



5.9 Hydrology and Water Quality

5.9 HYDROLOGY AND WATER QUALITY

This section analyzes potential project impacts on existing drainage patterns, surface hydrology, and flood control facilities and water quality conditions in the project area. Mitigation measures are recommended to avoid potential impacts or reduce them to a less than significant level. This analysis is based on the *Preliminary Drainage Study* (Drainage Study), prepared by Triad/Holmes Associates, dated August 12, 2016; refer to [Appendix 11.7, *Drainage Study*](#).

5.9.1 EXISTING SETTING

REGIONAL HYDROLOGY AND DRAINAGE CONDITIONS

Hydrologic Setting

The Town of Mammoth Lakes is located within the Mammoth Hydrologic Basin. This approximate 71-square-mile basin is part of the Long Valley Subunit of the Owens Valley Hydrologic Unit. The Mammoth Hydrologic Basin includes many alpine lakes, surface streams, and springs, which are all tributary to Mammoth Creek or Hot Creek. Mammoth Creek serves as the principal drainage course through the Town of Mammoth Lakes and flows into Hot Creek at a point to the east of U.S. Highway 395. Hot Creek then flows easterly into the Owens River. The total length of the Mammoth Creek/Hot Creek drainage system is approximately 18 miles.

Major Watersheds

The Mammoth Hydrologic Basin contains six distinct major watersheds. Watersheds I through V comprise the major tributary area of Mammoth Creek (located upstream of U.S. Highway 395) and Hot Creek (located downstream of U.S. Highway 395). The remaining Basin area has been combined into Watershed VI, even though minor drainage districts could be designated. Watershed I encompasses the Lakes Basin and contains the largest and most numerous lakes within the Mammoth Hydrologic Basin. Watershed II, includes portions of Mammoth Mountain and the Town of Mammoth Lakes (including the project site), which drains directly into Mammoth Creek. Watershed III drains into Mammoth Creek near U.S. Highway 395.

Regional Drainage and Runoff

Mammoth Creek serves as the primary surface watercourse in the Mammoth Hydrologic Basin. Secondary watercourses in the Basin include Murphy Gulch, Hot Creek, Bodle Ditch, Laurel Creek, and Sherwin Creek. Flow rates decrease in summer after peaking in the spring snowmelt. Drainage flows to the east in areas located to the north of the Old Mammoth and Snowcreek Districts. The Old Mammoth and Snowcreek Districts are located in a separate mini-watershed, draining directly into one of two tributaries of Mammoth Creek. In other areas located to the south of State Route (SR)-203, drainage is accomplished by sheet flow through the Town of Mammoth Lakes and then into the existing roadway drainage system or unimproved channels/ditches, eventually draining down SR-203, which acts as a watercourse. For areas located to the north of SR-203, surface flows are carried via Canyon Boulevard into pipelines to SR-203.

Existing Regional Drainage Infrastructure

Existing drainage facilities are located throughout the Town of Mammoth Lakes. In 1975, a major storm drainage project established the area's storm drain system from Mammoth Slopes to Mammoth Ranger Station via Canyon Boulevard, Berner Street, Alpine Circle, and Main Street in the North Village Specific Plan area. This system, set forth in the Mammoth Lakes Storm Drain Master Plan (Storm Drain Master Plan) and described below, discharges into Murphy Gulch located to the east of the Mammoth Ranger Station. A 43,560-square-foot siltation basin was constructed at the downstream end of Murphy Gulch channel in conjunction with these drainage improvements. A comparison of the design flow capacities versus the tributary discharge values found that 50 of 445 storm drain pipes did not meet the required capacity for the 20-year event. The 100-year event was analyzed only on pipes that run parallel to the street and found that 16 of 82 pipes are undersized.

PROJECT SITE HYDROLOGY AND DRAINAGE CONDITIONS

Physical Setting of the Project Site

The site is located at the existing Mammoth Creek Park West. According to the Drainage Study, the subject site slopes gently from west to east at a grade rate of 2.5 percent. Ground surface elevations range from approximately 7,860 feet above mean sea level (msl) in the northwest corner of the site to approximately 7,847 feet above msl in the northeast corner. Other than the existing playground facility and associated paved surface parking lot, the project site is undeveloped area covered by big sagebrush scrub with scattered pine trees and artificial turf associated with the park activities.

Drainage From Off-Site Sources

Currently, drainage from the off-site multi-family developments to the north and west of the project site sheet flows across the property from west to east. These two off-site tributary areas, labeled Areas B1 and B2 (identified on [Exhibit 5.9-1, Existing Drainage](#)), contribute sheet flows onto the project site from the north and west.

As discussed on [Table 5.9-1, Existing Flowrates](#), Area B1 is 2.5 acres and includes residential developments adjacent to the Mammoth Creek Park West to the north and west. During the 20- and 100-year intensity storms, the runoff quantities are 2.9 cubic feet per second (cfs) and 4.8 cfs, respectively. As discussed on [Table 5.9-1](#), Area B2 is 5.3 acres located west of the project site. This area also includes the residential development with runoff quantities of 3.5 cfs and 10.1 cfs for the storms of 20- and 100-year intensities, respectively.

**Table 5.9-1
Existing Flowrates**

Area ID	Area (Acres)	Flow (cfs)	
		20-year	100-year
B1	2.5	2.9	4.8
B2	5.3	3.5	10.1
A	6.4	1.9	3.5
Notes: cfs = cubic feet per second			
Source: Triad/Holmes Associates, <i>Preliminary Drainage Study</i> , dated August 12, 2016.			



Source: Triad/Holmes Associates, Preliminary Drainage Study, dated August 12, 2016.

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ENVIRONMENTAL IMPACT REPORT
MAMMOTH CREEK PARK WEST
NEW COMMUNITY MULTI-USE FACILITIES
Existing Drainage

Exhibit 5.9-1

Drainage From On-Site Sources

The existing impervious areas of the project site encompass approximately 18,142 square feet (or 6.4 percent of the project site). As shown on [Exhibit 5.9-1](#) and [Table 5.9-1](#), the existing 20- and 100-year runoffs through the project site (referenced as Area A) are 1.9 cfs and 3.5 cfs, respectively. Discharge of runoff at the project site occurs at the eastern portion of the project site, which is tributary to Mammoth Creek (to the east-southeast).

EXISTING OFF-SITE MUNICIPAL STORM DRAIN FACILITIES

As discussed above, the project site sheets flows eastward across the project site. Currently, there are two drywells along the eastern portion of the project site.¹ The first drywell is located to the south of the Mammoth Creek Park West driveway entrance. This drywell catches all of the conveyed flow from the southern portion of the existing parking lot. The second drywell is located to the north of the Mammoth Creek Park West driveway entrance. This drywell catches the conveyed flow from the northern portion of the parking lot. This second drywell also has an overflow pipe, which directs the flow to a semi natural vegetated depression located to the north, along Old Mammoth Road.

