

15 HYDROLOGY AND WATER QUALITY

15.1 INTRODUCTION

This chapter includes a discussion of existing hydrologic conditions, a summary of applicable hydrology and water quality regulations, and an analysis of potential short-term and long-term hydrologic or water quality impacts that could result from implementation of the Placer County Tahoe Basin Area Plan and the Tahoe City Lodge. The primary topics raised during scoping that pertain to hydrology and water quality included:

- ▲ effects on existing drainage systems,
- ▲ inclusion of Pollutant Load Reduction Model results, and
- ▲ potential for beneficial water quality effects.

Mitigation measures are recommended for any significant or potentially significant impacts to important natural hydrologic processes or conditions, or to water quality. A discussion of effects to coverage and potential land surface erosion, and potential effects of a seismically induced seiche or tsunami are provided in Chapter 14, “Geology, Soils, Land Capability, and Coverage.” A discussion of effects to Stream Environment Zone (SEZ) habitat is found in Chapter 7, “Biological Resources,” and is also discussed below in relation to water quality. Information sources used in the preparation of this analysis include previous studies conducted for the watersheds within the Plan area; environmental impact reports prepared for plans and projects in the Plan area; background reports prepared for plans and projects in the vicinity; and published and unpublished hydrologic literature.

As discussed in Chapter 4, “Approach to Environmental Analysis,” this analysis is provided to fully document the environmental effects of the four Area Plan and Lodge alternatives. The broad geography and long timeframe to which the Area Plan applies and the policy-oriented nature of its guidance is such that the EIR/EIS is prepared at a programmatic level, i.e., a more general analysis of each resource area with a level of detail and degree of specificity commensurate with the overall planning level of the Area Plan. Similarly, because the Kings Beach Center design concept lacks sufficient detail for definitive impact analysis, that portion of the project is also evaluated in a programmatic fashion. The proposed Tahoe City Lodge represents a project that contains a greater level of detail and specificity such that a project-level analysis is included in this chapter.

15.2 REGULATORY SETTING

15.2.1 Federal

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 U.S. Environmental Protection Agency (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 U.S. 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 (and in California, ultimately to the Regional Water Quality Control Boards).

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 Regional Water Quality Control Boards (RWQCBs) in California 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 placement of a given pollutant on the Section 303(d) list would be remediated.

Lake Tahoe TMDL

The Lake Tahoe TMDL was developed as a partnership between the Lahontan Regional Water Quality Control Board (LRWQCB) and the Nevada Division of Environmental Protection, 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.

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, LRWQCB 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).

Middle Truckee River TMDL

The Middle Truckee River Watershed TMDL focuses on sediment-related water quality objectives for the reach of the Truckee River from the outflow at Lake Tahoe to the California/Nevada state line. This reach drains roughly 428 square miles. The primary goal of the TMDL is to lower sediment inputs to protect in-stream aquatic life which has decreased in diversity and structure as it trended towards more sediment tolerant species. Suspended sediment concentrations in the Middle Truckee River are above what is recommended for healthy aquatic life. High flow events from thunderstorms, snow melt, and dam releases resulting in short-term turbidity pulses and urbanization and development lead to increased sedimentation over the long-term (LRWQCB 2008). Primary sediment sources in the watershed have been linked to dirt roads, urban stormwater runoff, legacy erosion sites and in some cases graded ski runs. It is estimated that a 20 percent reduction in sediment loading is needed to achieve the desired in-stream conditions which amounts to 40,300 tons per year based on 1996 to 1997 water years (EPA 2009). The TMDL emphasizes the continuation and improvement of existing erosion control and monitoring programs, NPDES stormwater permits and sediment controls for construction projects, highway operations and long-term operations such as ski resorts and industrial areas.

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 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." The 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. The EPA interprets this provision to prohibit new or increased discharges to ONRWs that would degrade water quality.

Regulated Floodplain

Floodplain Management Executive Order (EO) 11988 (May 24, 1977) directs all federal agencies to evaluate potential effects of any actions it may take in the floodplain and to avoid all adverse impacts associated with modifications to floodplains. It also directs federal agencies to avoid encroachment into the 100-year floodplain, whenever there is a practicable alternative, and to restore and preserve the natural and beneficial values served by the floodplains.

FEMA oversees floodplain management and runs the National Flood Insurance Program (NFIP) adopted under the National Flood Insurance Act of 1968. FEMA prepares Flood Insurance Rate Maps (FIRM) that delineate the regulatory floodplain to assist local governments with land use and floodplain management decisions to meet the requirements of the NFIP. In general, the NFIP mandates that development is not to proceed within the 100-year regulatory floodplain, if the development is expected to increase flood elevation by one foot or more. Very limited development is allowed in designated 100-year floodways (i.e., flood flow channels and areas with sufficient directional flow velocity of 100-year floodwaters).

15.2.2 Tahoe Regional Planning Agency

LAKE TAHOE REGIONAL PLAN

Code of Ordinances

The TRPA Code contains the requirements and standards intended to achieve water quality thresholds, goals, and policies. Sections 60.1 and 60.2 of the TRPA Code are directed specifically at water quality, but a number of other chapters and sections contain provisions related to design and installation of BMPs and standards for grading and excavation (Table 15-1).

Table 15-1 Water Quality Code Requirements Related to the Proposed Project

Ordinance	Requirement
Section 13.5.3.B.3	Areawide stormwater treatment systems may be developed as part of an area plan.
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.
Section 60.4	Runoff shall be controlled with implementation of BMPs. Alternative BMPs may be allowed where special circumstances exist.

Source: TRPA Code of Ordinances

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 15- 2 at the 90th percentile for discharge to surface waters. Surface runoff infiltrated into soils may not exceed the concentrations listed in Table 15- 2 for discharge to groundwater. In addition to numerical discharge limits, the 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 15-2 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

Table 15-2 TRPA Discharge Limits for Surface Runoff and Discharge to Groundwater

Constituent	Maximum Concentration
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
Grease and Oil	40 mg/l
Source: TRPA Code of Ordinances	

TRPA 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 15-3, 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 2012a).

Table 15-3 TRPA Summary of Findings by Threshold Category (Water Quality)

Threshold Category	Indicator Reporting Category (Indicator Theme)	Generalized Characterization of Current Status, Trend and Confidence ¹
Water Quality	Pelagic Lake Tahoe (open waters of Lake Tahoe)	Status: somewhat worse than target Trend: moderate decline Confidence: high
	Littoral Lake Tahoe (nearshore waters of Lake Tahoe)	Status: insufficient data to determine status, or no target established Trend: insufficient data to determine trend Confidence: low
	Tributaries	Status: somewhat worse than target Trend: moderate improvement Confidence: moderate
	Surface Runoff (stormwater runoff to surface waters)	Status: insufficient data to determine status, or no target established Trend: insufficient data to determine trend Confidence: low
	Groundwater (stormwater runoff to soil)	Status: insufficient data to determine status, or no target established Trend: insufficient data to determine trend Confidence: low
	Other Lakes (Fallen Leaf Lake)	Status: insufficient data to determine status, or no target established Trend: insufficient data to determine trend Confidence: low

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.

Confidence Categories: High, Moderate, and Low

Source: TRPA 2012a

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. Elevated turbidity measurements in the nearshore area of the Lake, defined as levels exceeding 0.25 NTU (TRPA 2012b), appear to be influenced by surface runoff from developed areas. While measures exceeding 0.25 NTU may be higher relative to other areas of the Lake, they do not represent exceedance of the standard. Of the 72 miles (115.9 kilometers [km]) of Lake shoreline, 0.9 mile (1.5 km) of shoreline were identified with extremely elevated turbidity, 2.5 miles (4 km) of shoreline with moderately elevated turbidity, and 5.6 miles (9 km) of shoreline with slightly elevated turbidity (TRPA 2012b).

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 22 feet worse than 1968 values, based on average annual Secchi disk measurement (TERC 2015). In 2014 the average annual Secchi disk visibility depth measured from the surface of the lake was 77.8 feet, which is an increase of 7.6 feet over the previous year and well above the lowest value recorded, which was an average annual measurement of 64.1 feet in 1997 (TERC 2015). These measurements continue 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 in grams of carbon per square meter (gC/m²). Exhibit 4.6-6 presents average annual measurements of primary productivity in the Lake which have trended upwards since 1968.

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; aquatic invasive species, periphyton (attached algae), 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 15-3, above, provides the current status for these additional Water Quality Indicator Reporting Categories.

15.2.3 State

State Water Resources Control Board

In California, the State Water Resources Control Board (SWRCB) has broad authority over water quality control issues for the state. SWRCB is responsible for developing statewide water quality policy and exercises the powers delegated to the state by the federal government under the CWA. Other state agencies with jurisdiction over water quality regulation in California include the California Department of Health Services (DHS) (for drinking water regulations), the California Department of Pesticide Regulation, the California Department of Fish and Wildlife (formerly Department of Fish and Game), and the Office of Environmental Health and Hazard Assessment. Regional authority for planning, permitting, and enforcement is delegated to the nine regional water boards. The regional boards are required to formulate and adopt water quality control plans for all areas in the region and establish water quality objectives in the plans. LRWQCB is responsible for the water bodies in the project vicinity.

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 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 (LRWQCB 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. LRWQCB 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.

Waste Discharge Prohibition for the Truckee River Hydrologic Unit

The Basin Plan prohibits the discharge of any waste or material which would cause, or threaten to cause, a violation of any water quality objective, or otherwise adversely affect the beneficial uses of water described above (LRWQCB 1995). Additionally, the Basin Plan prohibits the discharge of soil or liquid waste materials containing soil or other earthen material to the surface waters of the Truckee River Hydrologic Unit, or the 100-year flood plain of the Truckee River. Exemption from this prohibition may be granted by LRWQCB for replacement of existing structures (provided that there is not additional loss of floodplain or volume), bridge abutments, approaches, or other essential transportation facilities identified in an approved county general plan, or project necessary to protect public health or safety or to provide essential public services provided that the project meets the following exemption criteria (LRWQCB 1995: pp. 4.1-5 through 4.1-7):

- ▲ There is no reasonable alternative to locating the project or portions of the project within the 100-year floodplain.
- ▲ The project, by its very nature, must be located within the 100-year floodplain.
- ▲ The project incorporates measures which will insure that any erosion and surface runoff problems caused by the project are mitigated to levels of insignificance.
- ▲ The project will not, individually or cumulatively with other projects, directly or indirectly, degrade water quality or impair beneficial uses of water.

- ▲ The project will not reduce the flood flow attenuation capacity, the surface flow treatment capacity, or the ground water flow treatment capacity from existing conditions. This shall be ensured by restoration of previously disturbed areas within the 100-year floodplain within the project site, or by enlargement of the floodplain within or as close as practicable to the project site. The restored, new or enlarged floodplain shall be of sufficient area, volume, and wetland value to more than offset the flood flow attenuation capacity, surface flow treatment capacity, and ground water flow treatment capacity lost by construction of the project. This finding will not be required for: (1) essential public health or safety projects, (2) projects to provide essential public services for which the Regional Board finds such mitigation measures to be infeasible because the financial resources of the entity proposing the projects are severely limited, or (3) projects for which the Regional Board finds (based on evidence presented by the proposed discharger) that the project will not reduce flood flow attenuation capacity, the surface flow treatment capacity, of the ground water flow treatment capacity from existing conditions.

National Pollutant Discharge Elimination System Permits

SWRCB and LRWQCB have required specific NPDES permits for a variety of activities that have potential to discharge pollutants to waters of the state and adversely affect water quality. To receive an NPDES permit a Notice of Intent to discharge must be submitted to LRWQCB and design and operational BMPs must be implemented to reduce the level of contaminated runoff. BMPs can include the development and implementation of regulatory measures (local authority of drainage facility design) various practices, including educational measures (workshops informing public of what impacts result when household chemicals are dumped into storm drains), regulatory measures (local authority of drainage facility design), public policy measures (label storm drain inlets as to impacts of dumping on receiving waters), and structural measures (filter strips, grass swales, and retention basins). All NPDES permits also have inspection, monitoring, and reporting requirements.

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

LRWQCB 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 LRWQCB 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 stormwater 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. BMPs would conform to Chapter 4.5 of the Tahoe BMP Handbook.

General Permit for Stormwater Discharges Associated with Construction Activity

SWRCB adopted the statewide NPDES General Construction Permit in August 1999. The state requires that projects disturbing more than 1 acre of land during construction file a Notice of Intent with LRWQCB to be covered under this permit. The General Construction Permit covers portions of the state that are not otherwise regulated by a regional NPDES permit, including the Truckee River Watershed portions of the Plan area. This permit regulates ground disturbing construction activities and requires the preparation of a SWPPP and implementation of BMPs.

State Nondegradation Policy

In 1968, as required under the federal antidegradation policy described previously, SWRCB adopted a nondegradation policy aimed at maintaining high quality for waters in California. The nondegradation policy states that the disposal of wastes into state waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state. The policy states:

- a) Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent

with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water.

- b) Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet waste discharge requirements.

