWQCB has estimated that facilities designed to treat or infiltrate this size of storm event effectively capture approximately 85 percent of the average annual runoff volume (SWRCB 2013). The combined volumes of the stormwater basins would exceed the regulatory requirements by an average of 500 percent and would be able to accept flows from a much larger storm (Wood Rodgers 2016).

The proposed alignment of Alternative B would affect the existing stormwater infrastructure systems described in Table 3.10-7. Approximately 2.5 miles of storm drain would be intersected by Alternative B, including components of the SSWA and City of South Lake Tahoe storm drain systems. These systems would

be reconstructed or improved as required to meet the increase in runoff volume generated by the project. The Fern Road Basins (owned by the City of South Lake Tahoe) would require reconstruction due to the disturbance caused by the widening of the adjacent roadway. These basins could potentially be expanded into the Rocky Point Stormwater Treatment parcels 029-331-11 and 029-331-12, similar to parcel 029-332-01, which is currently the site of the southernmost Fern Road Stormwater Basin. Portions of the Rocky Point Stormwater Easement parcels (see Table 3.10-7) would be permanently modified by the roadway realignment. Modifications could include the alteration of drainage paths or stormwater conveyance structures, or the reduction of natural areas currently used for infiltration of runoff. The Rocky Point Stormwater Project parcels, which were purchased by the Conservancy, currently provide a water quality benefit through infiltration or conveyance of stormwater runoff. The project-related modifications to these parcels could reduce their ability to meet the water quality goals for which they were purchased.

In summary, Alternative B transportation improvements would result in an increase in impervious surfaces, its implementation would require compliance with stringent SWRCB, Lahontan RWQCB, NDEP, and TRPA post-construction stormwater controls. Storage, infiltration, and treatment measures would be required to minimize runoff flows and volumes and prevent erosion and flooding downstream of the project site. Additionally, stormwater discharges would be required to comply with Lahontan RWQCB, NDEP, and TRPA water quality standards and the Lake Tahoe TMDL. However, the implementation of this alternative could reduce the capacity or effectiveness of existing stormwater basins and the infiltration capability of the previously described Rocky Point stormwater parcels. Because Alternative B transportation improvements would adversely affect existing stormwater management infrastructure, this would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative B to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative B would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements.

Alternative B mixed-use development, including replacement housing, would include the potential for construction of up to 227 new residential units on Sites 1, 2, and 3, and would add 5.76 acres of new impervious surfaces for the roundabout option or 7.62 acres for the signalized option, before reductions are made for transfer of excess allowable land coverage. All new construction would be required to meet TRPA stormwater management standards, including the mandate to fully infiltrate the runoff generated by the 20-year, 1-hour design storm or, if site constraints prevent this, to convey it to an off-site shared stormwater system approved by TRPA. The portions of the mixed-use sites that are within the Town Center designated in the Tourist Core Area Plan would be permitted a larger area of impervious coverage for high capability lands; however, any coverage exceeding the base allowable would be purchased and transferred from outside areas. This pattern of development reflects the goals of the Lake Tahoe Regional Plan (TRPA 2012b:2-10 to 2-14). Because the conceptual development would be required to infiltrate stormwater runoff from the design storm and would be accompanied by the transfer and restoration of land coverage from areas outside of the Town Center, the mixed-use development concept, including replacement housing, would result in a water quality benefit.

One of the potential sites for mixed-use development would encroach on the Fern Road Basins (owned by the City of South Lake Tahoe). These basins could potentially be expanded into the Rocky Point Treatment Parcels 029-331-11 and 029-331-12 (parcel 029-332-01 is currently the site of the southernmost Fern Road basin). It should be noted that the capacity of the existing basins combined is approximately 48,000 cubic feet. The potential capacity of the reconstructed basins at the proposed location could exceed 80,000 cubic feet (Wood Rodgers 2016).