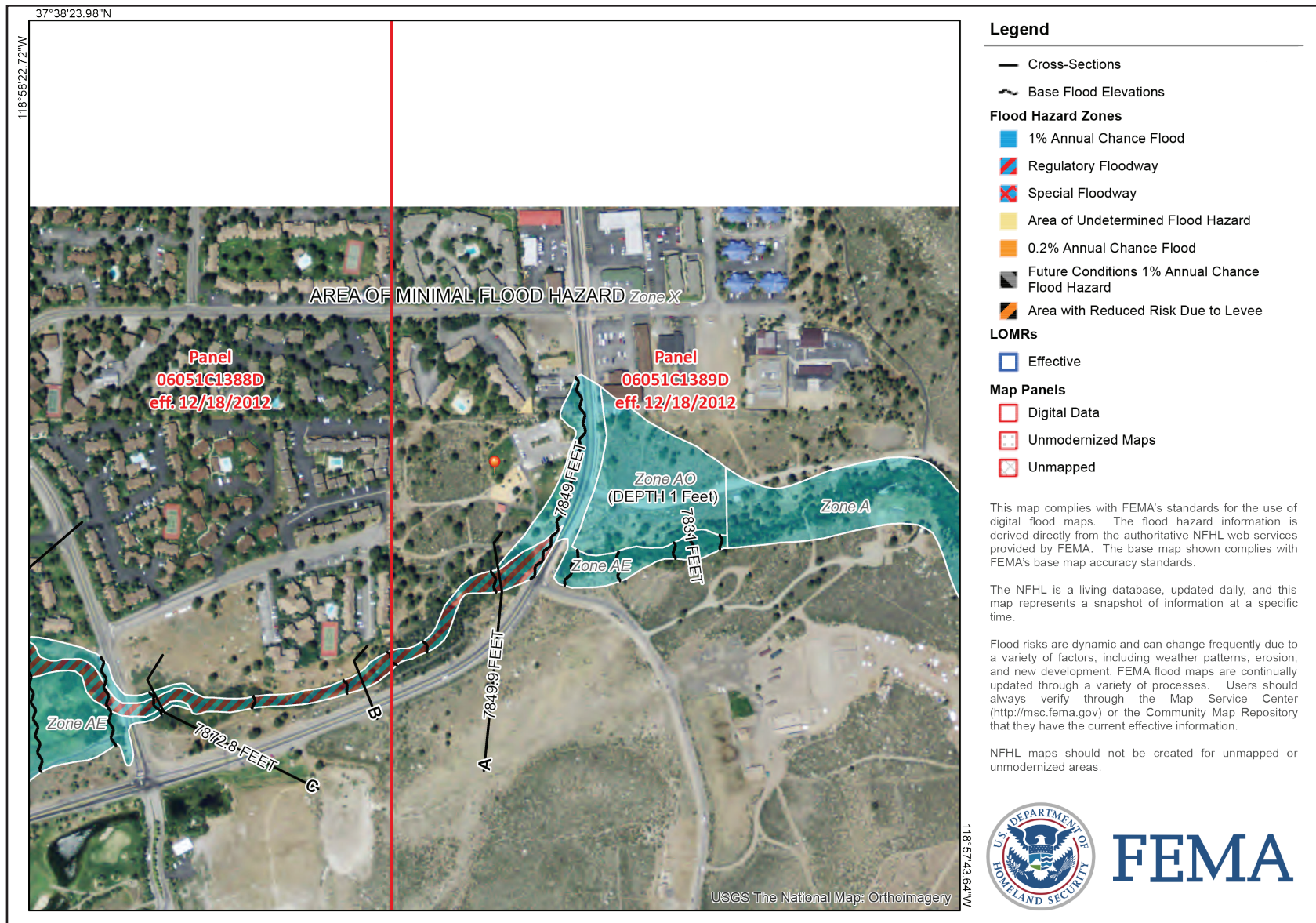
It is noted that this semi natural vegetated depression also takes in other off-site flows, other than the project site. There is a 12-inch corrugated metal pipe (CMP) that crosses the Mammoth Creek Park West driveway entrance and spills into this depression, as well as three storm drain inlets (located in the curb line of Old Mammoth Road) that convey water through piping under the street to the same area.

FLOODPLAIN MAPPING

According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM), portions of the project site are located in the 100-year flood zone²; refer to [Exhibit 5.9-2, FEMA Flood Zones](#). These areas, as depicted on [Exhibit 5.9-2](#), are situated along the eastern and southeastern portions of the project site. Currently, uses in the 100-year flood zone include the driveway serving the project site, the rock garden located to the south of the driveway, and vacant land at the northeast corner of the project site.

¹ Correspondence with Haislip Hayes, PE, Engineering Manager Town of Mammoth Lakes, conducted via e-mail on October 4, 2016.

² Federal Emergency Management Agency, *Flood Insurance Rate Map*, Map Number 06051C1389D, Panel 1389 of 2050, effective date February 18, 2011.



Source: U.S. Department of Homeland Security, FEMA, dated October 11, 2016.

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ENVIRONMENTAL IMPACT REPORT
MAMMOTH CREEK PARK WEST
NEW COMMUNITY MULTI-USE FACILITIES
FEMA Flood Zones

Exhibit 5.9-2

EXISTING STORM WATER QUALITY CONDITIONS

Nonpoint Source Pollutants

A net effect of urbanization can be to increase pollutant export over naturally occurring conditions. The impact of the higher export affects the adjacent streams and also the downstream receiving waters. However, an important consideration in evaluating storm water quality is to assess whether the beneficial use to the receiving waters is impaired. Nonpoint source pollutants have been characterized by the following major categories in order to assist in determining the pertinent data and its use. Receiving waters can assimilate a limited quantity of various constituent elements; however, there are thresholds beyond which the measured amount becomes a pollutant and results in an undesirable impact. Standard water quality categories of typical urbanization impacts are:

- Sediment. Sediment is made up of tiny soil particles that are washed or blown into surface waters. It is the major pollutant by volume in surface water. Suspended soil particles can cause the water to look cloudy or turbid. The fine sediment particles also act as a vehicle to transport other pollutants, including nutrients, trace metals, and hydrocarbons. Construction sites are the largest source of sediment for urban areas under development. Another major source of sediment is streambank erosion, which may be accelerated by increases in peak rates and volumes of run-off due to urbanization.
- Nutrients. Nutrients are a major concern for surface water quality, especially phosphorous and nitrogen, which can cause algal blooms and excessive vegetative growth. Of the two, phosphorus is usually the limiting nutrient that controls the growth of algae in lakes. The orthophosphorous form of phosphorus is readily available for plant growth. The ammonium form of nitrogen can also have severe effects on surface water quality. The ammonium is converted to nitrate and nitrite forms of nitrogen in a process called nitrification. This process consumes large amounts of oxygen, which can impair the dissolved oxygen levels in water. The nitrate form of nitrogen is very soluble and is found naturally at low levels in water. When nitrogen fertilizer is applied to lawns or other areas in excess of plant needs, nitrates can leach below the root zone, eventually reaching ground water. Orthophosphate from auto emissions also contributes phosphorus in areas with heavy automobile traffic. As a general rule of thumb, nutrient export is greatest from development sites with the most impervious areas. Other problems resulting from excess nutrients are: 1) surface algal scums; 2) water discolorations; 3) odors; 4) toxic releases; and 5) overgrowth of plants. Common measures for nutrients are total nitrogen, organic nitrogen, total Kjeldahl nitrogen (TKN), nitrate, ammonia, total phosphate, and total organic carbon (TOC).
- Trace Metals. Trace metals are primarily a concern because of their toxic effects on aquatic life, and their potential to contaminate drinking water supplies. The most common trace metals found in urban run-off are lead, zinc, and copper. Fallout from automobile emissions is also a major source of lead in urban areas. A large fraction of the trace metals in urban run-off are attached to sediment; this effectively reduces the level, which is immediately available for biological uptake and subsequent bioaccumulation. Metals associated with sediment settle out rapidly and accumulate in the soils. Urban run-off events typically occur

over a shorter duration, reducing the amount of exposure, which could be toxic to the aquatic environment. The toxicity of trace metals in run-off varies with the hardness of the receiving water. As total hardness of the water increases, the threshold concentration levels for adverse effects increases.

- Oxygen-Demanding Substances. Aquatic life is dependent on the dissolved oxygen in the water. When organic matter is consumed by microorganisms, dissolved oxygen is consumed in the process. A rainfall event can deposit large quantities of oxygen-demanding substance in lakes and streams. The biochemical oxygen demand of typical urban run-off is on the same order of magnitude as the effluent from an effective secondary wastewater treatment plant. A problem from low dissolved oxygen (DO) results when the rate of oxygen-demanding material exceeds the rate of replenishment. Oxygen demand is estimated by direct measure of DO and indirect measures such as biochemical oxygen demand (BOD), chemical oxygen demand (COD), oils and greases, and TOC.
- Bacteria. Bacteria levels in undiluted urban run-off exceed public health standards for water contact recreation almost without exception. Studies have found that total coliform counts exceeded the U.S. Environmental Protection Agency's (EPA) water quality criteria at almost every site and almost every time it rained. The coliform bacteria that are detected may not be a health risk by themselves, but are often associated with human pathogens.
- Oil and Grease. Oil and grease contain a wide variety of hydrocarbons, some of which could be toxic to aquatic life in low concentrations. These materials initially float on water and create the familiar rainbow-colored film. Hydrocarbons have a strong affinity for sediment and quickly become absorbed to it. The major source of hydrocarbons in urban run-off is through leakage of crankcase oil and other lubricating agents from automobiles. Hydrocarbon levels are highest in the run-off from parking lots, roads, and service stations. Residential land uses generate less hydrocarbon export, although illegal disposal of waste oil into storm water can be a local problem.
- Other Toxic Chemicals. Priority pollutants are generally related to hazardous wastes or toxic chemicals and can be sometimes detected in storm water. Priority pollutant scans have been conducted in previous studies of urban run-off, which evaluated the presence of over 120 toxic chemicals and compounds. The scans rarely revealed toxins that exceeded the current safety criteria. The urban run-off scans were primarily conducted in suburban areas not expected to have many sources of toxic pollutants (with the possible exception of illegally disposed or applied household hazardous wastes). Measures of priority pollutants in storm water include: 1) phthalate (plasticizer compound); 2) phenols and creosols (wood preservatives); 3) pesticides and herbicides; 4) oils and greases; and 5) metals.