Safe Drinking Water Act

As mandated by the Safe Drinking Water Act (Public Law 93-523), passed in 1974, EPA regulates contaminants of concern to domestic water supply. Such contaminants are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by EPA primary and secondary Maximum Contaminant Levels (MCLs). MCLs and the process for setting these standards are reviewed triennially. Amendments to the Safe Drinking Water Act enacted in 1986 established an accelerated schedule for setting drinking water MCLs. EPA has delegated to the DHS the responsibility for California's drinking water program. DHS is accountable to EPA for program implementation and for adoption of standards and regulations that are at least as stringent as those developed by EPA. Title 22 of the California Administrative Code (Article 16, Section 64449) defines secondary drinking water standards, which are established primarily for reasons of consumer acceptance (i.e., taste) rather than for health issues.

15.2.4 Local

Placer County Truckee River Basin Stormwater Management Plan

The Truckee River Basin Stormwater Management Plan (Placer County 2007) is a comprehensive program to reduce pollution in stormwater runoff located in the Placer County portion of the Middle Truckee River Watershed. The plan is implemented in compliance with NPDES Phase II General Municipal Permit No. CAS000004 and WQCB Order No. 2003-005-DWQ.

Placer County General Plan

The Placer County General Plan (2013a) contains policies pertaining to water resources. The policies applicable to the proposed project are described below.

- ▲ **Policy 4.E.4.** The County shall ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the County Land Development Manual.
- ▲ **Policy 6.A.5.** The County shall continue to require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities and urban runoff and to encourage the use of BMPs for agricultural activities.
- ▲ **Policy 6.A.7.** The County shall discourage grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of creeks and damage to riparian habitat.

Placer County Code

The Placer County Code is the implementing mechanism for the goals and policies of the General Plan. Portions of the County Code dealing with a specific issue are referred to as ordinances. Specific ordinances relevant to Hydrology and Water Quality include the Stormwater Ordinance (Section 8.28 of the Placer County Code) and the Flood Damage and Prevention Ordinance (Section 15.52 of the Placer County Code). The Stormwater Ordinance includes discharge prohibitions, requirements for BMP installation and reduction of stormwater flows, and enforcement mechanisms. The Flood Damage and Prevention Ordinance includes standards for construction in or near flood areas and prohibits actions that would raise flood elevations or increase the risk of flood damage to existing structures.

15.3 ENVIRONMENTAL SETTING

15.3.1 Hydrology

The Plan area lies within two major drainage areas, the Lake Tahoe Basin and the Truckee River Watershed. Exhibit 15-1 provides an overview of watershed and sub-watershed boundaries, and surface waters within the project area.

LAKE TAHOE BASIN

The Lake Tahoe Basin was formed approximately 2 to 3 million years ago by geologic faulting and volcanic activity. Geologic faults running in a north-south direction allowed the formation of a valley between the uplifting Sierra Nevada and the Carson Range. The northeastern portion of the valley was blocked and dammed by volcanic activity to create the 506 square mile basin that lies along the California-Nevada border. Precipitation and runoff eventually filled a portion of the basin to create Lake Tahoe, which has a water surface area covering nearly two-fifths of the total basin area (191 square miles).

Lake Tahoe is fed by 63 tributary streams and 52 intervening zones that drain directly to the Lake (see Exhibit 15-1). The Truckee River at the northwest end of the Tahoe Basin is the Lake's only outlet, flowing to Pyramid Lake in Nevada. A dam constructed at Tahoe City in the early 1900s regulates water flow to the Truckee River from the natural rim (6,223 feet above sea level) to the maximum legal Lake level of 6,229.1 feet. The Lake is 12 miles wide and 22 miles long with 72 miles of shoreline.

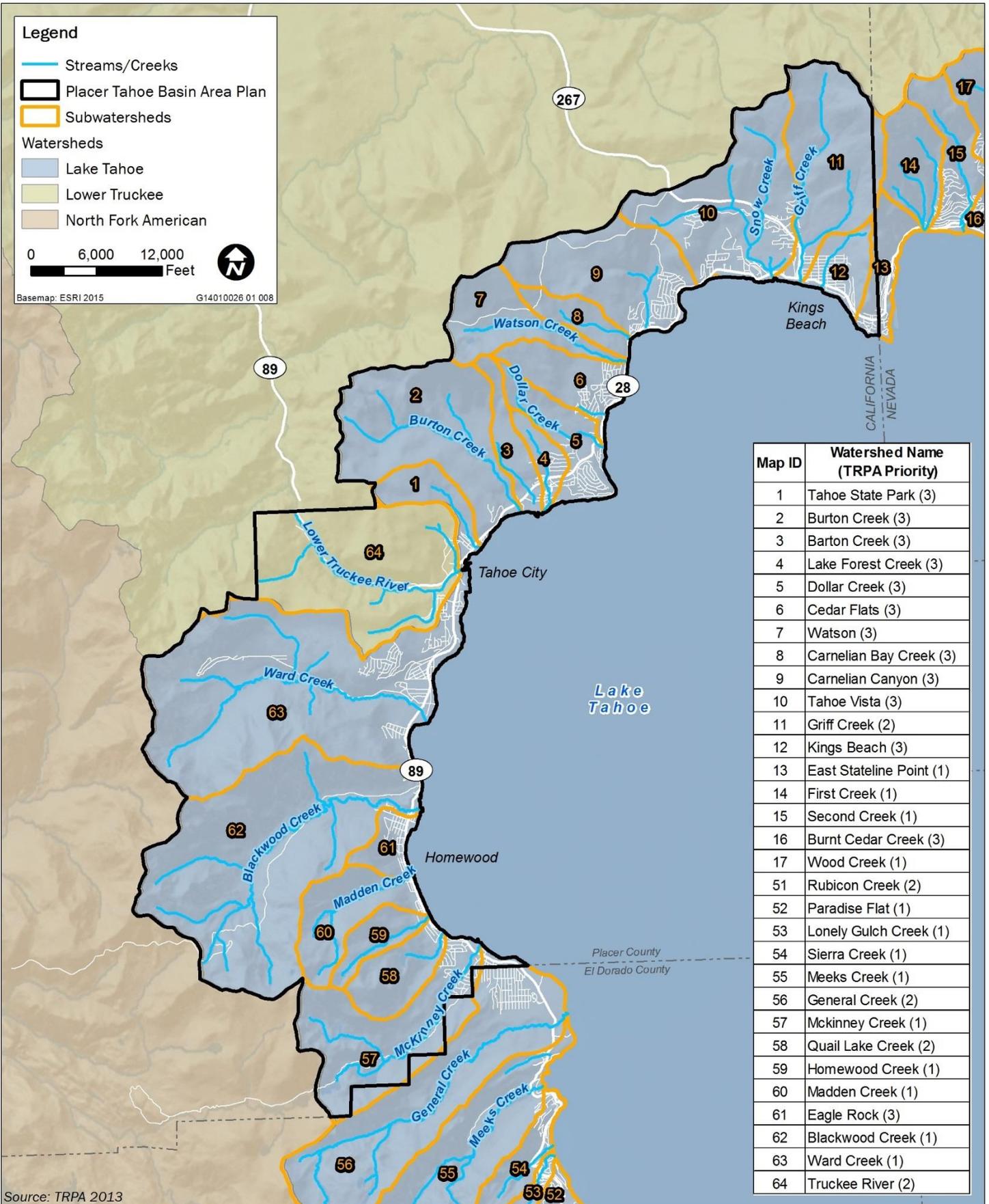
Regional topography is characterized by steep mountain slopes at higher elevations, transitioning to more moderately sloped terrain near the lakeshore.

Average precipitation, measured at almost 32 inches a year at Tahoe City (Placer County 2013b), generally falls as snow in the higher elevations and as snow and rain in the lower elevations, including the lake shore from October to May. Peak stream runoff in the watersheds of interest is typically triggered by spring snowmelt in May and June. The snow pack near the lakeshore predominantly melts before the peak in snowmelt and runoff from the higher elevations. Land cover within the Lake Tahoe Basin is primarily forest, with areas of granitic outcrops and meadows.

TRUCKEE RIVER WATERSHED

The most northwestern portions of the Plan area occur within the upstream end of the 2,720 square mile Truckee River watershed. The watershed drains to the Truckee River as it flows from the Lake Tahoe outlet in Tahoe City north and northwestward toward the Town of Truckee and ultimately northeastward down to Pyramid Lake in Nevada. The geology along the western Sierra Nevada boundary of the watershed is mostly granitic base rocks capped in some cases with basaltic lava flows, while the southern boundary consists of volcanic deposits that also formed a natural dam across Lake Tahoe's northern end. Volcanic rocks are dispersed through the area south of the Town of Truckee; glacial outwash, river and stream deposits, and ancient lake sediment deposits also occur in the watershed. It is estimated that more than fifty percent of the Truckee River watershed has "moderate" to "very high" erosion potential due in part to the steep slopes (LRWQCB 2008).

Topography in the Truckee River watershed is similar to that of the Lake Tahoe Basin with a large majority of land characterized by steep mountainous terrain above 6,000 feet elevation. Similar to the Lake Tahoe Basin watershed, stream flows typically peak during the spring snowmelt in May or June and lower to base flows during the later summer months.



Map ID	Watershed Name (TRPA Priority)
1	Tahoe State Park (3)
2	Burton Creek (3)
3	Barton Creek (3)
4	Lake Forest Creek (3)
5	Dollar Creek (3)
6	Cedar Flats (3)
7	Watson (3)
8	Carnelian Bay Creek (3)
9	Carnelian Canyon (3)
10	Tahoe Vista (3)
11	Griff Creek (2)
12	Kings Beach (3)
13	East Stateline Point (1)
14	First Creek (1)
15	Second Creek (1)
16	Burnt Cedar Creek (3)
17	Wood Creek (1)
51	Rubicon Creek (2)
52	Paradise Flat (1)
53	Lonely Gulch Creek (1)
54	Sierra Creek (1)
55	Meeks Creek (1)
56	General Creek (2)
57	Mckinney Creek (1)
58	Quail Lake Creek (2)
59	Homewood Creek (1)
60	Madden Creek (1)
61	Eagle Rock (3)
62	Blackwood Creek (1)
63	Ward Creek (1)
64	Truckee River (2)

Source: TRPA 2013

Exhibit 15-1

Hydrology



100-YEAR FLOODPLAIN

The Federal Emergency Management Agency (FEMA) provides mapping showing areas that would be inundated by the 100-year flood. The 100-year floodplain refers to the area that would be inundated by a flood that has a one percent chance of occurring in any given year. The 100-year flood is the national minimum standard to which communities regulate their floodplains. As shown in Exhibit 15-2, various streams located in the Plan area are subject to flooding during 100-year storm events. Streams with regulated floodplains in the Plan area include Blackwood Creek, Ward Creek, Burton Creek, Lake Forest Creek, Tahoe Vista Creek, Griff Creek, and the Truckee River. Communities lying at least partially within the 100-year floodplain include portions of Kings Beach, Tahoe Vista, Dollar Point, Tahoe City, Tahoe Pines, and Homewood (Exhibits 15-3 and 15-4 show 100-year floodplains in Tahoe City and Kings Beach). TRPA prohibits additional development within the 100-year floodplain. (TRPA Code Section 35.4.2). The Tahoe City Lodge project site is located outside of the FEMA delineated 100-year floodplain (FIRM 06061C0225F).

15.3.2 Surface Water Quality

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 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 15-5 displays the relative distribution of average annual pollutant loading to Lake Tahoe for each pollutant of concern among the source categories (LRWQCB and NDEP 2010). As shown in Exhibit 15-5, 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 (LRWQCB 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 (LRWQCB and NDEP 2010).