Although Alternative B mixed-use development, including replacement housing, would result in an increase in impervious surfaces, its implementation would require compliance with stringent SWRCB, Lahontan RWQCB, NDEP, and TRPA post-construction stormwater controls, as described above, as well as Lahontan RWQCB, NDEP, and TRPA water quality standards and the Lake Tahoe TMDL. However, the implementation of this alternative could reduce the capacity or effectiveness of existing stormwater basins and the infiltration capability of the Rocky Point stormwater parcels. Because Alternative B would require use of existing stormwater management infrastructure for mixed-use development, there would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the mixed-use development, including replacement housing, as part of Alternative B to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for stormwater runoff environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential impacts related to stormwater runoff would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, at one or more of the mixed-use development sites would result in a **significant** impact from the potential for stormwater runoff environmental consequences.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative B transportation improvements and mixed-use development, including replacement housing, to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Alternative C: Triangle One-Way

Transportation Improvements

The effects of Alternative C transportation improvements on stormwater runoff would be similar to those described for Alternative B above. Alternative C would result in 1.06 acre of increase in impervious surfaces, which is 4.41 to 6.56 acres less than Alternative B. Despite this decrease in coverage relative to Alternative B, Alternative C would affect much of the same existing stormwater infrastructure, as shown in Table 3.10-7.

For the same reasons described above, Alternative C transportation improvements would be required to minimize runoff flows and volumes and all stormwater discharge would meet Lahontan RWQCB, NDEP, and TRPA water quality standards. As with Alternative B, stormwater runoff would be captured in stormwater basins (see Exhibit 3.10-4) with a storage capacity well in excess of the regulatory requirements. However, because Alternative C would adversely affect existing stormwater management infrastructure, including the Rocky Point stormwater parcels, this would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative C to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative C would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements.

Alternative C mixed-use development, including replacement housing, would include the potential for construction of up to 227 new residential units on Sites 1, 2, and 3 and would add 1.06 acres of new impervious surfaces, before reductions are made for transfer of excess allowable land coverage. The stormwater runoff impacts of Alternative C mixed-use development, including replacement housing, would be the same as those discussed for Alternative B above.

For the same reasons described above, Alternative C would be required to minimize runoff flows and volumes and all stormwater discharge would meet Lahontan RWQCB, NDEP, and TRPA water quality standards. However, because Alternative C would require use of existing stormwater management infrastructure for mixed-use development, there would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the mixed-use development, including replacement housing, as part of Alternative C to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for stormwater runoff environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential impacts related to stormwater runoff would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, at one or more of the mixed-use development sites would result in a **significant** impact from the stormwater runoff environmental consequences.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative C transportation improvements and mixed-use development, including replacement housing, to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

The effects of Alternative D transportation improvements on stormwater runoff would be similar to those described for Alternative B above. Alternative D would result in 5.76 to 7.91 acres of increase in impervious surfaces, which is an increase of 0.29 acre compared to Alternative B. Alternative D would affect much of the same existing stormwater infrastructure, as shown in Table 3.10-7, but would intersect one less parcel of the Rocky Point stormwater system.

As with Alternative B, stormwater runoff would be captured in stormwater basins (see Exhibit 3.10-5) with a storage capacity well in excess of the regulatory requirements. For the same reasons described above, Alternative D would be required to minimize runoff flows and volumes and all stormwater discharge would meet Lahontan RWQCB, NDEP, and TRPA water quality standards. However, because Alternative D transportation improvements would adversely affect existing stormwater management infrastructure, including the Rocky Point stormwater parcels, this would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative D to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative D would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements.

Alternative D mixed-use development, including replacement housing, would include the potential for construction of up to 224 new residential units on Sites 1, 2, and 3 and would add 5.76 to 7.91 acres of new impervious surfaces, before reductions are made for transfer of excess allowable land coverage. The stormwater runoff impacts of Alternative D mixed-use development, including replacement housing, would be the same as those discussed for Alternative B above.

For the same reasons described above, Alternative D would be required to minimize runoff flows and volumes and all stormwater discharge would meet Lahontan RWQCB, NDEP, and TRPA water quality standards. However, because would require use of existing stormwater management infrastructure for mixed-use development, there would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the mixed-use development, including replacement housing, as part of Alternative D to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for stormwater runoff environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential impacts related to stormwater runoff would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, at one or more of the mixed-use development sites would result in a **significant** impact from the stormwater runoff environmental consequences.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative D transportation improvements and mixed-use development, including replacement housing, to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Alternative E: Skywalk

Alternative E would create an impervious deck over an existing impervious surface and would therefore not create additional runoff volumes. Stormwater would be directed from the deck to existing drop-inlets along US 50; however, Alternative E would not modify or adversely affect existing stormwater infrastructure. Therefore, this alternative would have **no impact** relative to stormwater runoff for purposes of NEPA, CEQA, and TRPA.