PHYSICAL CHARACTERISTICS OF SURFACE WATER QUALITY

Standard parameters, which can assess the quality of storm water, provide a method of measuring impairment. A background of these typical characteristics assists in understanding water quality requirements. The quantity of a material in the environment and its characteristics determine the degree of availability as a pollutant in surface run-off. In an urban environment, the quantity of certain pollutants in the environment is a function of the intensity of the land use. For instance, a

high density of automobile traffic makes a number of potential pollutants (such as lead and hydrocarbons) more available. The availability of a material, such as a fertilizer, is a function of the quantity and the manner in which it is applied. Applying fertilizer in quantities that exceed plant needs leaves the excess nutrients available for loss to surface or ground water.

The physical properties and chemical constituents of water traditionally have served as the primary means for monitoring and evaluating water quality. Evaluating the condition of water through a water quality standard refers to its physical, chemical, or biological characteristics. Water quality parameters for storm water comprise a long list and are classified in many ways. Typically, the concentration of an urban pollutant, rather than the annual load of that pollutant, is required to assess a water quality problem. Some of the physical, chemical, or biological characteristics that evaluate the quality of the surface run-off are listed below.

- Dissolved Oxygen. DO in the water has a pronounced effect on the aquatic organisms and the chemical reactions that occur. It is one of the most important biological water quality characteristics in the aquatic environment. The DO concentration of a water body is determined by the solubility of oxygen, which is inversely related to water temperature, pressure, and biological activity. DO is a transient property that can fluctuate rapidly in time and space, and represents the status of the water system at a particular point and time of sampling. The decomposition of organic debris in water is a slow process, as are the resulting changes in oxygen status. The oxygen demand is an indication of the pollutant load and includes measurements of biochemical oxygen demand or chemical oxygen demand.
- Biochemical Oxygen Demand. The BOD is an index of the oxygen-demanding properties of the biodegradable material in the water. Samples are taken from the field and incubated in the laboratory at 20°C, after which the residual dissolved oxygen is measured. The BOD value commonly referenced is the standard 5-day values. These values are useful in assessing stream pollution loads and for comparison purposes.
- Chemical Oxygen Demand. The COD is a measure of the pollutant loading in terms of complete chemical oxidation using strong oxidizing agents. It can be determined quickly because it does not rely on bacteriological actions as with BOD. COD does not necessarily provide a good index of oxygen demanding properties in natural waters.
- Total Dissolved Solids. Total dissolved solids (TDS) concentration is determined by evaporation of a filtered sample to obtain residue whose weight is divided by the sample volume. The TDS of natural waters varies widely. There are several reasons why TDS is an important indicator of water quality. Dissolved solids affect the ionic bonding strength related to other pollutants such as metals in the water. TDS are also a major determinant of aquatic habitat. TDS affects saturation concentration of dissolved oxygen and influences the ability of a water body to assimilate wastes. Eutrophication rates depend on TDS.
- pH. The pH of water is the negative log, base 10, of the hydrogen ion (H^+) activity. A pH of 7 is neutral; a pH greater than 7 indicates alkaline water; a pH less than 7 represents acidic water. In natural water, carbon dioxide reactions are some of the most important in establishing pH. The pH at any one time is an indication of the balance of chemical equilibrium in water and affects the availability of certain chemicals or nutrients in water for

uptake by plants. The pH of water directly affects fish and other aquatic life; generally, toxic limits are pH values less than 4.8 and greater than 9.2.

- *Alkalinity.* Alkalinity is the opposite of acidity, representing the capacity of water to neutralize acid. Alkalinity is also linked to pH and is caused by the presence of carbonate, bicarbonate, and hydroxide, which are formed when carbon dioxide is dissolved. A high alkalinity is associated with a high pH and excessive solids. Most streams have alkalinities less than 200 milligrams per liter (mg/l). Ranges of alkalinity of 100-200 mg/l seem to support well-diversified aquatic life.
- *Specific Conductance.* The specific conductivity of water, or its ability to conduct an electric current, is related to the total dissolved ionic solids. Long term monitoring of project waters can develop a relationship between specific conductivity and TDS. Its measurement is quick and inexpensive and can be used to approximate TDS. Specific conductivities in excess of 2000 microohms per centimeter ($\mu\text{ohms/cm}$) indicate a TDS level too high for most freshwater fish.
- *Turbidity.* The clarity of water is an important indicator of water quality that relates to the alkalinity of photosynthetic light to penetrate. Turbidity is an indicator of the property of water that causes light to become scattered or absorbed. Turbidity is caused by suspended clays and other organic particles. It can be used as an indicator of certain water quality constituents, such as predicting sediment concentrations.
- *Nitrogen.* Sources of nitrogen in storm water are from the additions of organic matter to water bodies or chemical additions. Ammonia and nitrate are important nutrients for the growth of algae and other plants. Excessive nitrogen can lead to eutrophication since nitrification consumes dissolved oxygen in the water. Nitrogen occurs in many forms. Organic nitrogen breaks down into ammonia, which eventually becomes oxidized to nitrate-nitrogen, a form available for plants. High concentrations of nitrate-nitrogen (N/N) in water can stimulate growth of algae and other aquatic plants, but if phosphorus (P) is present, only about 0.30 mg/l of nitrate-nitrogen is needed for algal blooms. Some fish life can be affected when nitrate-nitrogen exceeds 4.2 mg/l. There are a number of ways to measure the various forms of aquatic nitrogen. Typical measurements of nitrogen include Kjeldahl nitrogen (organic nitrogen plus ammonia), ammonia, nitrite plus nitrate, nitrite, and nitrogen in plants. The principal water quality criterion for nitrogen focuses on nitrate and ammonia.
- *Phosphorus.* Phosphorus is an important component of organic matter. In many water bodies, phosphorus is the limiting nutrient that prevents additional biological activity from occurring. The origin of this constituent in urban storm water discharge is generally from fertilizers and other industrial products. Orthophosphate is soluble and is considered to be the only biologically available form of phosphorus. Since phosphorus strongly associates with solid particles and is a significant part of organic material, sediments influence concentration in water and are an important component of the phosphorus cycle in streams. Important methods of measurement include detecting orthophosphate and total phosphorus.

Existing Storm Water Quality Conditions

Mammoth Creek is classified as an impaired water body and has been placed on the 303(d) list of impaired waters for the following pollutants: manganese, mercury, and total dissolved solids (TDS). According to the Lahontan Regional Water Quality Control Board (RWQCB), manganese and mercury impairment are caused by natural sources, whereas the source of TDS are unknown.

A Total Maximum Daily Load (TMDL) sets a limit for the total amount of a particular pollutant that can be discharged to a waterbody, such that the pollutant loads from all sources would not impair the designated beneficial uses of the waterbody. The timeframe for compliance with TMDL targets varies, but may take many years. TMDLs often include a compliance schedule, identifying interim and final targets. The Lahontan RWQCB has not set any TMDLs for these pollutants of concern within this segment of Mammoth Creek.

As discussed above, the project site is currently developed with passive and active recreational uses and a surface parking lot. These uses are assumed to generate suspended solid/sediments, nutrients, heavy metals, pathogens, pesticides, oil and grease, toxic organic compounds, and trash and debris.

Beneficial Uses

The Lahontan RWQCB adopted a Water Quality Control Plan for the Lahontan Region (Basin Plan), which recognizes and reflects regional differences in existing water quality, the beneficial uses of the region's ground and surface waters, and local water quality conditions and problems. The Basin Plan identifies beneficial uses for waters within the Lahontan Region. A beneficial use is one of the various ways that water can be used for the benefit of people and/or wildlife. Although more than one beneficial use may be identified for a given waterbody, the most sensitive use must be protected. The Basin Plan identifies the following beneficial uses for Mammoth Creek in the vicinity of the project site³:

- Cold Freshwater Habitat (COLD). Beneficial uses of waters that support cold water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
- Commercial and Sportfishing (COMM). Beneficial uses of waters used for commercial or recreational collection of fish or other organisms including, but not limited to, uses involving organisms intended for human consumption.
- Municipal and Domestic Supply (MUN). Beneficial uses of waters used for community, military, or individual water supply systems including, but not limited to, drinking water supply.
- Water Contact Recreation (REC-1). Beneficial uses of waters used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, and use of natural hot springs.