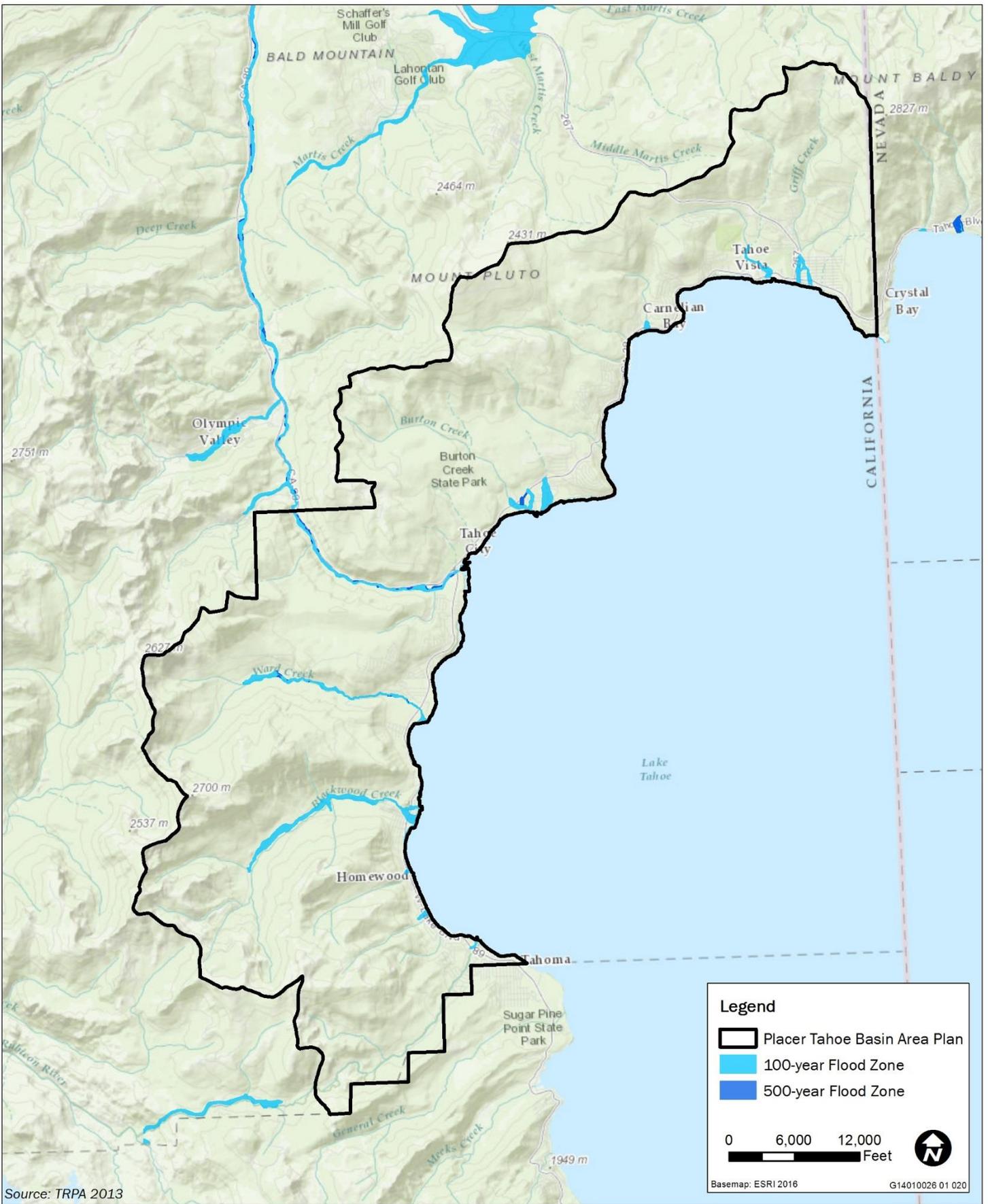


Exhibit 15-2

Plan Area 100-Year and 500-Year Floodplains



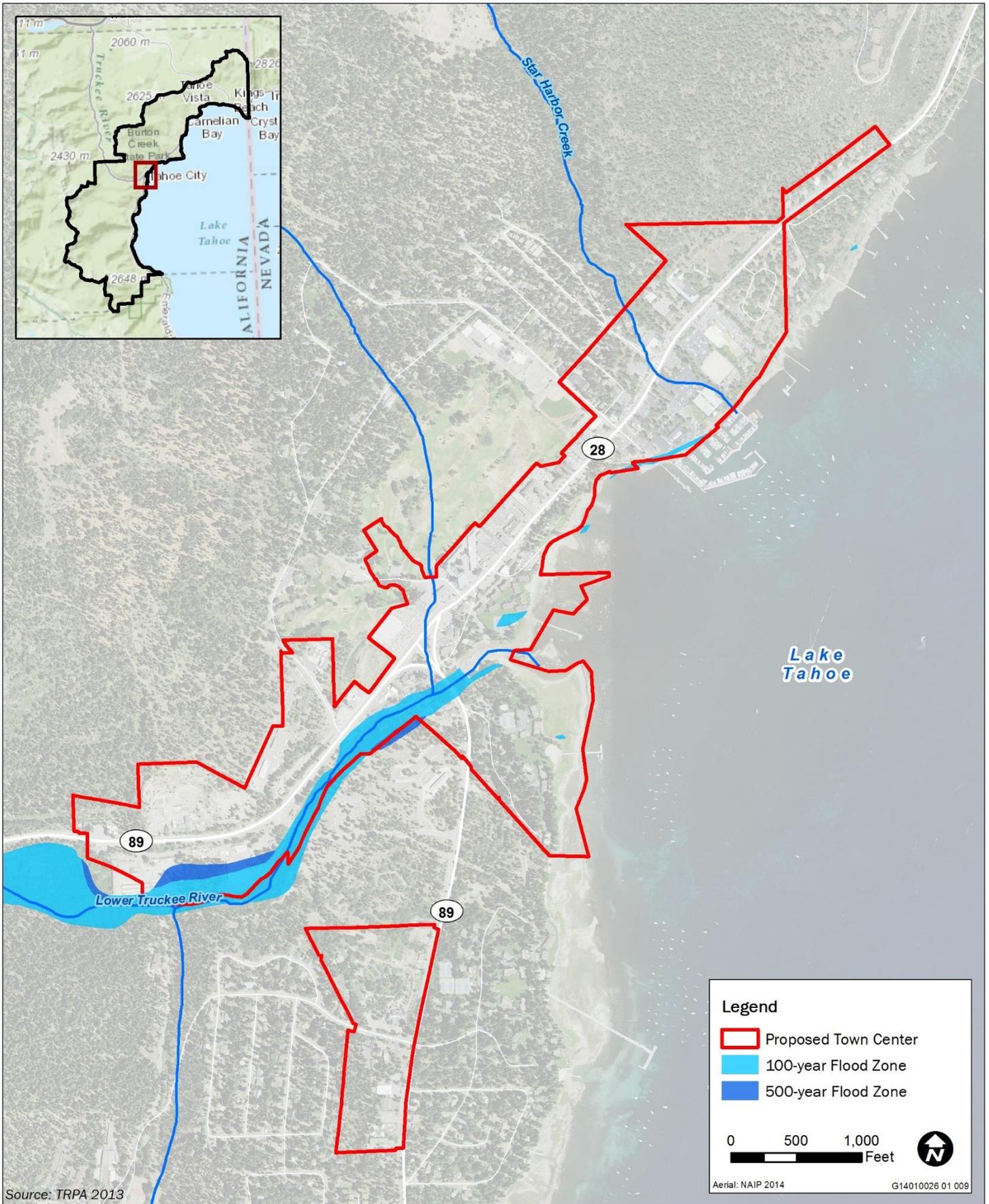
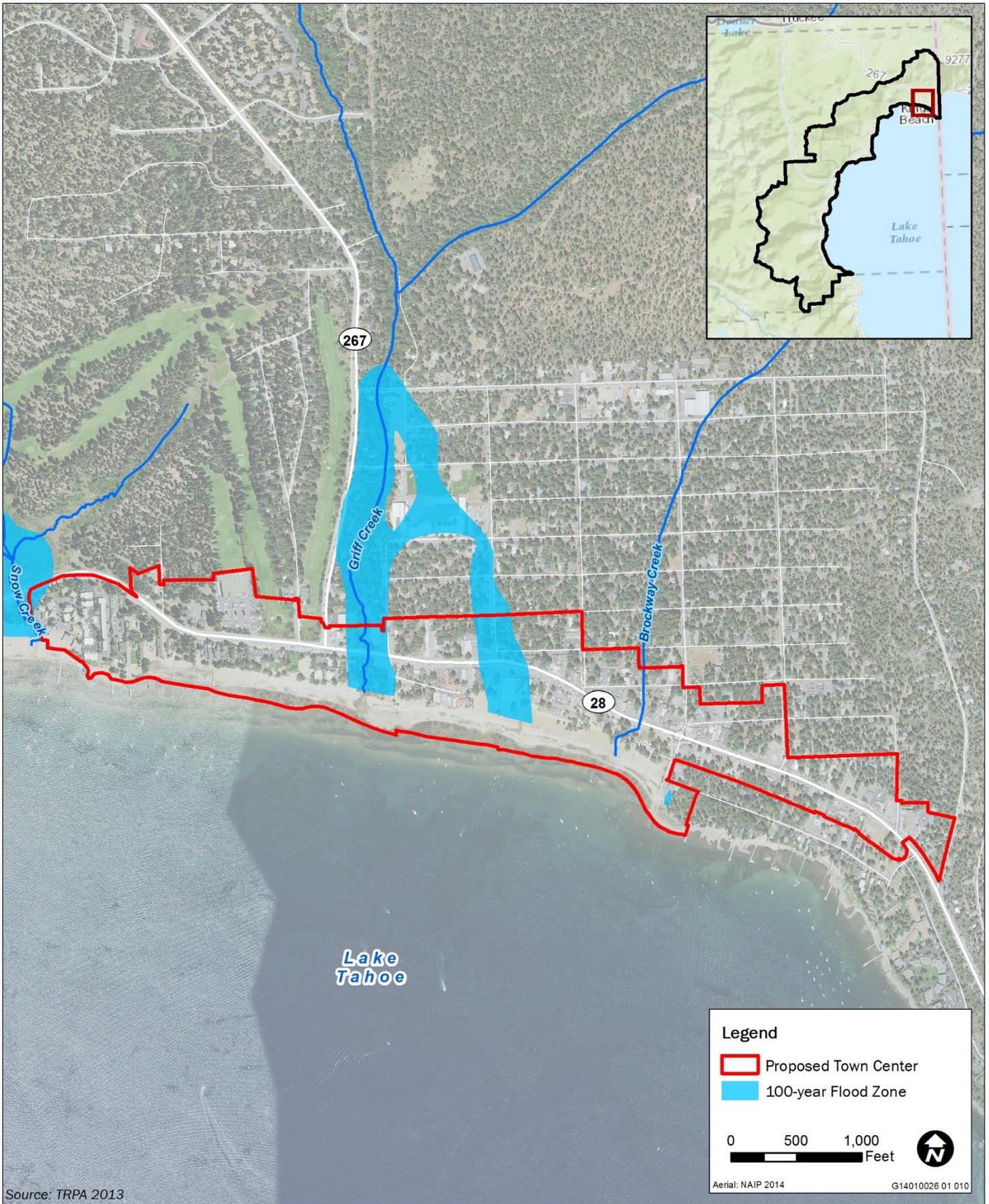


Exhibit 15-3

Tahoe City 100-Year and 500-Year Floodplains



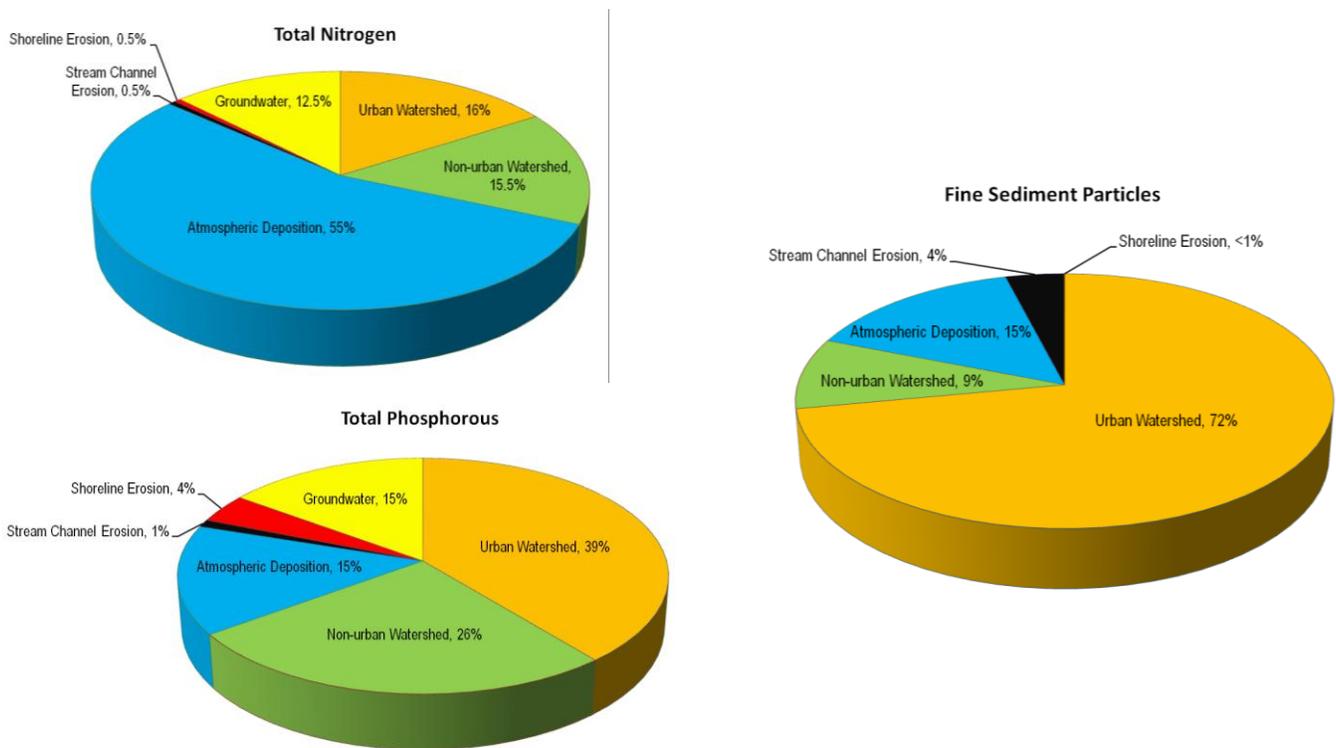


Source: TRPA 2013

Exhibit 15-4

Kings Beach 100-Year Floodplains





Source: Adapted from Lahontan RWQCB and NDEP 2010

Exhibit 15-5

Lake Tahoe TMDL Pollutant Sources

A 20-year interim transparency goal, known as the Clarity Challenge requires Tahoe 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 Tahoe Basin-wide fine sediment particle, phosphorus, and nitrogen loads by 32 percent, 14 percent, and 4 percent, respectively, over the 15-year period.