Impact 3.10-4: Potential to affect groundwater through infiltration of polluted water or during excavation activities

Alternatives B, C, and D have the potential to affect groundwater through infiltration of polluted stormwater runoff in areas of shallow groundwater; however, this potential would be minimized through compliance with TRPA discharge limits and installation of water quality BMPs. Although Alternatives B, C, and D could involve excavation or construction activities that intercept groundwater, these activities would occur in accordance with TRPA Code requirements and would not alter the flow or direction of groundwater. Finally, although the project site is located near several drinking water wells, the land uses and activities proposed by the project present a minimal threat to these resources. Alternative E also has the potential to intercept groundwater during excavation activities; however, all excavation would occur in accordance with TRPA regulations and would not alter the flow or direction of groundwater. Alternative A is the no build alternative and would have no impact on groundwater resources.

NEPA Environmental Consequences:	The design features of Alternatives B, C, D, and E would avoid or minimize the effects on groundwater such that no additional mitigation measures are needed of feasible to implement; No Impact for Alternative A
CEQA/TRPA Impact Determinations:	Less Than Significant for Alternatives B, C, D, and E; No Impact for Alternative A

Alternative A: No Build (No Project)

Alternative A is the no build alternative and would not intercept groundwater or alter the existing level of urban contaminants that occur in runoff infiltrated into the soil. For this reason, Alternative A would have **no impact** on groundwater resources for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

The project site contains some areas of shallow groundwater (such as wetland and SEZ habitats) and areas where the seasonal groundwater table might be intercepted by deep excavation. In general, the soil environment provides biological and physical filtering for water as it infiltrates; however, in areas where groundwater tables are shallow, contaminants can migrate directly into groundwater aquifers and adversely affect groundwater quality.

Groundwater interception or interference is prohibited under TRPA Code Section 33.3.6. Exceptions are permitted on a case-by-case basis for situations where there are no viable alternatives and measures would be taken to avoid adverse impacts. Whenever excavations would be greater than 5 feet, a soils hydrologic report must be prepared to demonstrate that no interference would occur or that measures are incorporated to maintain groundwater flows, avoid impacts on SEZ vegetation, and prevent any groundwater from leaving the project site as subsurface flow. While the potential exists for project-related excavation to intercept groundwater, none of the project components would interfere with or redirect the flow of groundwater or alter the elevation of groundwater. Dewatering (in compliance with the NPDES permits discussed above) would be required in areas of high groundwater; however, this activity would be temporary and isolated and would not affect the availability of groundwater for public use. Additionally, all build alternatives would follow

TRPA's grading ordinances requiring prior investigation and reporting of any potential interruption or redirection of groundwater flow for review and approval.

Alternative B transportation improvements would generate common urban pollutants (described under Impact 3.10-1) that would be carried with runoff and could infiltrate into the soil. Section 61.1 of the TRPA Code specifies that water infiltrated into soils should not contain excessive amount of nutrients, sediment, or oil and grease. Where a direct hydrologic connection exists between groundwater and surface waters (such as in riparian areas), discharge to groundwater must meet surface water discharge standards. The existence of a direct hydrologic connection is assumed to exist when, because of proximity to surface water, slope, or soil characteristics, the discharged water does not remain in the soil long enough to remove pollutants. The TRPA numeric discharge limits for surface water and groundwater are shown in Table 3.10-2.

The project site is within the 600-foot buffer zone of 15 active privately-owned wells and two inactive public wells (TRPA 2004). Because the project would not add any industrial land uses that could release contaminants into deep groundwater aquifers, the potential threat to these wells is minimal. The common urban pollutants generated by roadways, landscaped areas, and residential or mixed-use development are managed through the required installation and maintenance of permanent BMPs and through the TRPA standards for discharge to groundwater. For these reasons, the potential for Alternative B transportation improvements to adversely affect groundwater resources would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would avoid or minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative B would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The mixed-use development, including replacement housing, would be required to comply with the same TRPA requirements for protection of groundwater discussed above.