³ U.S. Environmental Protection Agency, *Waterbody Quality Assessment Report*, Water Quality Assessment and TMDL Information, https://ofmpub.epa.gov/waters10/attains_waterbody.control?p_au_id=CAR6031005120080816102743&p_cycle=2010, accessed September 8, 2016.

5.9.2 REGULATORY SETTING

This section discusses the Federal, State, and local drainage policies and requirements applicable to the project site.

FEDERAL LEVEL

Federal Clean Water Act (Section 404)

The State Water Resources Control Board (SWRCB) and the Lahontan RWQCB enforce State of California statutes, equivalent to or more stringent than the federal statutes, pertaining to Section 404 of Federal Clean Water Act (CWA). The Lahontan RWQCB is responsible for establishing water quality standards and objectives that protect the beneficial uses of various waters in their region. The Lahontan RWQCB is also responsible for protecting surface and ground waters from both point and non-point sources of pollution.

National Pollution Discharge Elimination System

The 1972 amendments to the CWA prohibit the discharge of any pollutant to navigable waters of the United States from a point source unless the discharge is authorized by a National Pollution Discharge Elimination System (NPDES) Permit. While the original CWA focused on point source discharges (defined pipes and outfalls), stormwater discharges were added to the scope of the law by Congress in 1987. The EPA adopted final regulations that established Phase I stormwater discharge control requirements for the NPDES program in 1990. These regulations required large municipalities and specific industrial sites to obtain stormwater discharge permits under the NPDES program. In addition, these regulations required that stormwater discharge permits be issued to large construction activities consisting of five acres or more of land.

In 2003, the Phase II NPDES program requirements took effect, regulating nonpoint source discharges from all construction sites one acre or more in size and expanding the permit requirements to smaller municipalities. In California, the NPDES program is administered by the SWRCB through the nine Regional Water Control Boards (RWQCBs). Because the Town of Mammoth Lakes is a small community, it falls below the threshold for the Phase II NPDES program's municipal stormwater regulations. Therefore, the Town's municipal storm drainage system is not required to be covered by an NPDES permit. However, under a Memorandum of Understanding (MOU) with the Lahontan RWQCB (MOU No. 6-91-926), the Town administers erosion control measures on a project by project basis to make sure that they are in place and operational. Further, the construction activities component of the Phase II NPDES program does apply to construction sites that disturb one acre or more within the Town.

National Flood Insurance Program

With the passage of the National Flood Insurance Act of 1968, the U.S. Congress established the National Flood Insurance Program (NFIP), enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is

based on an agreement between communities and the federal government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

The Flood Disaster Protection Act of 1973 prohibits federal agencies from providing financial assistance for acquisition or construction of buildings and certain disaster assistance in the floodplains in any community that did not participate in the NFIP by July 1, 1975, or within 1 year of being identified as flood-prone. This law required federal agencies and federally insured or regulated lenders to require flood insurance on all grants and loans for acquisition or construction of buildings in designated Special Flood Hazard Areas (SFHAs) in communities that participate in the NFIP. This requirement is referred to as the Mandatory Flood Insurance Purchase Requirement. The SFHA is that land within the floodplain of a community subject to a one-percent or greater chance of flooding in any given year, commonly referred to as the 100-year flood. The one-percent-annual-chance flood (or 100-year flood) represents a magnitude and frequency that has a statistical probability of being equaled or exceeded in any given year, the 100-year flood has a 26-percent (or 1 in 4) chance of occurring over a 30-year period.

In 1994, Congress amended the 1968 Act and the 1973 Act with the National Flood Insurance Reform Act (NFIRA). The 1994 Act included measures to (1) increase compliance by mortgage lenders, (2) increase the amount of flood insurance coverage that can be purchased, (3) provide flood insurance coverage for the cost of complying with floodplain management regulations by individual property owners, (4) establish a Flood Mitigation Assistance grant program to assist States and communities to develop mitigation plans and implement measures to reduce future flood damages to structures, (5) codify the NFIP's Community Rating System, and (6) require FEMA to assess its flood hazard map inventory at least once every five years.

STATE LEVEL

California Toxics Rule

The California Toxics Rule (CTR) is a federal regulation issued by the EPA providing water quality criteria for potentially toxic constituents in receiving waters with human health or aquatic life designated uses in the State of California. CTR criteria are applicable to the receiving water body and therefore must be calculated based upon the probable hardness values of the receiving waters for evaluation of acute (and chronic) toxicity criteria. At higher hardness values for the receiving water, copper, lead, and zinc are more likely to be complexed (bound with) components in the water column. This in turn reduces the bioavailability and resulting potential toxicity of these metals.

California Porter-Cologne Act

The CWA places the primary responsibility for the control of surface water pollution and for planning the development and use of water resources with the states, although it does establish certain guidelines for the states to follow in developing their programs and allows the EPA to withdraw control from states with inadequate implementation mechanisms.

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a water quality control plan for its region. The regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its state water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

California Department of Fish and Game Code

Section 1602 of the California Department of Fish and Game Code requires any entity (e.g., person, State or local government agency, or public utility) who proposes a project that will substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, it must first notify the California Department of Fish and Wildlife (CDFW) of the proposed project. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish or other aquatic life and watercourses having a surface or subsurface flow that support, or have supported, riparian vegetation. The CDFW's jurisdiction extends to the river, stream, or lake's top of bank, or to the outer edge of the adjacent riparian vegetation (i.e., riparian "drip line"), whichever is greater. If the CDFW determines that a proposed project may substantially adversely affect existing resources, a Lake or Streambed Alteration Agreement would be required.

State Water Resources Control Board

The SWRCB administers water rights, water pollution control, and water quality functions throughout the State, while the RWQCBs conduct planning, permitting, and enforcement activities. For the proposed project, the NPDES permit is divided into two parts: construction and post-construction. The construction permitting is administered by the SWRCB, while the post-construction permitting is administered by the RWQCB.

In 1992, the SWRCB adopted the General Construction Activity Storm Water Permit (GCASWP or General Permit), which is ". . . required for all stormwater discharges associated with construction activity where clearing, grading, and excavation results in a land disturbance of 5 or more acres." However, by Modification of Water Quality Order 99-08-DWQ (approved by Motion on December 2, 2002) and consistent with the Phase II NPDES program for stormwater, the SWRCB lowered the threshold acreage of soil disturbance requiring permit coverage from 5 acres to 1 acre. Since development projected to occur as part of the project would fall within these criteria, this project must be covered under the General Permit. In order to be covered under the General Permit, the

project applicant for each individual project to be developed within the project area must submit a Notice of Intent (NOI) to the SWRCB. For coordinated development proposals, a single NOI can be submitted.

The General Permit requires all owners of land where construction activities occur (i.e., dischargers) to:

- Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation;
- Develop and implement a Stormwater Pollution Prevention Plan (SWPPP); and
- Perform inspections of stormwater pollution prevention measures (control practices).

The General Permit authorizes the discharge of stormwater associated with construction activity from construction sites. However, it prohibits the discharge of materials other than stormwater and all discharges which contain hazardous substances in excess of reportable quantities established at Title 40 Code of Federal Regulations Sections 117.3 or 302.4 unless a separate NPDES permit has been issued to regulate those discharges.

The General Permit requires development and implementation of a SWPPP, emphasizing Best Management Practices (BMPs), which are defined as “schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States.” The SWPPP has two major objectives:

- To help identify the sources of sediment and other pollutants that affect the quality of stormwater discharges; and
- To describe and ensure the implementation of practices to reduce sediment and other pollutants in stormwater discharges.

In addition, dischargers are required to conduct inspections before and after storm events and to annually certify that they are in compliance with the General Permit. The General Permit is currently being revised and reissued to include numeric action levels and numeric affluent limits for certain pollutants, additional BMP, and other measures to further minimize potential impacts associated with construction activities.