TRUCKEE RIVER

The portion of the Lower Truckee River within the Plan area is a popular recreation area and receives intensive summer use. Foot traffic along informal access routes between Highway 89 and the river have caused severe erosion in some places and riparian habitat has been degraded by river users (LTBMU 2014). The majority of the Lower Truckee River watershed has seen extensive historic and ongoing disturbance through activities such as grazing, logging, urban development, ski resorts, and reservoir construction. As a result, the suspended sediment concentrations in the Truckee River can exceed the limits recommended for protection of aquatic life (LRWQCB 2008). The reach of the Truckee River between Lake Tahoe and Boca Reservoir is listed as impaired for sedimentation and siltation in accordance with section 303(d) of the CWA and a TMDL was established in 2008.

In addition to the standard Water Quality Objectives (WQOs) for all surface waters, LRWQCB has established the following WQOs for the Truckee River at the Lake Tahoe Outlet as described in the Lahontan Basin Plan:

- | | |
|---|--|
| Chlorine (Cl): 2.0 mg/L | Phosphorus (P): 0.01 mg/L |
| Iron (Fe): 0.03 mg/L | Sulfate (SO4): 2.0 mg/L |
| Nitrogen (N): 0.12 mg/L | Total Dissolved Solids (TDS): 65 milligrams per liter (mg/L) |
| Nitrogen as nitrate (NO ₃ -N): 0.02 mg/L | Total Kjeldahl nitrogen (TKN): 0.10 mg/L |

STREAMS

Traditional development activities increase impervious and disturbed areas within watersheds and result in an increase in the amount of flow and sediment that a stream must transport. Sediment entering streams may come from floodplains, upland slopes, urban runoff, or stream bank erosion. Stream systems influenced by watershed disturbance typically show stream channel degradation and increased bank erosion (LRWQCB and NDEP 2010). Additionally, pollutants such as phosphorus and nitrogen are often attached to sediment particles, further degrading water quality. In 2006, an analysis of sediment loading was completed for all 63 streams which flow into Lake Tahoe (Simon 2006). This study found that the streams contributing the highest amount of fine sediment to Lake Tahoe are the Upper Truckee River (1,010 T/y), Blackwood Creek (846 T/y), Trout Creek (462 T/y), and Ward Creek (412 T/y). These four streams make up roughly 40 percent of the Lake Tahoe Basin watershed area, but account for almost 50 percent of all fine-sediment loadings to the Lake (Simon 2006). Table 15-4 provides an overview of the streams and Subwatersheds within the Plan area.



Source: CTC 2016

Exhibit 15-6 Sediment Plume Entering Lake Tahoe from Blackwood Creek

Table 15-4 TRPA Subwatersheds within the Plan Area

Watershed #	Watershed	TRPA Priority Number ¹	Watershed Area (Acres)	Placer County Tahoe Basin Area Plan Communities	Streams	Annual Fine Sediment Load (<63µm, Tonnes/year)	Percent of Fine Sediment from Stream Bank Erosion
Tahoe Basin Subwatersheds							
1	Tahoe State Park ²	3	782	Tahoe City, Tahoe State Recreation Area	Star Harbor Creek	8.8	<1%
2	Burton Creek	3	3,652		Burton Creek	79.9	1%
3	Barton Creek	3	716		Barton Creek	4.9	<1%
4	Lake Forest	3	448	Lake Forest	Lake Forest Creek	3.4	<1%
5	Dollar Creek	3	1,166	Dollar Point	Dollar Creek	8.8	1%
6	Cedar Flats	3	1,167	Cedar Flat	-	18.0	1%
7	Watson	3	1,490		Watson Creek	11.2	<1%
8	Carnelian Bay Creek	3	635		Carnelian Bay Creek	7.8	<1%
9	Carnelian Canyon	3	2,662	Carnelian Bay	Carnelian Canyon Creek	35.4	<1%
10	Tahoe Vista	3	3,495	Tahoe Vista, North Tahoe Regional Park	Snow Creek	110.0	1%
11	Griff Creek	2	2,914	Kings Beach	Griff Creek	121.0	4%
12	Kings Beach	3	726	Kings Beach	Brockway Creek	22.4	<1%
13	East Stateline Point	1	875	Brockway		-	
57	McKinney Creek	1	3,135	Chambers Landing	McKinney Creek	20.2	<1%
58	Quail Lake Creek	2	1,049	Homewood	Quail Creek	3.4	<1%

Table 15-4 TRPA Subwatersheds within the Plan Area

Watershed #	Watershed	TRPA Priority Number ¹	Watershed Area (Acres)	Placer County Tahoe Basin Area Plan Communities	Streams	Annual Fine Sediment Load (<63um, Tonnes/year)	Percent of Fine Sediment from Stream Bank Erosion
59	Homewood Creek	1	645	Homewood	Homewood Canyon Creek	33.9	<1%
60	Madden Creek	1	1,462	Homewood	Madden Creek	11.4	<1%
61	Eagle Rock	3	521	Tahoe Pines	-	-	<1%
62	Blackwood Creek	1	7,426	Idlewild	Blackwood Creek	846	51%
63	Ward Creek	1	8,182	Sunnyside, Tahoe City	Ward Creek	412	25%
Truckee River Subwatersheds							
64	Truckee River ²	2	4,372	Tahoe City, Rampart	Truckee River	No data	

¹TRPA assigned priority values of 1 through 3, with 1 having the greatest propensity for accelerated erosion due to steeper terrain, highly erosive soils, and a higher ratio of development to undisturbed land requiring more immediate BMP implementation.

²Tahoe City Lodge project site is located within this subwatershed.

Source: Simon 2006

Blackwood Creek and Ward Creek are the two largest streams and watersheds within the Plan area. Although they are relatively undeveloped, these watersheds have experienced a great deal of disturbance from past land uses. The area was heavily grazed and logged into the 1970s and the associated loss of vegetation and network of roads caused heavy erosion throughout the watersheds (CTC 2016). In Blackwood Creek, an in-channel gravel mining operation greatly altered the channel and increased sediment delivery. Over time, disturbance has destabilized the Blackwood and Ward Creek stream channels in many areas. The eroding banks of these streams contribute a disproportional amount of fine sediment (51 percent of the Blackwood Creek load and 25 percent of the Ward Creek load) when compared to other streams within the Plan area. With the exception of Griff Creek (which receives an estimated 4 percent of its fine sediment load from eroding stream banks), the streambank erosion along the remaining streams creates a fine sediment contribution of one percent or less.

Understanding pollutant sources is critical for developing appropriate water quality improvement programs. Programs to reduce runoff from urban and residential areas have been implemented throughout the Placer County portion of the Lake Tahoe Basin and are focused on stormwater management, preventing the discharge of untreated stormwater directly to streams, and restoration of SEZs which provide natural water treatment. Addressing the pollution caused by streambank erosion, channel modification, or disturbance adjacent to stream channels must be addressed through intensive site-specific projects. In recent years, multiple stream restoration projects have been planned and implemented to reduce the sediment load in streams and restore ecosystem functions. Table 15-5, provides a summary of water quality projects completed or planned for Plan area streams.

Surface hydrology in the area of the Tahoe City Lodge project site has been modified by development. Exhibit 15-3 shows the TRPA stream data for the Tahoe City Town Center. The drainage that crosses the Tahoe City Lodge project site is known as Tahoe State Park Creek. The portion of the drainage that flows through the Tahoe City Golf Course and the lodge project site is an ephemeral feature that collects stormwater runoff from the golf course area and lands to the north. This drainage terminates at the south edge of the golf course where it enters a culvert and an existing stormdrain system (see Exhibit 15-10) and ultimately is discharged to the Tahoe City Urban Improvement Project (TCUIP) Detention Basin and Wetlands (Tahoe City Wetlands) (Auerbach 2015). (Note: Exhibit 3-2 in Chapter 3, "Proposed Project and Alternatives," shows the location of the Tahoe City Wetlands.)

Table 15-5 Placer County Stream Restoration Projects

Completion Year	Project Name	Implementing Agency	Description
2012	Ward Creek Road and Trail Sediment Reduction	California Department of Parks and Recreation	Created roads and trails plan and re-routed or removed trails through wet meadows and SEZs.
2012	Blackwood Creek Restoration- Phase 3, Site B	USFS- Lake Tahoe Basin Management Unit	Abandoned a ½ mile section of stream channel that was poorly functioning and restored flows to a historic remnant channel that remained intact. Included the stabilization of 7 acres adjacent to the historic channel.
2013	Lower Blackwood Creek Restoration- Phase 1	California Tahoe Conservancy	Stream channel stabilization and enhancement. Also included revegetation of eroding slopes, relocation of trail sections, and installation of Trail BMPs.
2014	Snow Creek Wetlands Restoration	Placer County	Removal of soil and fill material and construction of engineered wetlands to treat stormwater prior to discharging into Snow Creek.
2017	Griff Creek Stream Habitat Restoration	Placer County	Targeted SEZ restoration along Griff Creek.
2017	Truckee River First 4-Miles, Streambank Stabilization and Restoration	Tahoe City Public Utilities District	Stabilization of eroding stream banks, development of controlled river access points, and protection of sensitive areas.
2018	Ward Creek – Lower Gully Stabilization	USFS- Lake Tahoe Basin Management Unit	Stabilization of a large gully created by a legacy logging road.
2018	Blackwood Creek Wood Structure Enhancement	USFS- Lake Tahoe Basin Management Unit	Strategic placement of large wood structures to provide long term fish habitat enhancement.

Source: TRPA 2016

15.3.3 GROUNDWATER

The most extensive and productive groundwater reservoirs (aquifers) in the Lake Tahoe Basin are composed of coarse 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 Plan area is located within the Tahoe City/West Shore and the Tahoe Vista/Kings Beach aquifers (USGS 2007).

The Tahoe City/West Shore aquifer extends from Dollar Point to Rubicon Bay with a shoreline distance of 18 miles. In the area around the lake outlet at Tahoe City, the aquifer consists of a complex series of sediment layers including silt and clay lake sediments layered with sand, overlying volcanic flows, which are then underlain by ancient, water-bearing sand and gravel deposits, extending from approximately 60 feet 590 feet (USGS 2007). South of Tahoe City, the West shore is drained by a series of glacially cut watersheds separated by moraines (glacial till ridges). In general, each watershed is underlain by glacial outwash and stream deposits (mostly sands and gravels) with fill depths between 50 and 450 feet.

The Tahoe Vista/Kings Beach aquifer includes the area from Dollar Point on the west to Stateline Point on the east. The aquifer materials consist of lake sediments and glacial deposits occurring as a relatively thin strip along the shore of Lake Tahoe with the exception of the Carnelian Bay, Tahoe Vista, and Kings Beach areas where they extend one to two miles inland (USGS 2007). Groundwater within area is inconsistent and it may be better described as a “Fracture Flow” system, rather than an “aquifer.”

Groundwater recharge within the Plan area occurs via infiltration into faults and fractures in the bedrock, into the soil and decomposed granite that overlies much of the bedrock, and into unconsolidated basin-fill deposits. Groundwater quality is good, with no contamination reported (TCPUD 2014, DWR 2003).

15.4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

15.4.1 Methods and Assumptions

The evaluation of potential water quality and stormwater management impacts is based on a review of documents pertaining to the Plan area, including: previous studies conducted for the watersheds within the Plan area; environmental impact reports; background reports prepared for plans and projects in the vicinity; 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 proposed project would comply with relevant federal, state, and local laws, regulations, and ordinances.

15.4.2 Significance Criteria

Significance criteria relevant to hydrology and water quality are summarized below.

TRPA CRITERIA

The “Water Quality” criteria from the TRPA Initial Environmental Checklist were used to evaluate the hydrology and water quality impacts of the alternatives. Checklist items that are relevant to the proposed project have been included in the environmental analysis below. Impacts to hydrology and water quality would be significant if it would:

- ▲ change currents, or the course or direction of water movements;
- ▲ change the amount of surface water in any water body;
- ▲ discharge into surface waters, or alter surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity;
- ▲ cause the potential discharge of contaminants to the groundwater or alter groundwater quality;
- ▲ change absorption rates, drainage patterns, 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 course or flow of 100-year flood waters; or
- ▲ expose people or property to water related hazards such as flooding and/or wave action from 100-year storm occurrence.

CEQA CRITERIA

Based on Appendix G of the State CEQA Guidelines and the Placer County CEQA Checklist, impacts to hydrology and water quality would be significant if the project would:

- ▲ violate any water quality standards or waste discharge requirements;
- ▲ otherwise substantially degrade water quality;
- ▲ substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g.,

the production rate of pre-existing nearby wells would drop to a level which would not support the existing land uses or planned uses for which permits have been granted);

- ▲ substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, 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;
- ▲ place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- ▲ place within a 100-year flood hazard area structures that would impede or redirect flood flows; or
- ▲ expose people or structures to a significant risk of loss, injury, or death involving flooding.