Alternative B mixed-use development, including replacement housing, has the potential to affect groundwater through infiltration of polluted stormwater runoff in areas of shallow groundwater; however, this potential would be minimized through compliance with TRPA discharge limits and through the installation of water quality BMPs as discussed above. Although Alternative B could involve excavation or construction activities that intercept groundwater, these activities would occur in accordance with TRPA Code requirements. Finally, although Alternative B is located near several drinking water wells, the land uses and activities proposed by the project present a minimal threat to these resources. For these reasons, the potential for Alternative B mixed-use development, including replacement housing, to adversely affect groundwater resources would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative B would avoid or minimize the impacts on groundwater such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for groundwater environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis

of the potential groundwater impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on groundwater.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative B would minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

The effects of Alternative C transportation improvements on groundwater resources would be the same as described for Alternative B. The project would be required to comply with TRPA discharge limits and install water quality BMPs as discussed above. For these reasons, the potential for Alternative C transportation improvements to adversely affect groundwater resources would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative C would avoid or minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative C would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements.

The effects of Alternative C mixed-use development, including replacement housing, on groundwater resources are the same as those described for Alternative B. Alternative C would be required to comply with TRPA discharge limits, water quality BMPs requiring separation of runoff and groundwater, and completion of a soils/hydrology study for deep excavations and would not include industrial land uses. For these reasons, the potential for Alternative C mixed-use development, including replacement housing, to adversely affect groundwater resources would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative C would avoid or minimize the impacts on groundwater such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for groundwater environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential groundwater impacts would be speculative at this time. Full, project-level environmental

review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on groundwater.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative C would minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

The effects of Alternative D transportation improvements on groundwater resources would be the same as those described for Alternative B. The project would be required to comply with TRPA discharge limits and install water quality BMPs as discussed above. For these reasons, the potential for Alternative D transportation improvements to adversely affect groundwater resources would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative D would avoid or minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative D would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements.

The effects of Alternative D mixed-use development, including replacement housing, on groundwater resources would be the same as those described for Alternative B. Alternative D would be required to comply with TRPA discharge limits, water quality BMPs requiring separation of runoff and groundwater, and completion of a soils/hydrology study for deep excavations and would not include industrial land uses. For these reasons, the potential for Alternative D mixed-use development, including replacement housing, to adversely affect groundwater resources would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative D would avoid or minimize the impacts on groundwater such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for groundwater environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential groundwater impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion
For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on groundwater.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative D would minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk
Alternative E would affect groundwater only through the potential interception of groundwater during excavation for the construction of the skywalk piers. As required by TRPA and as described above for Alternative B, the project would be required to prepare a soils/hydrologic report to demonstrate that no interference would occur or that measures are incorporated to maintain groundwater flows, avoid impacts on SEZ vegetation, and prevent any groundwater from leaving the project site as subsurface flow. Therefore, the potential for Alternative E to affect the flow or direction of groundwater would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative E would avoid or minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

3.10.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure 3.10-3: Protect functionality of Rocky Point Stormwater Improvements

This mitigation measure applies to Alternatives B, C, and D transportation improvements and mixed-use development, including replacement housing, for the purposes of NEPA, CEQA, and TRPA.

The project proponent shall demonstrate that all Rocky Point Stormwater Improvements continue to meet the goals for which they were established, including meeting or exceeding 6.4 pounds of sediment reduction per State of California dollar spent on site improvements. If the functionality of the Rocky Point property and facilities cannot be maintained, the project design would be modified to replace these facilities with land and infrastructure that is at least as effective as the current facilities, or more effective. In the event that any portion of the project encroaches on the existing City of South Lake Tahoe stormwater basins at Fern Road, these basins would be reconstructed in place or replaced in-kind within available right-of-way. The net result would be the maintenance of existing stormwater facilities or the replacement of affected facilities with equivalently or more effective stormwater management land and infrastructure. The specific location and design of the replacement infrastructure would be defined during detailed design development.

Significance after Mitigation
The implementation of Mitigation Measure 3.10-3 would avoid or compensate for the potential of the project to adversely affect the functionality of existing stormwater infrastructure systems. This mitigation measure would reduce the potential impacts on existing stormwater infrastructure to a **less-than-significant** level for Alternatives B, C, and D for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the environmental consequences of implementing Alternatives B, C, and D with Mitigation Measure 3.10-3 **would not be adverse**.