REGIONAL LEVEL

Lahontan Regional Water Quality Control Board

The Town is within the jurisdictional boundaries of the Lahontan RWQCB. One of nine regional boards in the state, the RWQCB develops and enforces water quality objectives and implementation plans that safeguard the quality of water resources in its region. Its duties include developing “basic plans” for its hydrologic area, issuing waste discharge requirements, taking enforcement action against violators, and monitoring water quality. In March 1995, a *Water Quality Control Plan for the Lahontan Region, North and South Basins* (Basin Plan), adopted by the RWQCB, took effect. The Basin Plan incorporates language from and replaces three earlier plans: the Lahontan Regional Board’s

1975 North and South Lahontan Basin Plans, as amended through 1991, and the State Water Resources Control Board's 1980 *Lake Tahoe Basin Water Quality Plan*, as amended through 1989. The earlier plans were combined into a single plan which was adopted by the Lahontan Regional Board in November 1994 and which took effect upon approval by the California Office of Administrative Law in March 1995. It should be noted that a 2015 version of the Basin Plan is now available, incorporating amendments approved between 1995 and 2015.⁴ These amendments do not directly affect any of the local waterbodies discussed in this section.

The Basin Plan outlines policies and regulations for municipal wastewater, treatment, disposal, and reclamation. The Basin Plan also establishes specific erosion and sediment control guidelines for land developments within the Town. These standards are designed to provide developers with a uniform approach for the design and installation of adequate systems to control erosion and mitigate urban drainage impacts from the Town in an effort to prevent the degradation of waters of Mammoth Creek and Hot Creek. Under a MOU with the Lahontan RWQCB (MOU No. 6-91-926), the Town administers erosion control measures on a project by project basis to make sure that they are in place and operational.

Non-Point Source Pollution Control Program

The purpose of the Non-Point Source Pollution (NPS) Control Program (NPS Program Plan) is to improve the State's ability to effectively manage NPS pollution and conform to the requirements of the CWA and the Federal Coastal Zone Act Reauthorization Amendments of 1990. These documents were developed by staff of the SWRCB's Division of Water Quality and California Coastal Commission (CCC), in coordination with the RWQCBs and staff from over 20 other State agencies.

Assembly Bill 3030

In 1992, the California Legislature approved AB-3030 to allow local agencies whose service areas overlie a state designated groundwater basin to develop and implement groundwater management plans (GMP). The law also stated that a local agency might not manage ground water pursuant to AB-3030 within a service area of another local agency without the agreement of that entity. In effect, the purpose of the GMP was two-fold:

- Outline the role of the local agency in managing the local groundwater resource; and
- Maximize the water supply and to protect the quality of the supply.

Components of the GMP include the following:

- Control of saline water intrusion;
- Identification and management of wellhead protection areas and recharge areas;
- Regulate migration of contaminated ground water;
- Administer well abandonment and destruction programs;
- Mitigate overdraft conditions;

⁴ State Water Resources Control Board, *Fully Approved Basin Plan Amendments*, http://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/docs/bpa2014x.pdf, accessed December 27, 2016.

- Replenish ground water extracted by producers;
- Monitor ground water levels and storage;
- Facilitate conjunctive uses;
- Identification policies for well construction;
- Construct/operate contaminated ground water remediation, recharge, storage, conservation, water recycling and extraction;
- Develop/maintain relationships with state/federal regulatory agencies; and
- Review land use plans and coordinate with land use planning agencies to assess activities that may create a risk of contaminating ground water.

LOCAL LEVEL

Town of Mammoth Lakes General Plan

Town policies pertaining to hydrology and water quality are contained in the Resource Management and Conservation and Public Health and Safety Elements of the *Town of Mammoth Lakes General Plan 2007* (General Plan), adopted on August 15, 2007. The intent of the Resource Management and Conservation Element is to establish and emphasize our stewardship of the community's natural resources. These policies include, but are not limited to, the following:

- Support efforts to regulate in-stream flows and lake levels to maintain fishery and other wildlife habitat (R.1.G.);
- Work with MCWD to ensure that groundwater is not over-drafted and does not cause negative environmental impacts to resources such as surface water, springs and native vegetation (R.1.H.);
- Wisely manage natural and historic drainage patterns (R.5.A.);
- Require parking lot storm drainage systems to include facilities to separate oils and silt from storm water where practical and when warranted by the size of the project (R.5.B.); and
- Prevent erosion, siltation, and flooding by requiring use of Best Management Practices (BMPs) during and after construction (R.5.C.).

The intent of the Public Health and Safety Element is to improve the quality of life to encourage people to live and work in Mammoth Lakes. The policy applicable to hydrology and water quality states that the quality of life may be improved by restricting development in flood areas and near perimeter of natural water bodies (S.3.K.).

Town of Mammoth Lakes Storm Drain Master Plan Update

In May 2005, the Town updated its 1984 Storm Drain Master Plan (Storm Drain Master Plan). The Storm Drain Master Plan was primarily formulated to control the existing drainage and erosion problems by establishing a program to rehabilitate existing development areas, while also providing policies, standards, and procedures to guide future development. The Storm Drain Master Plan identifies several existing drainage problems in the Town including the following:

- Lack of a stable drainage system in much of the community located within the Urban Growth Boundary;
- Roadside and slope erosion due to uncontrolled runoff in poorly defined channels from steep areas;
- Drainage that crosses private property, and development in or near the natural drainage channels;
- Undersized culverts and channels; and
- Discharge of runoff from developed areas directly to Mammoth Creek resulting in high sediment loads to the creek and water quality degradation.

In response to these problems, the Storm Drain Master Plan identifies general drainage improvements throughout the Town to remedy existing drainage problems and accommodate projected buildout of the Town. Construction of the Storm Drain Master Plan facilities can be spread out over a number of years. This would allow facilities to be built as they are needed or as further development occurs. Three priority levels have been established in the Storm Drain Master Plan for construction of the improvements as summarized below:

- Priority 1 improvements focus primarily on eliminating existing drainage and erosion control problems;
- Priority 2 improvements include solutions to less critical drainage problems and facilities required to provide adequate drainage trunk capacity for the ultimate development; and
- Priority 3 improvements include the remainder of Storm Drain Master Plan facilities, which are principally improvements for local storm drainage.

The Storm Drain Master Plan strives to retain or improve natural streams where possible, rather than replacing them with storm pipes for aesthetic, economic, and functional purposes. Storm pipes would be placed in streets where feasible; however, some easements would be required on private property, primarily where existing development has occurred near stream zones. The updated Storm Drain Master Plan recommends the Town replace corrugated metal pipelines that failed to transmit the required 20-year flows, with pipes of the same size made of concrete, polyvinyl chloride (PVC), high-density polyethylene (HDPE), or other materials that do not have a rough texture.

The Storm Drain Master Plan also includes guidelines for erosion control for the Mammoth Lakes area. In an effort to remedy drainage and erosion problems, the erosion guidelines prescribe requirements that must be followed during all phases of developments involving soil disturbance on one-quarter acre or more. The erosion guidelines also provide a basis for consistent design of storm drainage and erosion control facilities.

The Storm Drain Master Plan inventories all of the existing storm drain pipe facilities and assesses the adequacy of storm drain system(s) under three general scenarios: 1) existing conditions, 2) future conditions, and 3) improved conditions. An improved condition is defined as the future condition

in conjunction with impacts due to the construction of a detention facility proposed as part of the Storm Drain Master Plan. In the future and improved scenarios, future land uses are considered to account for planned development. In all storm drain scenarios, the 20-year and 100-year return periods are considered.

The Storm Drain Master Plan applies two criteria to assess whether the existing stormwater conveyance pipelines are considered to be adequately sized: 1) each pipe is to have adequate capacity to convey the 20-year discharge; and 2) in the cases of storm drain flows under streets, the combined street capacity and storm drain capacity is to have the necessary capacity to convey the 100-year flow. In the case where inadequate pipes are encountered, the pipes would be identified and enlarged to meet the adequacy criteria for the future and improved condition scenarios. The drainage improvements would be primarily funded through payment of developer impact fees and would be constructed as needed or as further development occurs.

Stormwater Master Plan

The Town recognizes the impact stormwater runoff has on water resources; has identified erosion, drainage, and flooding issues affecting Town infrastructure; and is in need of a focused strategy for dealing with stormwater. Recently, the Town received a Proposition 84 Integrated Regional Water Management (IRWM) Planning Grant from the California Department of Water Resources (DWR) through the Inyo-Mono IRWM Program to develop the *Town of Mammoth Lakes Stormwater Master Plan 2015* (Stormwater Master Plan), adopted in 2015, to provide a strategy for dealing with the most pressing stormwater priorities. The Stormwater Master Plan includes a Stormwater Capital Improvement Program; Stormwater Operations and Maintenance Plan; Public Education and Outreach; Commercial, Industrial, and Residential Retrofit Program; and Construction Site Program.