15.4.3 Environmental Effects of the Project Alternatives

Impact 15-1: Potential for adverse impacts to water quality resulting from construction activities

None of the Area Plan Alternatives would alter existing laws and regulations that require erosion and sediment controls, implementation and maintenance of temporary construction BMPs, waste control measures, and management controls for stormwater runoff. Because regulatory protections are in place to minimize erosion and transport of sediment and other pollutants during construction, and appropriate project-specific mitigation measures would be defined to achieve Placer County and TRPA standards such that necessary permits and approvals can be secured, construction related impacts for all alternatives would be reduced to a **less-than-significant** level.

Tahoe City Lodge Alternatives 1, 2, and 3 would create project specific construction-related disturbance, which would have the potential to degrade water quality. This would be a **potentially significant** impact. Mitigation Measures 15-1a through 15-1d include Placer County standard permit conditions, which would substantially reduce the risk of construction-related stormwater quality impacts by minimizing the release of construction site contaminants (such as sediment-laden runoff and construction chemicals), and by proper management of hazardous materials onsite. Implementation of these mitigation measures would reduce the potential for Tahoe City Lodge Alternatives 1, 2, and 3 to create substantial adverse effects on water quality from construction activities to a **less-than-significant** level. Alternative 4 is the no-action alternative and would have **no impact** related to construction effects on water quality.

Placer County Tahoe Basin Area Plan Program-Level Analysis

Alternative 1: Proposed Area Plan

The policies and incentives included in Alternative 1 could result in an increased level of redevelopment, or infrastructure improvements (e.g., water quality improvement projects, transportation projects, utility improvements, stream restoration projects). Construction activities associated with these projects would typically involve vegetation removal, grading, excavation, and temporary stockpiling of soils, all of which could expose soils to wind and water erosion and potentially transport pollutants to surface water bodies, particularly during storm events. In addition, construction activities would involve on-site staging of construction equipment and vehicles, as well as construction-related vehicle trips. Fuels and other construction-related chemicals could be accidentally spilled or leaked, or could otherwise be discharged into drainages. If pollutants reach drainages, they could ultimately be discharged to Lake Tahoe.

Although construction activities have the potential to adversely affect surface and groundwater quality, all projects would be required to comply with stringent TRPA, LRWQCB, and Placer County water quality protections. Temporary construction BMPs that would be required through existing regulations, such as Chapter 33 of the TRPA Code of Ordinances, would include but not be limited to:

- ▲ Temporary erosion control BMPs (e.g., silt fencing, fiber rolls, drain inlet protection) installed and maintained to prevent the transport of earthen materials and other waste from a construction site.
- ▲ Tree protection fencing installed around trees that are to remain in place throughout construction.
- ▲ Mandatory pre-grading inspections by regulatory agencies at the construction site to ensure proper installation of the temporary construction BMPs prior to the initiation of construction activities.
- ▲ Requirements to limit the area and extent of all excavation to avoid unnecessary soil disturbance.
- ▲ Requirements to winterize construction sites by October 15 to reduce the water quality impacts associated with winter weather. Winterization typically includes installation of erosion controls, vegetation protection, removal of construction debris, site stabilization, and other measures.
- ▲ Dust control measures to prevent transport of materials from a project site into any surface water or drainage course. Dust control measures typically include sweeping, watering, covering of disturbed soils and stockpiles, vehicle washing, and other measures.
- ▲ Requirements to remove surplus or waste earthen materials from project sites, as well as requirements to stabilize and protect stockpiled material.
- ▲ Stabilization of drainage swales disturbed by construction activities with appropriate soil stabilization measures (e.g., revegetation, rock armoring) to prevent erosion.
- ▲ Temporary BMPs to capture and contain pollutants from fueling operations, fuel storage areas, and other areas used for the storage of hydrocarbon based materials. These may include spill prevention plans and other measures.
- ▲ Temporary BMPs to prevent the tracking of earthen materials and other waste materials from project sites to offsite locations, including stabilized points of entry/exit for construction vehicles/equipment, designated vehicle/equipment rinse stations, and sweeping operations.
- ▲ Regular inspection and maintenance of temporary BMPs.

All construction projects in California with greater than 1 acre of disturbance must, in advance of the construction, prepare a SWPPP pursuant to the NPDES Phase II Stormwater Program. A project-specific SWPPP describes the site, construction activities, proposed erosion and sediment controls, means of waste disposal, maintenance requirements for temporary BMPs, and management controls for potential pollutant sources other than stormwater runoff. In addition, the SWPPP would require the implementation of a Hazardous Materials spill response plan, which would reduce the potential of directly and indirectly effecting water quality through construction-related hazardous material spills. Water quality controls outlined in a SWPPP must be consistent with TRPA requirements (including Chapter 4.5 of the TRPA BMP Handbook), the federal antidegradation policy, and maintain designated beneficial uses of Lake Tahoe.

In addition to TRPA and LRWQCB permit enforcement, it is the accepted practice of the Placer County Engineering and Surveying Division to require inclusion of pertinent regulatory compliance measures as mitigation for projects within the county. This practice creates an additional layer of regulatory oversight and review, and facilitates communication between Placer County and the regulatory agencies.

Any proposed project and associated construction under Alternative 1 would be subject to existing laws and regulations requiring erosion and sediment controls, implementation and maintenance of temporary construction BMPs to capture, detain, and infiltrate or otherwise control and properly manage site runoff;

waste control measures to prevent leakage or spill of hazardous materials into soil and surface waters; and management controls for stormwater runoff to prevent erosion and offsite transport of earth materials. Because regulatory protections are in place to minimize erosion and transport of sediment and other pollutants during construction, and appropriate project-specific mitigation measures would be defined to secure necessary permits and approvals, construction related impacts would be minimized. Therefore, this impact would be **less than significant**.

Alternative 2: Area Plan with No Substitute Standards

The potential water quality effects of Alternative 2 resulting from future construction activities would be the same as those discussed for Alternative 1 above. For the same reasons, future construction activities resulting from the implementation of Alternative 2 would have a **less-than-significant** impact on water quality.

Alternative 3: Reduced Intensity Area Plan

The potential water quality effects of Alternative 3 resulting from future construction activities would be the same as those discussed for Alternative 1 above. For the same reasons, future construction activities resulting from the implementation of Alternative 3 would have a **less-than-significant** impact on water quality.

Alternative 4: No Project

Alternative 4 is the no-action alternative. Implementation of this alternative would not stimulate increased levels of construction activity and construction related water quality effects would not be changed from the existing condition. For this reason, Alternative 4 construction activities would have **no impact** on water quality.

Tahoe City Lodge Project-Level Analysis

Alternative 1: Proposed Lodge

The redevelopment of the Tahoe City Lodge Alternative 1, the relocation and expansion of the Tahoe City Golf Course club house, and the restoration of SEZ areas within the golf course would result in soil disturbing activities including clearing, excavating, filling, grading, and temporary stockpiling of soils, all of which could expose soil to erosion. In addition, the demolition of existing structures at the lodge and clubhouse sites would generate debris. Soil and small pieces of debris exposed during construction activities could be carried off-site through construction vehicle traffic or washed off the exposed areas, and transported to adjacent SEZ areas or Lake Tahoe, particularly during storm events. Finally, there would be onsite construction staging of equipment and vehicles, as well as construction-related vehicle trips. Fuels and other construction related chemicals could be accidentally spilled or leaked, or could otherwise be discarded into nearby drainages. Therefore, construction activities resulting from the proposed Tahoe City Lodge would result in a **potentially significant** impact to water quality.

Alternative 2: Reduced Scale Lodge

The construction related disturbance associated with the implementation of Alternative 2 would be limited to the redevelopment of the Tahoe City Lodge within the existing commercial site. No reconstruction or expansion of the golf course club house would occur and no SEZ restoration would be required. Although Alternative 2 would expose a smaller area of soil and would not involve the demolition of the existing golf course club house structure, the exposure of soil materials and construction debris, and the use of fuel and construction related chemicals would create a **potentially significant** impact to water quality for the same reasons described for Alternative 1.

Alternative 3: Reduced Height Lodge

The construction related disturbance associated with Alternative 3 would be the same as those described for Alternative 1 above. For the same reasons, the construction of Alternative 3 would result in **potentially significant** impacts to water quality.

Alternative 4: No Project

Alternative 4 is the no-action alternative. Implementation of this alternative would not result in redevelopment of the Lodge site and would therefore not result in construction related water quality effects. For this reason, Alternative 4 would have **no impact** relative to construction site effects on water quality.

Mitigation Measure 15-1a: Prepare and Implement a stormwater pollution prevention plan for each construction phase

This mitigation measure applies to Tahoe City Lodge Alternatives 1, 2, and 3.

Each construction phase of the project shall be subject to the Lake Tahoe Construction General NPDES Permit from Lahontan RWQCB. After project approval and as a condition of the NPDES permit, the project applicant shall develop a project-specific SWPPP prepared by a qualified SWPPP practitioner and/or a qualified SWPPP developer, which specifies water quality controls consistent with Lahontan RWQCB requirements and ensures that runoff quality maintains beneficial uses of Lake Tahoe and the Truckee River. The site- and design-specific SWPPP developed for each construction phase shall describe the site controls, erosion and sediment controls, means of waste disposal, implementation of project specific plans required by local regulations, post-construction sediment and erosion control measures, and other impact reduction strategies unrelated to stormwater. BMPs identified in the SWPPPs shall be implemented during all development activities. Each SWPPP shall comply with the requirements of Chapter 4.5 of the TRPA BMP Handbook. Required elements of the SWPPPs include the following:

- ▲ 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 fences, fiber rolls, erosion control blankets, mulch (such as pine needles and wood chips); and temporary drainage swales and settling basins.
- ▲ Designated contractor staging areas for materials and equipment storage outside of riparian 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 with native vegetation.
- ▲ 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.
- ▲ A spill prevention and containment plan to minimize the potential for soil and groundwater contamination during construction. Project contractors would be responsible for proper storage of onsite materials and installation and maintenance of 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 onsite for the cleanup of accidental spills (such as oil absorbent booms and sheets), maintaining drip pans beneath construction equipment, training site workers in spill response measures, immediate cleanup of spilled materials in accordance with directives from the Lahontan RWQCB, and proper disposal of waste materials at an approved offsite 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 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 protective casings of wood slats around the bases of trees.
- ▲ Temporary BMPs for the containment or removal of drilling spoils generated from construction of bridge foundations and abutments.

- ▲ Daily inspection and maintenance of temporary BMPs to ensure proper function. The prime contractor would be required to maintain a daily log of Temporary Construction BMP inspections and keep the log onsite during project construction, available for review by Lahontan RWQCB and Placer County.
- ▲ 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.

Mitigation Measures 15-1b: Verification of SWPPP submittal

This mitigation measure applies to Tahoe City Lodge Alternatives 1, 2, and 3.

Prior to construction commencing, provide evidence to the Engineering and Surveying Division (ESD) of a Water Discharger Identification number generated from the State Regional Water Quality Control Board's Stormwater Multiple Application & Reports Tracking System (SMARTS). This serves as the Regional Water Quality Control Board approval or permit under the NPDES construction stormwater quality permit.

Mitigation Measures 15-1c: Design, install, and maintain water quality BMPs which meet industry and TRPA standards

This mitigation measure applies to Tahoe City Lodge Alternatives 1, 2, and 3.

The Improvement Plans shall show that water quality treatment facilities/BMPs shall be designed according to the guidance of the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction, for New Development/Redevelopment, and for Industrial and Commercial (or other similar source as approved by the ESD) and with TRPA BMP Handbook Chapter 4.5.

Storm drainage from on- and off-site impervious surfaces (including roads) shall be collected and routed through specially designed catch basins, vegetated swales, vaults, infiltration basins, water quality basins, filters, etc. for entrapment of sediment, debris and oils/greases or other identified pollutants, as approved by the ESD. No water quality facility construction shall be permitted within any identified wetlands area, floodplain, or right-of-way, except as authorized by project approvals.

All BMPs shall be maintained as required to ensure effectiveness. The applicant shall provide for the establishment of vegetation, where specified, by means of proper irrigation. Vegetation species shall be selected that are appropriate to meet water restrictions in effect at the time of planting. Proof of on-going maintenance, such as contractual evidence, shall be provided to ESD upon request. Maintenance of these facilities shall be provided by the project owners/permittees.

Mitigation Measures 15-1d: Demonstrate TRPA permit approval prior to approval of Placer County Improvement Plan

This mitigation measure applies to Tahoe City Lodge Alternatives 1, 2, and 3.

Prior to Improvement Plan approval by the County, the Engineering and Surveying Division must be provided with permits and comments, if any, from TRPA indicating its approval of the Improvement Plan.

Significance after Mitigation

Mitigation Measures 15-1a through 15-1d would substantially reduce the risk of construction phase stormwater quality impacts by minimizing the release of construction site contaminants such as sediment-laden runoff and construction chemicals, and by proper management of hazardous materials onsite. LRWQCB, TRPA, and Placer County have substantial experience with review, approval, and enforcement of SWPPPs and project-specific permit conditions for projects in the Tahoe Basin, and they have been shown to be effective. Implementation of these mitigation measures would reduce the potential for Tahoe City Lodge

Alternatives 1, 2, and 3 to create substantial adverse effects on water quality from construction activities to a **less-than-significant** level.

Impact 15-2: Potential water quality impacts to surface and groundwater due to changes in land use or lodge operation

Area Plan Alternatives 1, 2, and 3 would alter land uses and development within town centers and mixed-use areas, and each proposes new development concepts, programs, and standards. However, these alternatives would not alter the existing TRPA regulations related to discharge to surface and groundwater or water quality protection. The increased density and coverage limits within town centers were previously analyzed by the TRPA RPU EIS and were determined to have a less-than-significant effect on water quality. Finally, the PLRM modeling conducted for the proposed project indicates that Alternatives 1 and 2, which encourage the redevelopment of town centers, would result in a decrease in the pollutant load carried in stormwater runoff through TRPA BMP requirements. For these reasons, the land use changes and policies that would be implemented through Area Plan Alternatives 1 and 2 would have a **beneficial** impact on water quality. Alternatives 3 and 4 would also generate a slight reduction in pollutant loading and would have a **less-than-significant** impact on water quality. The Tahoe City Lodge Alternatives 1, 2, and 3 would result in continued tourist or commercial use of the Lodge site. These alternatives have the potential to generate pollutants which could be carried in stormwater runoff to surface waters, resulting in a **potentially significant** impact. Implementation of Mitigation Measure 15-2 would require installation of approved permanent water quality BMPs, which would reduce the potential for Tahoe City Lodge Alternatives 1, 2, and 3 to create adverse effects on water quality from operational activities to a **less-than-significant** level. Lodge Alternative 4 represents a continuation of existing conditions and would have **no impact**.

Placer County Tahoe Basin Area Plan Program-Level Analysis

Alternative 1: Proposed Area Plan

Alternative 1 would alter the land use and development pattern within town center and mixed-use areas; and proposes new development concepts, programs, and standards. This would include allowing the use of non-contiguous project areas within town centers, which could result in concentrated development on one parcel, and an equivalent reduction in development on another parcel, provided that these parcels are deed restricted to assure that coverage and density calculations for the parcels are always determined as if the parcels were legally consolidated. However, the Area Plan would not alter the existing TRPA regulations related to discharge to surface and groundwater, or water quality protection. All future projects, including any projects with non-contiguous project areas, would be required to meet the surface and groundwater discharge standards found in Chapter 60 of the TRPA Code. As with existing conditions, all development, redevelopment, and infrastructure improvement within the Area Plan would be required to meet the discharge standards of LRWQCB and, for sites creating more than one acre of disturbance, prepare and submit a SWPPP.

With the exception of the proposed Tahoe City Town Center boundary change, the land use changes and increased coverage limits within town centers contemplated by Alternative 1 were analyzed in the TRPA RPU EIS and were found to be less than significant (TRPA 2012b: pp. 3.8-41 – 3.8-42). The RPU EIS used the Pollutant Load Reduction Model (PLRM) to estimate the conceptual change in pollutant loading from all town centers resulting from the adopted coverage policies. For the proposed project, the PLRM (Version 2) was used to individually model the maximum buildout of the Kings Beach and Tahoe City Town Centers to determine the localized effects on water quality. The PLRM evaluates surface runoff and pollutant loads at the local level using very small watersheds known as drainage catchments. The model incorporates site-specific information on land uses, coverage, stormwater BMPs, and hydrologic connectivity. Within the town center areas, parcels for which maximum allowable land coverage would increase were reviewed to determine their current BMP status. Parcels without certified BMPs were modeled as receiving infiltration BMPs through redevelopment or through connection to the Tahoe City wetlands. Land coverage increases above base allowable would only be allowed on high capability lands (LCDs 4 through 7), which have sufficient spacing between the ground surface and the seasonal high water table for the installation of infiltration BMPs. Additionally, TRPA Code Section 60.4.6 requires infiltration BMPs for all projects except

where prohibited by natural conditions (such as shallow bedrock or high water table). Therefore it is reasonable to assume that infiltration BMPs would be installed in these areas. Land coverage was assumed to be increased to the maximum allowed. Table 15-6 provides a summary of modeling results for all alternatives. The PLRM model results represent a conservative estimate of water quality impacts because the model assumes all parcels within town centers would be developed and include the maximum allowable coverage; and the model does not account for public water quality improvement projects identified in the Area Plan, such as roadway stormwater management improvements or the benefits associated with coverage removal necessary to transfer coverage up to the 70 percent limit.

Table 15-6 Summary of PLRM Modeling Results for the Tahoe City and Kings Beach Town Centers

	Surface Runoff (Acre-ft/yr) ¹	Fine Sediment (lbs/yr) ¹	Fine Sediment % reduction from existing ¹	Total N (lbs/yr) ¹	Total P (lbs/yr) ¹
Kings Beach Town Center					
Existing Conditions	68.1	52,498	-	170	574
Alternative 1	62.9	49,697	5%	160	538
Alternative 2	62.9	49,697	5%	160	538
Alternative 3	64.7	50,768	3%	164	551
Alternative 4	64.7	50,768	3%	164	551
Tahoe City Town Center (Lake Tahoe Watershed)					
Existing Conditions (current boundary)	56.8	36,053	-	126	448
Alternative 2	50.7	32,861	9%	114	406
Alternative 4	55.0	35,358	2%	123	436
Existing Conditions (modified boundary)	59.5	39,018	-	135	474
Alternative 1	55.8	36,752	6%	127	474
Alternative 3	57.7	38,287	2%	131	462
Tahoe City Town Center (Truckee River Watershed)					
Existing Conditions (current boundary)	72.2	29,487	-	110	420
Alternative 2	72.0	29,490	-	109	420
Alternative 4	72.0	29,475	<1%	109	419
Existing Conditions (modified boundary)	74.1	29,699	-	111	427
Alternative 1	73.7	29,652	<1%	111	426
Alternative 3	73.8	29,659	<1%	111	426
Totals					
Existing Conditions (current boundary)	197.1	118,038	-	406	1,442
Alternative 2	185.6	112,048	5%	393	1,400
Alternative 4	191.7	115,601	2%	396	1,406
Existing Condition (modified boundary)	201.7	121,215	-	416	1,475
Alternative 1	192.4	116,101	4%	408	1,474
Alternative 3	196.2	118,714	2%	406	1,439
Net Reduction					
Alternative 1	9.3	5,114	4%	8	1
Alternative 2	11.5	5,990	5%	13	42
Alternative 3	5.5	2,501	2%	10	36
Alternative 4	5.4	2,437	2%	10	36

¹Values for alternatives represent build-out conditions.

Source: NHC 2016

The Tahoe City Town Center drains both to the Truckee River (via the Tahoe City Wetlands) and to Lake Tahoe (refer to Exhibit 15-7). The Kings Beach town center drains entirely to Lake Tahoe. For catchments that drain to Lake Tahoe, the PLRM results indicate that Alternative 1 would provide a 5 percent reduction in fine sediment loading from the Kings Beach Town Center and a 6 percent reduction in fine sediment loading from the Tahoe City Town Center (Exhibit 15-8 shows the anticipated change in sediment loading for the catchments draining to Lake Tahoe). Alternative 1 would have a negligible effect on fine sediment loading from the portion of the Tahoe City Town Center draining to the Truckee River (see Exhibit 15-9).

In total, Alternative 1 would reduce fine sediment from the Tahoe City and Kings Beach Town Centers by 5,114 lbs/year, which represents a 4 percent reduction from existing conditions. Under Alternative 1, similar urban land uses would continue within the town centers. Redeveloped parcels within town centers would be required to implement BMPs in order to take advantage of the increased maximum allowable land coverage. This redevelopment would increase the low existing BMP implementation rates (35 percent in Kings Beach and 34 percent in Tahoe City). As a result, the PLRM model indicates that the increased BMP implementation would create a pollutant load reduction in the Tahoe City and Kings Beach Town Centers, even after accounting for the increase in land coverage.

As described above, Alternative 1 would not alter the existing regulations related to discharge to surface and groundwater or water quality protection. Additionally, the PLRM modeling completed for the Area Plan indicates that implementation of Alternative 1 would create a reduction in pollutant loading, therefore, the land use changes proposed by Alternative 1 would have a **beneficial** impact to water quality.

Alternative 2: Area Plan with No Substitute Standards

The land use changes associated with Alternative 2 would have similar effect to those discussed for Alternative 1 above. Although Alternative 2 would not include substitute standards, the maximum land coverage allowed in town centers would be the same as Alternative 1. As shown in Table 15-6, Alternative 2 would provide a 3 percent reduction in fine sediment loading from the Kings Beach Town Center and a 2 percent reduction in fine sediment loading from the Tahoe City Town Center. Alternative 2 would have a negligible effect on fine sediment loading from the portion of the Tahoe City Town Center draining to the Truckee River. In total, Alternative 2 would reduce fine sediment from the Area Plan town centers by 5,990 lbs/year, which represents a 5 percent reduction when compared to existing conditions and is a 1 percent larger reduction than Alternative 1.

For the same reasons described above, Alternative 2 would not alter the existing regulations related to discharge to surface and groundwater, or water quality protection. As indicated by the PLRM modeling, Alternative 2 would create a reduction in pollutant loading. For these reasons, the land use changes proposed by Alternative 2 would have a **beneficial** impact on water quality.

Alternative 3: Reduced Intensity Area Plan

Key differences between Alternative 1 and Alternative 3 are the additional performance standards for special planning areas and the reduction in maximum allowable coverage for Alternative 3. None of the additional performance standards would have the potential to affect water quality; however land coverage and surface water runoff are directly related. Alternative 3 would limit maximum land coverage to 50 percent for all parcels within town centers, rather than allowing up to 70 percent coverage on vacant parcels as allowed under existing conditions. This would result in a small decrease in overall land coverage within the town centers; the decrease in coverage would not be large enough to substantially affect water quality because of the limited number of undeveloped parcels within the town centers. In addition, because Alternative 3 does not include the increased land coverage development incentive, a reduced number of parcels would be redeveloped and Alternative 3 would have a lower percentage of BMP implementation when compared to Alternatives 1 and 2. As shown in Table 15-6, Alternative 3 would provide a 5 percent reduction in fine sediment loading from the Kings Beach Town Center and a 9 percent reduction in fine sediment loading from the Tahoe City Town Center. Alternative 3 would have a negligible effect on fine sediment loading from the portion of the Tahoe City Town Center draining to the Truckee River. In total, Alternative 3 would reduce fine sediment from the Area Plan town centers by 2,501 lbs/year, which