Town of Mammoth Lakes Municipal Code

Municipal Code Chapter 12.04, *Construction and Encroachments in the Public Right of Way*, establishes encroachment permit requirements which are subject to enforcement procedures. The requirements help stabilize construction sites and reduce runoff velocities by preventing erosion and sedimentation. Municipal Code Chapter 12.08, *Land Clearing, Earthwork, and Drainage Facilities*, establishes requirements for earthwork on private and public property. The standards require protection of drainage paths and installation of devices capturing stormwater runoff at select sites. These requirements help prevent erosion of sediment and reduce runoff velocities. Municipal Code Chapter 15.08, *Construction Site Regulations*, require construction sites to protect drainage paths and control erosion from areas cleared of vegetation during construction. These requirements support the implementation of the Stormwater Master Plan by providing authority to regulate erosion and sedimentation from construction sites. Municipal Code Section 17.08.020, *Standards for All Development and Land Use, Grading and Clearing*, also requires a grading permit for any lot graded or cleared of vegetation. This section requires all construction and uses to comply with the Lahontan RWQCB requirements. This supports Stormwater Master Plan implementation by providing a mechanism to enforce erosion control and runoff quality requirements at construction sites.

Municipal Code Chapter 12.10, *Floodplain Management*, promotes the public health, safety, and general welfare, and minimizes public and private losses from flood conditions. Specifically, Section

12.10.040 requires a Development Permit for all construction/development within the 100-year flood zone. The applicant is required to provide plans depicting the nature, location, dimensions, and elevation of the area in question, as well as the existing or proposed structures, fill, storage of materials, and drainage facilities.

Municipal Code Chapter 13.20, *Storm Drainage Utility*, establishes a Storm Drainage Utility and fund operated by the Public Works Director in coordination with the Town Manager and Town Council. The fund is intended to be sustained by service charges, as well as connection, impact and permit fees. This fund serves to protect and repair the stormwater infrastructure, respond to impacts from flood events and assign responsibility for water quality entering into and discharging from the stormwater infrastructure. Municipal Code Chapter Subsection 15.16.081.C, *Special Fees, Storm Drainage Collection Facilities*, establishes a development impact fee for drainage collection facilities upon the issuance of building permits for development. These fees are deposited into the drainage fund. This supports Stormwater Master Plan implementation by establishing a revenue generating mechanism to support maintenance of the Town's stormwater infrastructure.

5.9.3 IMPACT THRESHOLDS AND SIGNIFICANCE CRITERIA

Appendix G of the *CEQA Guidelines* contains the Environmental Checklist form that was used during the preparation of this EIR. Accordingly, a project may create a significant adverse environmental impact if it would:

- Violate any water quality standards or waste discharge requirements (refer to Impact Statements HWQ-1 and HWQ-2);
- Substantially deplete groundwater supplies or substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted) (refer to Section 8.0, *Effects Found Not To Be Significant*);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site (refer to Impact Statement HWQ-2);
- 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 run-off in a manner that would result in flooding on- or off-site (refer to Impact Statement HWQ-3);
- Create or contribute to run-off water that would exceed the capacity of existing or planned storm water drainage systems or provision of substantial additional sources of polluted run-off (refer to Impact Statement HWQ-2);

- Otherwise substantially degrade water quality (refer to Impact Statements HWQ-1 and HWQ-2);
- 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 (refer to Section 8.0, *Effects Found Not To Be Significant*);
- Place a structure within a 100-year flood hazard area that would impede or redirect flood flows (refer to Impact Statement HWQ-3);
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam (refer to Impact Statement HWQ-3); and/or
- Result in inundation by seiche, tsunami, or mudflow (refer to Section 8.0, *Effects Found Not To Be Significant*).

Based on these standards/criteria, the effects of the proposed project have been categorized as either a “less than significant impact” or a “potentially significant impact.” If a potentially significant impact cannot be reduced to a less than significant level through the application of goals, policies, standards, or mitigation, it is categorized as a significant and unavoidable impact. The standards used to evaluate the significance of impacts are often qualitative rather than quantitative because appropriate quantitative standards are either not available for many types of impacts or are not applicable for some types of projects.

5.9.4 IMPACTS AND MITIGATION MEASURES

WATER QUALITY – SHORT-TERM IMPACTS

HWQ-1 GRADING, EXCAVATION, AND CONSTRUCTION ACTIVITIES ASSOCIATED WITH THE PROPOSED PROJECT COULD IMPACT WATER QUALITY.

Impact Analysis: There are three sources of short-term construction-related storm water pollution associated with the proposed project, which include the following:

- Handling, storage, and disposal of construction materials containing pollutants;
- Maintenance and operation of construction equipment; and
- Earthmoving activities.

These sources, if not controlled, can generate soil erosion as well as on- and off-site transport via storm run-off or mechanical equipment. Poorly maintained vehicles and heavy equipment leaking fuel, oil, antifreeze, or other vehicle-related fluids on the project site are also common sources of storm water pollution and soil contamination. Generally, standard safety precautions for handling and storing construction materials can adequately reduce the potential pollution of storm water by these materials. These types of standard procedures can be extended to non-hazardous storm water pollutants such as sawdust, concrete washout, and other wastes.

In addition, grading activities can greatly increase erosion processes, leading to impacts on storm drains and sediment loading to storm run-off flows. Two general strategies are recommended to prevent soil materials from entering local storm drains. First, erosion control procedures should be implemented for those areas that must be exposed, and secondly, the project site should be secured to control off-site transport of pollutants.

Surface Water Quality Conditions

The proposed project would be required to comply with the Town's Municipal Code Chapter 12.04, 12.08, 15.08, and 17.08.020. The construction site must be stabilized in order to reduce runoff velocities, preventing erosion and sedimentation from exiting the project site during construction. During grading activities, all drainage paths must be protected and devices to capture stormwater runoff during construction would be required, as necessary. The Contractor would be required to control erosion from areas cleared of vegetation during construction. The project would also be subject to a grading permit which would require compliance with the Lahontan RWQCB requirements during construction.

The project would be required to conform to the requirements of the SWPPP (Mitigation Measure HWQ-2), the NPDES Construction General Permit No. CAS000002 (2009-0009-DWQ [as amended by 2010-0014-DWQ and 2012-006-DWQ]) (Mitigation Measure HWQ-3), and utilize the Town of Mammoth Lakes MOU, which would require the implementation of construction period BMPs to minimize the potential for water quality impacts. Coverage under the General Permit must be obtained from the SWRCB prior to start of construction. The General Permit requires that non-stormwater discharges from construction sites be eliminated or reduced to the maximum extent practicable, that a SWPPP be developed governing construction activities for the proposed project, and that routine inspections be performed of all stormwater pollution prevention measures and control practices being used at the site, including inspections before and after storm events.

The SWPPP prepared for construction of the proposed project must also address hazardous materials storage and use, erosion and sedimentation control, and spill prevention and response in addition to identifying measures for preventing non-stormwater discharges to surface water drainages and the Town's storm drain system. In addition, provisions for implementing the land development policy and guidelines pertaining to the Mammoth Lakes area in the Basin Plan must be included in the SWPPP. The required implementation of the BMPs in the proposed project's SWPPP would ensure that project construction activities at the project site would not cause the violation of any water quality standards within Mammoth Creek. Thus, construction activities associated with the proposed project would have a less than significant impact on surface water quality with implementation of applicable mitigation measures.

Water Quality Standards

The significance criteria for the construction phase of the proposed project is implementation of BMPs consistent with Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology (BAT/BCT), as required by the Construction General Permit.

The proposed project would reduce or prevent erosion and sediment transport and transport of other potential pollutants from the project site during the construction phase through implementation of BMPs meeting BAT/BCT. This would prevent or minimize environmental

impacts and to ensure that discharges during the construction phase would not cause or contribute to any exceedance of water quality standards in the receiving waters. These BMPs would assure effective control of not only sediment discharge, but also of pollutants associated with sediments, such as and not limited to nutrients, heavy metals, and certain legacy pesticides.

Discharges of turbid runoff are primarily of concern during the construction phase of development. The SWPPP must contain sediment and erosion control BMPs pursuant to the General Construction Permit, and those BMPs must effectively control erosion and discharge of sediment, along with other pollutants, per the BAT/BCT standards. Additionally, fertilizer control and non-visible pollutant monitoring and trash control BMPs in the SWPPP would combine to help control turbidity during the construction phase.