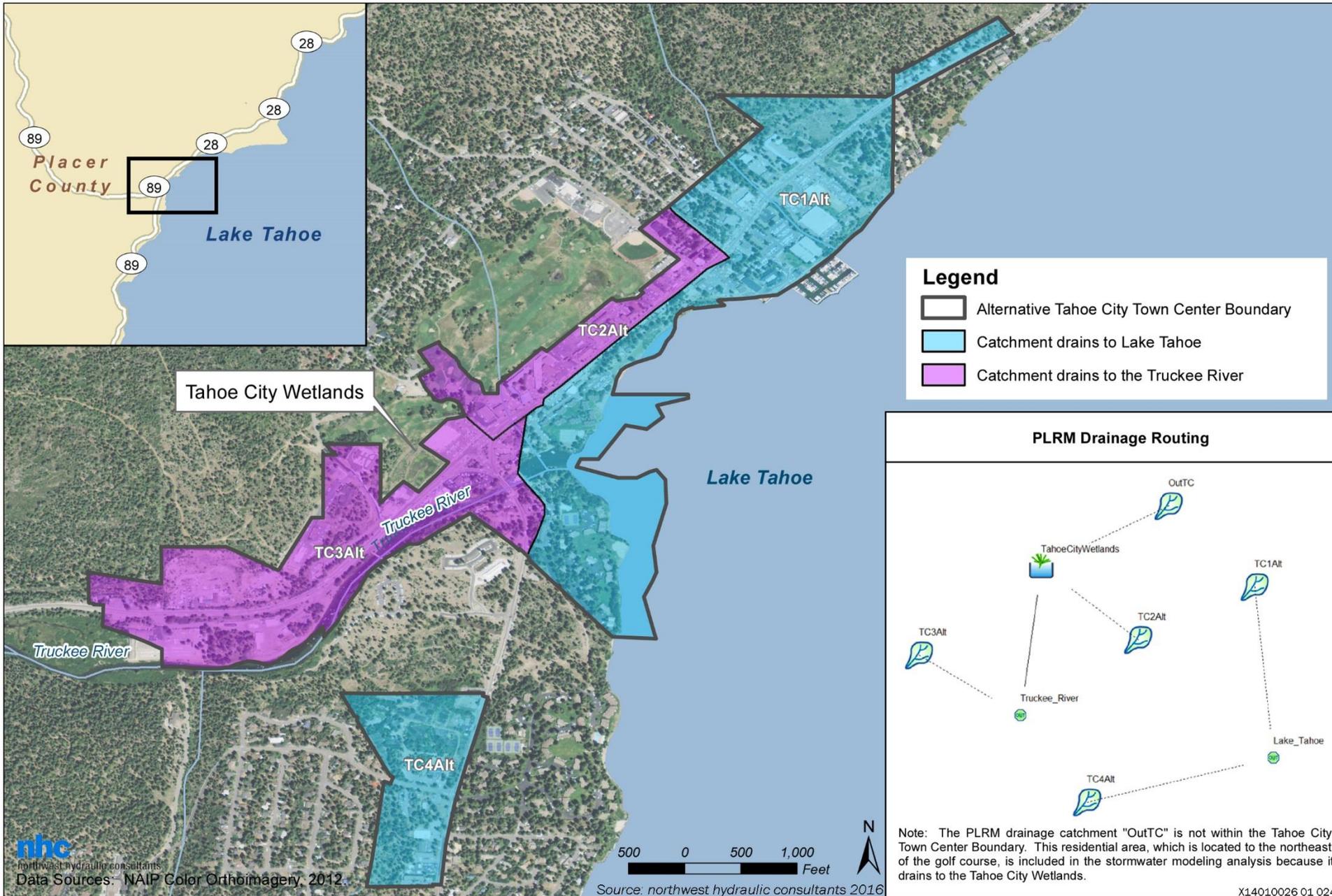


Exhibit 15-7

Drainage Catchment Map



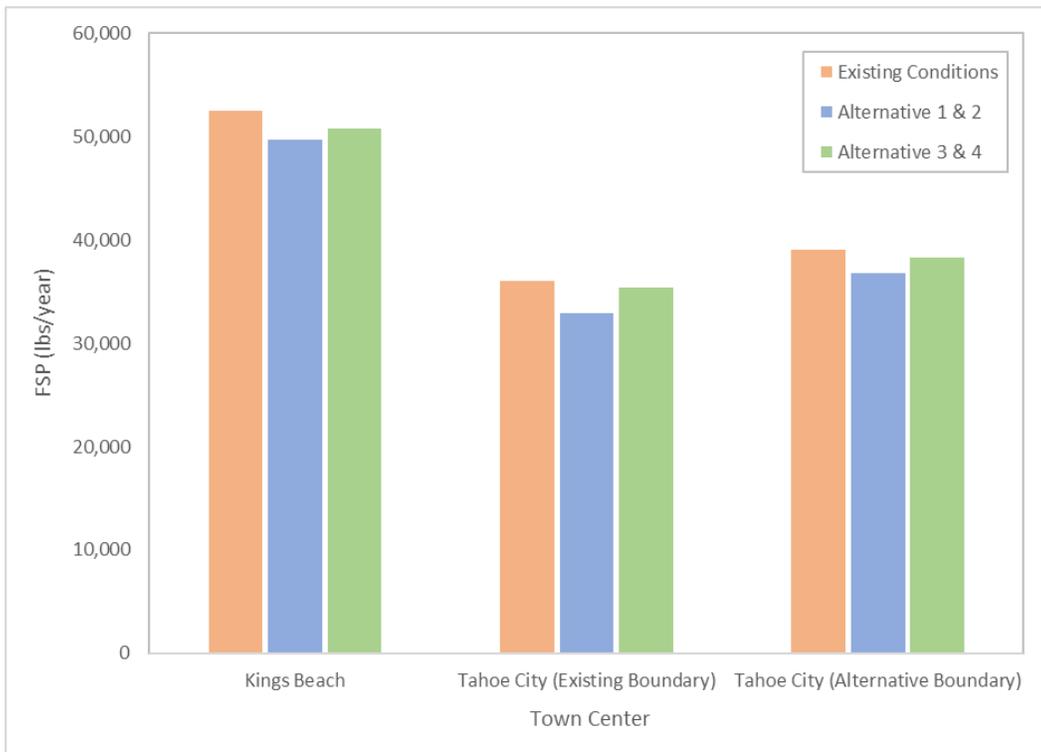


Exhibit 15-8

Anticipated Fine Sediment Particle (FSP) Loading for Catchments Draining to Lake Tahoe



Exhibit 15-9

Anticipated Fine Sediment Particle (FSP) Loading for Catchments Draining to the Truckee River

represents a 2 percent reduction when compared to existing conditions and is a 2 percent smaller reduction than Alternative 1. This reduction in fine sediment loading is roughly equivalent to the reductions that would occur through the buildout of these areas without the adoption of an Area Plan, as demonstrated under Alternative 4.

For the same reasons described above, Alternative 3 would not alter the existing regulations related to discharge to surface and groundwater, or water quality protection. As indicated by the PLRM modeling, Alternative 3 would create a slight reduction in pollutant loading that is roughly equivalent to conditions that would occur under build-out of the no-action alternative (Alternative 4). For these reasons, the land use changes proposed by Alternative 3 would have a **less-than-significant** impact on water quality.

Alternative 4: No Project

Alternative 4 would see a continuation of existing land use policies and land coverage limits. All future projects would continue to be required to meet the surface and groundwater discharge standards found in Chapter 60 of the TRPA Code, and future project would be required to meet the discharge standards of LRWQCB and (for sites creating more than one acre of disturbance) prepare and submit a SWPPP. For these reasons, implementation of Alternative 4 would have a **less-than-significant** impact on water quality.

Tahoe City Lodge Project-Level Analysis

Alternative 1: Proposed Lodge

Alternative 1 would result in a change from a commercial use to tourist accommodation use at the lodge site. These land uses would generate similar types and amounts of runoff and pollutants. Both the existing commercial use and the proposed tourist accommodation use could result in the accidental discharge of household and commercial products or improper use of pesticides and fertilizers, which could be carried in runoff or infiltrated into the soil reaching surface and groundwater resources. Additionally, urban stormwater runoff and snow melt from the site could contain oil and roadway residue, fine sediment, and other pollutants. Without proper management, these contaminants would be carried in concentrated stormwater runoff and could reach surface waters, degrading water quality and affecting the water quality objectives. This would be a **potentially significant** impact.

Alternative 2: Reduced Scale Lodge

Operation of the Tahoe City Lodge, as included in Alternative 2, would have the same potential water quality effects as those described for Alternative 1. For the same reasons described above, operational contaminants could be carried in concentrated stormwater runoff and could reach surface waters, degrading water quality and affecting the water quality objectives. This would be a **potentially significant** impact.

Alternative 3: Reduced Height Lodge

Operation of the Tahoe City Lodge, as included in Alternative 3, would have the same potential water quality effects as those described for Alternative 1. For the same reasons described above, operational contaminants could be carried in concentrated stormwater runoff and could reach surface waters, degrading water quality and affecting the water quality objectives. This would be a **potentially significant** impact.

Alternative 4: No Project

Alternative 4 would involve the continued commercial use of the Lodge site. The site currently does not have stormwater BMPs or facilities to collect and treat runoff and protect water quality. As described for Alternative 1, operation contaminants could be carried in stormwater runoff and could reach surface waters, thereby degrading water quality and affecting water quality objectives. Because this would represent a continuation of existing conditions, implementation Alternative 4 would have **no impact**.

Mitigation Measure 15-2: Design, install, and maintain water quality BMPs pursuant to Mitigation Measure 15-1c

This mitigation measure applies to Tahoe City Lodge Alternative 1, 2, and 3.

See Mitigation Measure 15-1c above. The same mitigation measure would apply.

Significance after Mitigation

Mitigation Measure 15-2 would substantially reduce the risk of stormwater quality impacts during the operation of the Tahoe City Lodge meeting TRPA BMP requirements either through the installation and maintenance of parcel scale permanent water quality BMPs and/or participating in an area-wide water quality treatment project showing great or equal water quality benefits to parcel scale BMPs. Implementation of these mitigation measures would reduce the potential for Tahoe City Lodge Alternatives 1, 2, and 3 to create substantial adverse effects on water quality from operational activities to a **less-than-significant** level.

Impact 15-3: Potential for increase in stormwater runoff, impacts to existing drainage systems, or alteration of drainage patterns

Implementation of Area Plan Alternatives 1 and 2 would result in increased impervious surfaces within town centers. However, the requirements for future projects to meet existing BMP standards and project level drainage analysis would remain in place under all alternatives. These requirements would cause a decrease in stormwater runoff volumes for all alternatives, resulting in a **less-than-significant** impact.

Tahoe City Lodge Alternatives 1, 2, and 3 would reduce the total volume of stormwater runoff generated by the project site, however the construction of the project could affect existing drainage systems and drainage patterns, creating a **potentially significant** impact. Mitigation Measure 15-3 would require the preparation of a final drainage report to meet Placer County Stormwater Management Manual requirements, which would reduce the potential for Tahoe City Lodge Alternatives 1, 2, and 3 to create substantial adverse effects on stormwater runoff volumes and existing drainage systems to a **less-than-significant** level. Tahoe City Lodge Alternative 4 is the no-action alternative and as such, would have **no impact** on runoff volumes or drainage patterns.

Placer County Tahoe Basin Area Plan Program-Level Analysis

Alternative 1: Proposed Area Plan

The peak flow and volume of stormwater runoff generated from an area is affected by development through conversion of vegetated and otherwise pervious surfaces to impervious surfaces (e.g., roads, roofs, driveways, walkways) 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 and volume of runoff and eliminate storage and infiltration that would naturally occur along drainage paths.

Of the policies and design concepts included in the Area Plan, only the proposed increase in maximum transferred land coverage within town centers would have an effect on the volume of stormwater runoff generated within the Plan area. The effect of this coverage change on stormwater runoff was analyzed in the TRPA RPU EIS (Impact 3.8-4, p 3.8-32, 3.8-41-3.8-42), and was found to be less than significant at a regional level. Implementation of Alternative 1 would result in an increase in coverage and a corresponding increase in the volume of stormwater generated within the Tahoe City and Kings Beach Town Centers, and an associated decrease in coverage and stormwater runoff elsewhere. However, the proposed increase in coverage in these town centers would be limited to high capability lands and would be required to meet existing BMP standards (Section 60.4.6 of the TRPA Code) to control potential increases in stormwater runoff and pollutant loading. In addition, the PLRM modeling completed for the Area Plan indicates that the required BMP implementation that would occur through development and redevelopment within town centers would require infiltration of runoff, resulting in a net reduction in the total volume of stormwater runoff generated by the Tahoe City and Kings Beach Town Centers (NHC 2016). As shown in Table 15-6,

Implementation of Alternative 1 is expected to result in a net reduction of 5.2-acre feet per year in stormwater volume.

Because the Area Plan is a planning-level document, and aside from the lodge, no specific project is proposed at this time that would result in direct effects to drainage systems or drainage patterns. All future projects, including a potential project built pursuant to the Kings Beach design concept, would be required to conduct project level analysis of effect to drainage patterns and drainage systems, including preparation of a drainage report prepared in conformance with the requirements of Section 5 of the Land Development Manual and the Placer County Stormwater Management Manual.

Implementation of Alternative 1 would generate increased impervious surfaces within town centers, but as noted above, all redevelopment projects would be required to meet TRPA stormwater infiltration requirements (TRPA Code Section 60.4.6) and the transfer of land coverage into town centers would result in an associated decrease in coverage and stormwater runoff elsewhere. Moreover, the requirements for future projects to meet existing BMP standards and project level drainage analysis would remain in place, resulting in a net decrease in stormwater runoff volumes. Therefore, implementation of Alternative 1 would have a **less-than-significant** impact.

Alternative 2: Area Plan with No Substitute Standards

The stormwater runoff and drainage effects of Alternative 2 would be similar to those discussed for Alternative 1 above. Although Alternative 2 could result in increases in impervious surfaces within town centers, all projects would be required to meet existing BMP standards and project level drainage analysis. As shown in Table 15-6, Alternative 2, would result in a net reduction in stormwater runoff of 11.5 acre feet/year. For this reason, Alternative 2 would have a **less-than-significant** impact.

Alternative 3: Reduced Intensity Area Plan

The stormwater runoff and drainage effects of Alternative 3 would be similar to those discussed for Alternative 1 above. However, Alternative 3 would not create additional impervious surfaces because the maximum allowable coverage in town centers would not be increased. In addition, all future projects would be required to meet existing BMP standards and project level drainage analysis. For this reason, Alternative 3 would have a **less-than-significant** impact.

Alternative 4: No Project

Alternative 4 would continue the existing development pattern and rate of redevelopment within the Plan area. As new development or redevelopment projects are constructed they would be required to meet the TRPA and Placer County BMP standards and project level drainage analysis discussed for Alternative 1 above. Therefore, Alternative 4 would have a **less-than-significant** impact on stormwater runoff volumes and existing drainage systems or drainage patterns.

Tahoe City Lodge Project-Level Analysis

Alternative 1: Proposed Lodge

Under current conditions, stormwater runoff from the Lodge site is discharged to the SR 28 right-of-way with no detention or treatment (Auerbach 2015). These flows are conveyed to the Tahoe City Wetlands and ultimately discharged to the Truckee River.