Construction Runoff

During the construction phase, hydrocarbons in site runoff could result from construction equipment/vehicle fueling or spills. However, pursuant to the General Construction Permit, the Construction SWPPP would include BMPs that address proper handling of petroleum products on the construction site, such as proper petroleum product storage and spill response practices, and those BMPs must effectively prevent the release of hydrocarbons to runoff per the BAT/BCT standards. Trash and debris would be controlled through the SWPPP process, as BMPs for trash control (trash racks on outlets, catch basin inserts, good housekeeping practices, etc.) would be required. Compliance with the Permit Requirements and inclusion of these BMPs, meeting BAT/BCT, included in the SWPPP would mitigate impacts from trash and debris to a level less than significant.

Mitigation Measures:

- HWQ-1 Prior to Grading Permit issuance and as part of the project's compliance with the National Pollution Discharge Elimination System (NPDES) requirements, a Notice of Intent (NOI) shall be prepared and submitted to the State Water Resources Quality Control Board (SWRCB), providing notification and intent to comply with the State of California General Permit.
- HWQ-2 The proposed project shall conform to the requirements of an approved Storm Water Pollution Prevention Plan (SWPPP) (to be applied for during the Grading Plan process) and the National Pollution Discharge Elimination System (NPDES) Construction General Permit No. CAS000002 (2009-0009-DWQ [as amended by 2010-0014-DWQ and 2012-006-DWQ]), including implementation of all recommended Best Management Practices (BMPs), and utilize the Town of Mammoth Lakes Memorandum of Understanding (MOU) Resolution No. 6-91-926 issued by the State Water Resources Control Board.
- HWQ-3 Upon completion of project construction, the Public Works Director shall submit a Notice of Termination (NOT) to the State Water Resources Quality Control Board to indicate that construction is completed.

Level of Significance: Less Than Significant Impact With Mitigation Incorporated.

LONG-TERM OPERATIONAL IMPACTS

HWQ-2 IMPLEMENTATION OF THE PROPOSED PROJECT COULD POTENTIALLY RESULT IN INCREASED RUN-OFF AMOUNTS AND DEGRADED WATER QUALITY.

Impact Analysis: This section analyzes the proposed project conditions and compares them to the existing conditions to determine project impacts on drainage and runoff. The proposed conditions that were investigated include changes to land use, changes to drainage patterns, assumed storm drain configuration, and hydrology.

Proposed Land Use

The project proposes new community multi-use facilities at the project site, encompassing an ice rink (winter)/recreation/event area (RecZone) and additional storage and support space. In addition, the proposed project includes a complementary community center, reconfiguration and improvements to an existing playground to add accessible interactive components, restroom improvements, and additional surface parking spaces. The project would also include an active outdoor recreation area to the west of the new community multi-use facilities.

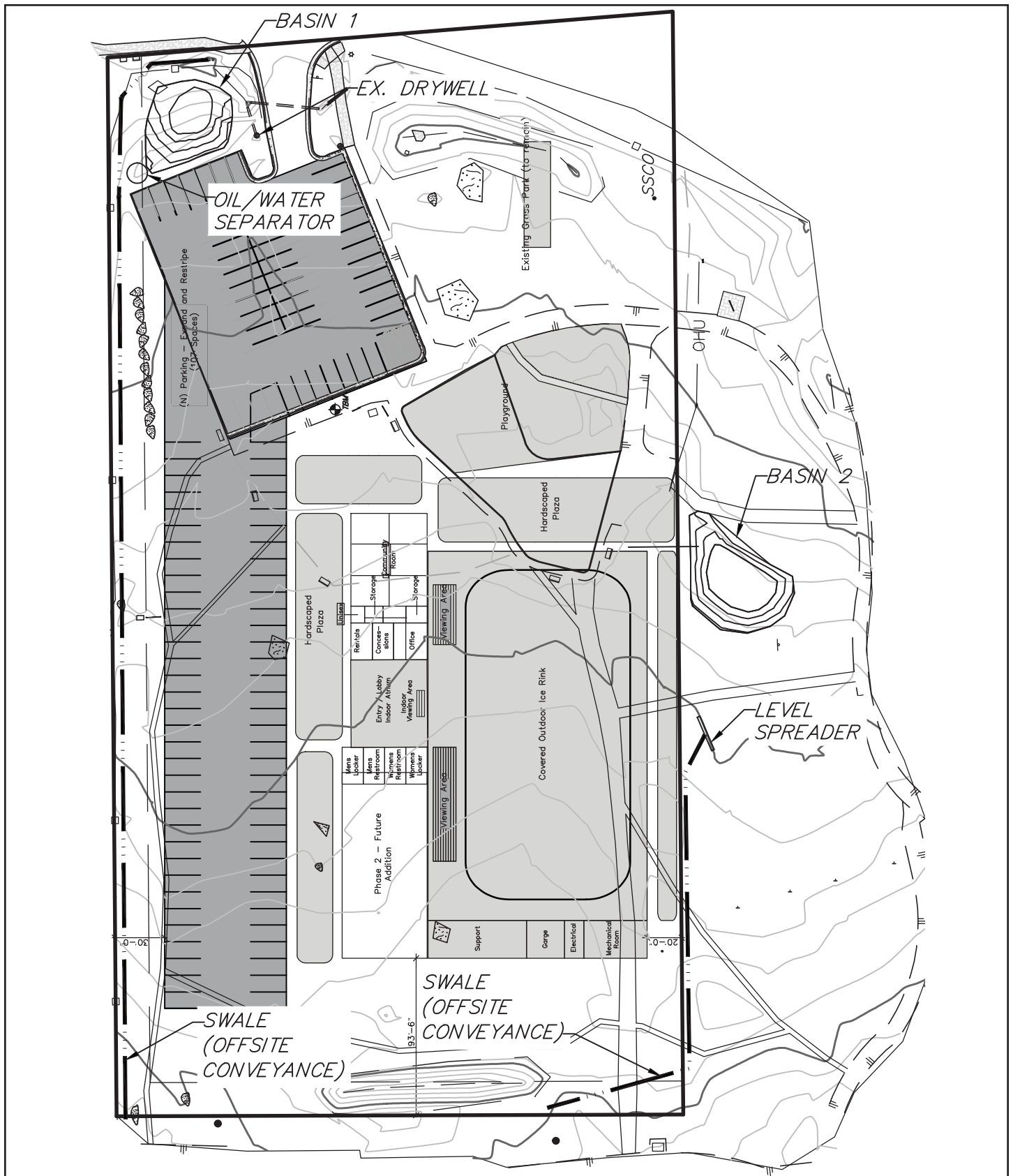
Proposed On-Site Drainage Facilities

The proposed development would result in approximately 101,695 square feet of new impervious surface, consisting of 48,244 square feet of roof area and 35,977 square feet of asphalt concrete (AC) pavement areas. Approximately 17,474 square feet of pavers or concrete hardscaping would also be installed to create plaza and walkways. The remaining area of the site is to be landscaped or left in a natural state (approximately 162,577 square feet). Thus, the proposed project would result in 62.5 percent of impervious surface (an increase of 56.1 percent compared to the existing 6.4 percent impervious surface at the site). The proposed grading for the project would maintain the existing drainage patterns on-site; refer to [Exhibit 5.9-3, *Conceptual Drainage*](#).

Proposed Storm Water Drainage

[Table 5.9-2, *Comparison of Existing and Proposed Flowrates*](#), provides a comparison of existing and proposed project conditions for the peak flow rates for the 25-year and 100-year storm event runoff for the project site. As indicated in [Table 5.9-2](#), the proposed project would increase peak flow rates in the 20-year storm event by 2.6 cfs and the 100-year storm event by 3.8 cfs above existing conditions, potentially resulting in a significant impact to off-site tributary areas.

The proposed project would attenuate increased runoff on-site prior to discharge. On-site drainage improvements proposed include inlets at low points, storm drain pipes, and swales as necessary. The stormwater that flows through the surface parking lot would be directed to an oil/water separator in the northeast corner prior to flowing into the proposed retention system (as illustrated on [Exhibit 5.9-3](#)). Stormwater runoff collected from building's roof would be directed to the retention system just southeast of the improvements. The proposed retention basin system has been preliminary designed to contain a 20-year intensity storm for 1 hour. Two retention basins (Basin 1 and Basin 2 depicted on [Exhibit 5.9-3](#)) are proposed.



Source: Triad/Holmes Associates, Preliminary Drainage Study, dated August 12, 2016.