As discussed in Chapter 14, “Geology, Soils, Land Capability, and Coverage” (Impact 14-1), the Tahoe City Lodge, as proposed in Alternative 1, would reduce the amount of land coverage on the project site by 10,080 square feet (refer to table 14-8). This reduction would create a corresponding decrease in the volume of stormwater runoff generated by the site. Stormwater runoff would be managed using low impact development (LID) techniques to infiltrate stormwater as close to its source as possible and to minimize impervious cover. In addition, all LID features and stormwater systems would be designed to accommodate the volume of surface water generated by site during a 20-year, 1-hour storm, as required by TRPA Code Chapter 60. This would include the construction of infiltration basins and strategic placement of landscaped areas designed to capture runoff, and connections to the existing municipal stormwater system (Tahoe City

Wetlands). Exhibit 15-10 shows the proposed locations of stormwater management features within the project site.

As shown in Exhibit 15-10, an existing bypass storm drain and TCUIP storm drain cross the project site. These features collect runoff from the golf course area and the Tahoe City urban core and direct it to the Truckee River and the Tahoe City Wetlands, respectively. The excavation and construction activities required for Alternative 1 could intercept or alter these existing drainage systems. In addition, the volume and quality of runoff that the proposed project contributes to the TCUIP system could affect the Tahoe City Wetlands.

Although implementation of Alternative 1 would result in an overall decrease in stormwater runoff volume from the site, construction of the project could require modification and use of existing stormwater systems. This stormwater system modification could alter the flow path and volume of stormwater in existing systems, resulting in a **potentially significant** impact.

Alternative 2: Reduced Scale Lodge

The potential stormwater and drainage effects of Alternative 2 are similar to those discussed for Alternative 1 above. As discussed under Impact 14-1, Alternative 2 would reduce the land coverage on the project site by 21,409 square feet, resulting in a corresponding decrease in the volume of stormwater runoff. Additionally, implementation of Alternative 2 would involve compliance with TRPA stormwater BMP standards and inclusion of LID practices. However, Alternative 2 could require modification and use of existing municipal stormwater systems which could result in changes to the volume or flow path of stormwater currently being managed by these systems. For this reason, Alternative 2 would have a **potentially significant** impact.

Alternative 3: Reduced Height Lodge

The potential stormwater and drainage effects of Alternative 3 are similar to those discussed for Alternative 1 above. As discussed under Impact 14-1, Alternative 3 would reduce the land coverage on the project site by 2,955 square feet, resulting in a corresponding decrease in the volume of stormwater runoff. Additionally, implementation of Alternative 3 would involve compliance with TRPA stormwater BMP standards and inclusion of LID practices. However, Alternative 3 could require modification and use of existing municipal stormwater systems which could result in changes to the volume or flow path of stormwater currently being managed by these systems. For this reason, Alternative 3 would have a **potentially significant** impact.

Alternative 4: No Project

Alternative 4 is the no-action alternative. Under Alternative 4, no changes would occur to existing land coverage or storm drain systems. For this reason, implementation of Alternative 4 would have **no impact** on stormwater runoff volumes and existing drainage systems or drainage patterns.

Mitigation 15-3: Submittal of Final Drainage Report

This mitigation measure applies to Tahoe City Lodge Alternative 1, 2, and 3.

As part of the improvement plan submittal process, the preliminary Drainage Report provided during environmental review shall be submitted in final format. The final Drainage Report may require more detail than that provided in the preliminary report, and will be reviewed in concert with the improvement plans to confirm conformity between the two. The report shall be prepared by a Registered Civil Engineer and shall, at a minimum, include: A written text addressing existing conditions, the effects of the proposed improvements, all appropriate calculations, watershed maps, changes in flows and patterns, and proposed on- and off-site improvements and drainage easements to accommodate flows from this project. The report shall identify water quality protection features and methods to be used during construction, as well as long-term post-construction water quality measures. The final Drainage Report shall be prepared in conformance with the requirements of Section 5 of the Land Development Manual and the Placer County Stormwater Management Manual that are in effect at the time of improvement plan submittal.

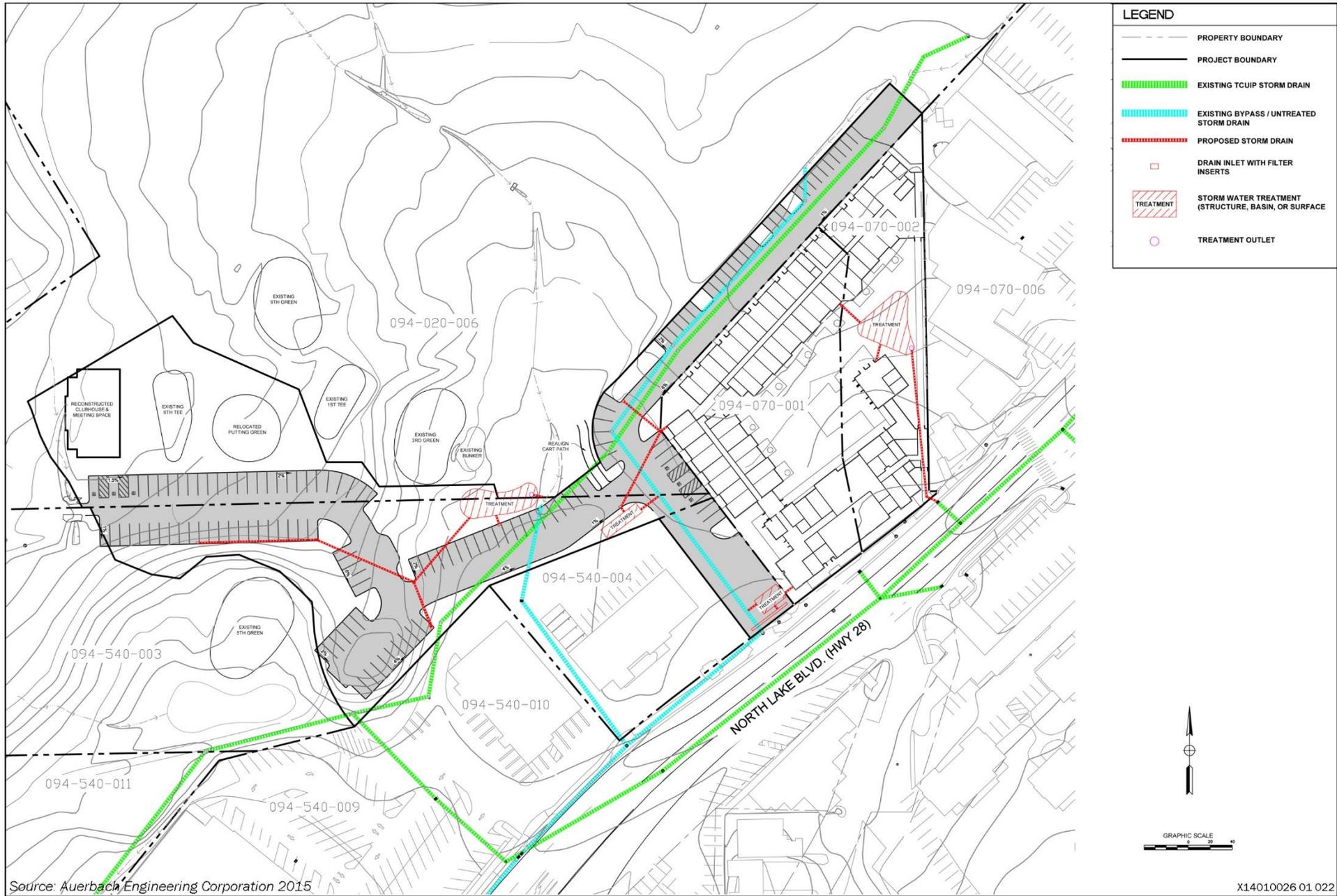


Exhibit 15-10

Tahoe City Lodge Conceptual Drainage Plan



Significance after Mitigation

Mitigation Measure 15-3 would result in preparation of a final drainage report and implementation of on- and off-site improvements and drainage easements to accommodate flows, water quality protection features and methods during construction, and long-term post-construction water quality measures. These would substantially reduce the risk of impacts to existing stormwater systems resulting from the redevelopment of the Tahoe City Lodge by requiring the submittal of a Final Drainage Report for review and approval by the Placer County Engineering and Surveying Division. Completion of this report and implementation of its recommended features and activities would ensure that the project does not adversely affect existing storm drain systems or flow volumes. Implementation of this mitigation measure would reduce the potential for Tahoe City Lodge Alternatives 1, 2, and 3 to create substantial adverse effects on stormwater runoff volumes and existing drainage systems or drainage patterns to a **less-than-significant** level.

Impact 15-4: Exposure to flood hazards

Although the Plan area contains low-lying areas that are within the FEMA designated 100-year flood zone, project-level analysis of all future development projects within the Area Plan would ensure that any future development or redevelopment projects do not result in exposure of people or property to flood hazards. Analysis is also required for 100-year floodplain impacts of non-FEMA designated drainageways during future development project environmental review. The Placer County Flood Damage Prevention Ordinance requirements would apply to projects on parcels within the 100-year flood zone or floodway. Therefore, implementation of Area Plan Alternatives 1, 2, and 3 would have a **less-than-significant** impact. Area Plan Alternative 4 is the no-action alternative. Because it would not alter the pace or location of development and would not affect flood regulation, Alternative 4 would have **no impact** relative to flood hazards. The Tahoe City Lodge project site is located above the 500-year and 100-year floodplain and therefore Tahoe City Lodge Alternatives 1, 2, 3, and 4 would have **no impact** relative to flood hazards.

Placer County Tahoe Basin Area Plan Program-Level Analysis

Alternative 1: Proposed Area Plan

Implementation of Alternative 1 would stimulate redevelopment within mixed-use and town center areas. The Kings Beach design concept is located outside of the 100-year flood zone, however portions of the communities of Kings Beach, Tahoe Vista, Tahoe Pines, Dollar Point, Tahoe City, and Homewood could be inundated during a 100-year flood event. The potential for future projects to expose people or property to flood risks would be minimized through compliance with the Placer County Flood Damage Prevention Regulations (Section 15.52, Placer County Code). These regulations require that projects located within a mapped 100-year flood zone be evaluated by a registered civil engineer. An engineering study would be required including a hydraulic analysis that demonstrates that the project would not aggravate or cause flooding problems on an adjacent property, would not create risks to users of the project itself, and would not cause an increase in the 100-year flood elevation. In addition, TRPA Code Section 35.4.2 prohibits additional development, grading or filling of lands within the 100-year floodplain, with limited exceptions provided for outdoor recreation, public service facilities, floodplain crossings, and water quality control facilities.

Although the Alternative 1 Plan area contains low-lying areas that are within the 100-year flood zone, project level protections would ensure that any future development or redevelopment projects do not result in exposure of people or property to flood hazards. Therefore, implementation of Alternative 1 would have a **less-than-significant** impact relative to flooding.

Alternative 2: Area Plan with No Substitute Standards

The potential flood hazard effects of Alternative 2 are the same as those described for Alternative 1, above. Although the Alternative 2 Plan area contains low-lying areas that are within the 100-year flood zone, project level protections would ensure that any future development or redevelopment projects do not result in exposure of people or property to flood hazards. Therefore, implementation of Alternative 2 would have a **less-than-significant** impact relative to flooding.

Alternative 3: Reduced Intensity Area Plan

The potential flood hazard effects of Alternative 3 are the same as those described for Alternative 1, above. Although the Alternative 3 Plan area contains low-lying areas that are within the 100-year flood zone, project level protections would ensure that any future development or redevelopment projects do not result in exposure of people or property to flood hazards. Therefore, implementation of Alternative 3 would have a **less-than-significant** impact relative to flooding.

Alternative 4: No Project

Alternative 4 is the no-project alternative and would make not changes to development patterns or policies. Because all existing zoning and protections would remain in effect, Alternative 4 would have **no impact** on flooding or flood hazards.

Mitigation Measures

No mitigation is required.

Tahoe City Lodge Project-Level Analysis**Alternative 1: Proposed Lodge**

The Tahoe City Lodge site is located outside of the 500-year flood zone (FIRM 06061C0225F). Because the project site would not experience flooding from 100-year or 500-year storm events and would not alter the base flood elevation of the 100-year flood, Alternative 1 would have **no impact** relative to the exposure of people and property to flood hazards.

Alternative 2: Reduced Scale Lodge

The potential flood hazard effects of Alternative 2 are the same as those described for Alternative 1, above. Because the project site is not located in the 100-year or 500-year floodplain, Alternative 2 would have **no impact** relative to exposure of people and property to flood hazards.

Alternative 3: Reduced Height Lodge

The potential flood hazard effects of Alternative 3 are the same as those described for Alternative 1, above. Because the project site is not located in the 100-year or 500-year floodplain, Alternative 3 would have **no impact** relative to exposure of people and property to flood hazards.

Alternative 4: No Project

The potential flood hazard effects of Alternative 4 are the same as those described for Alternative 1, above. Because the project site is not located in the 100-year or 500-year floodplain, Alternative 4 would have **no impact** relative to exposure of people and property to flood hazards.

Mitigation Measures

No mitigation is required.

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