NOT TO SCALE

Michael Baker
INTERNATIONAL



12/16 • JN 151373

ENVIRONMENTAL IMPACT REPORT
MAMMOTH CREEK PARK WEST
NEW COMMUNITY MULTI-USE FACILITIES
Conceptual Drainage

Exhibit 5.9-3

Table 5.9-2
Comparison of Existing and Proposed Flowrates

Area ID	Area (Acres)	Existing Flow (cfs)		Proposed Flow (cfs)		Change in Flow Conditions (cfs)
		20-year	100-year	20-year	100-year	
B1	2.5	2.9	4.8	2.9	4.8	0
B2	5.3	3.5	10.1	3.5	10.1	0
A	6.4	1.9	3.5	4.5	7.3	2.6 (20-year) 3.8 (100-year)
Notes: cfs = cubic feet per second						
Source: Triad/Holmes Associates, <i>Preliminary Drainage Study</i> , dated August 12, 2016.						

At minimum, these basins would store 3,000 cubic feet (cf) (Basin 1) and 4,100 cf (Basin 2), as required by the Lahontan RWQCB. Thus, the proposed storm drain facilities would be of proper size to retain the additional surface water flows created by the project. However, these storm drain facilities are preliminary and would be subject to change during final design. Thus, the project would be subject to Mitigation Measure HWQ-4, which would identify and implement storm drainage routing and conveyance infrastructure components prior to submittal of grading plans. The design, sizing, and location of these drainage components would be subject to review and approval by the Public Works Director and Town Engineer prior to the issuance of Grading or Building Permits.

In order to ensure that these storm drain facilities are properly maintained, the Town would also be required to implement a Storm Drain Facilities Maintenance Plan (Maintenance Plan) (Mitigation Measure HWQ-5) in order to ensure continued efficiency of proposed storm drain facilities. Particular items requiring maintenance would include, but not be limited to, cleaning of the grates, removal of foreign materials from storm drainage pipes, maintenance to outlet facilities, and repairs to damaged facilities. Any storm drain pipe with a slope of less than 0.5 percent would be identified and more frequent maintenance would be required in order to ensure efficiency of these low-incline facilities. Further, the Maintenance Plan would ensure that snow removal activities conducted near proposed storm drain facilities do not restrict drainage collection in gutters, inlets, and flow paths.

In conclusion, with implementation of the proposed storm drain facilities and compliance with Mitigation Measures HWQ-4 and HWQ-5, potential impacts associated with the increase in runoff, including potential increased erosion, would be reduced to less than significant levels.

Storm Water Quality

Activities associated with operation of the project would generate substances that could degrade the quality of water runoff, particularly vehicle-related pollutants. The deposition of certain chemicals by cars in the parking areas could have the potential to contribute metals, oil and grease, solvents, phosphates, hydrocarbons, and suspended solids to surface water flows. However, impacts to water quality generated from project operation can be reduced through the implementation of proposed BMPs designed to protect water quality in receiving water bodies. The project currently proposes BMPs that would be employed for the project, which include an oil/water separator and retention basins designed to filter runoff on the project site. The additional BMPs, if necessary, would be included upon finalizing grading/improvement plans (refer to Mitigation Measure HWQ-6).

Additionally, increased runoff can contribute to increased soil erosion. Soil erosion contributes to decreased water quality. However, as the project proposes storm drain facilities that would filter runoff, soil erosion would be minimized through infiltration. The facilities would be finalized in the grading/improvement plans (refer to Mitigation Measure HWQ-4). Mitigation Measure HWQ-5 would also ensure that the storm drain facilities are properly maintained during operation. Compliance with the Mitigation Measures HWQ-4 through HWQ-6 would reduce potentially significant impacts on receiving water quality in Mammoth Creek resulting from project operation to acceptable levels. As such, impacts related to operational water quality would be less than significant.

Mitigation Measures:

- HWQ-4 Prior to submittal of Grading Plans, the Town shall identify and implement a suite of storm drainage routing and conveyance infrastructure components designed to retain additional surface water flows prior to discharge. The design, sizing, and location of these drainage components shall be subject to review and approval by the Town. Implementation of this storm drainage infrastructure shall be approved by the Public Works Director and Town Engineer prior to the issuance of Grading or Building Permits.
- HWQ-5 A Storm Drain Facilities Maintenance Plan (Maintenance Plan) shall be prepared by the Town prior to issuance of a Certificate of Occupancy in order to ensure continued efficiency of proposed storm drain facilities. Implementation of the Maintenance Plan shall be overseen by the Public Works Director. Particular items requiring maintenance include, but are not limited to, cleaning of the grates, removal of foreign materials from storm drainage pipes, maintenance, as necessary, to outlet facilities, and repairs, as necessary, to damaged facilities. Any storm drain pipe with a slope of less than 0.5 percent shall be identified and more frequent maintenance shall be performed to ensure efficiency of these low-incline facilities. Further, the Maintenance Plan shall ensure that snow removal activities conducted near proposed storm drain facilities do not restrict drainage collection in gutters, inlets, and flow paths.
- HWQ-6 Prior to submittal of grading plans, the Public Works Director shall identify and implement a suite of stormwater quality Best Management Practices (BMP) and Low Impact Development (LID) features to address the most likely sources of stormwater pollutants resulting from operation of the proposed project. Pollutant sources and pathways to be addressed by these BMPs include, but are not necessarily limited to, parking lots, maintenance areas, trash storage locations, rooftops, interior public and private roadways, and storm drain inlets. The design and location of these BMPs shall generally adhere to the standards associated with the Phase II NPDES stormwater permit program. Implementation of these BMPs shall be assured by the Community & Economic Development Manager and Town Engineer prior to the issuance of Grading or Building Permits.

Level of Significance: Less Than Significant Impact With Mitigation Incorporated.

FLOODING

HWQ-3 THE PROJECT SITE IS SUBJECT TO FLOODING WITHIN THE 100-YEAR FLOOD ZONE AND COULD EXPOSE PEOPLE OR STRUCTURES TO FLOODING.

Impact Analysis: A portion of the project site is located in an area that is classified by FEMA as a 100-year flood zone; depicted on [Exhibit 5.9-2](#). However, as shown on [Exhibit 5.9-2](#) and [Exhibit 3-4, Site Plan](#), those areas currently inundated by the 100-year flood zone (the existing rock garden, access driveway, and vacant land in the northeast corner of the site), would remain upon completion of the proposed project. The project would not result in the construction of any habitable structures within the 100-year flood zone. Additionally, runoff in excess of existing flows would be retained on-site in the proposed retention facilities and these facilities would be designed to withstand the 100-year storm flows (as discussed in Impact Statement HWQ-2). Thus, the proposed project would not place structures within a 100-year flood hazard area or impede or redirect flood flows such that people or property would be exposed to flooding. As such, impacts associated with flooding would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

5.9.5 CUMULATIVE IMPACTS

The following discussions are included per topic area to determine whether a significant cumulative effect would occur.

- GRADING, EXCAVATION, AND CONSTRUCTION ACTIVITIES ASSOCIATED WITH THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS COULD POTENTIALLY IMPACT WATER QUALITY.
- IMPLEMENTATION OF THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS COULD POTENTIALLY RESULT IN INCREASED RUN-OFF AMOUNTS AND DEGRADED WATER QUALITY.

Impact Analysis: Development of the proposed project, in conjunction with related cumulative projects, would result in the further expansion of urban uses within the Town and an increase in overall imperviousness and potential for stormwater pollution. As discussed above, the project site and the surrounding area primarily consist of a patchwork of undeveloped areas and developed impervious urbanized surfaces, and are served by existing storm drains that would be expanded in order to serve new development. It is likely that most of the cumulative projects would also contribute stormwater flows to the Town's storm drain system. Each individual related project would be required to submit a drainage analysis to the Town for review and approval prior to issuance of grading or building permits. Each drainage analysis must illustrate how peak flows generated from each related project site would be accommodated by the Town's existing and/or proposed storm drainage facilities. Where necessary, each related project would be required to

include retention or infiltration features designed to reduce the total rate and/or volume of runoff generated at its site. Therefore, cumulatively considerable impacts to the Town's existing or planned stormwater drainage system capacity would be less than significant.

In addition, per the Basin Plan, development on each site larger than 0.25 acre above the 7,000 foot elevation level would be subject to uniform policy guidelines designed to minimize the water quality impacts associated with proposed project construction to the maximum extent practicable. All related projects that disturb one acre or more must also obtain coverage under the General Construction Permit, including the preparation and submittal of a SWPPP to govern all construction activities associated with each project. As a result, with approval and implementation of site-specific SWPPPs and associated BMPs to address water quality, cumulative water quality and erosion/siltation impacts would be considered less than significant.

As discussed in Impact Statements HWQ-1 and HWQ-2, with implementation of the recommended Mitigation Measures HWQ-1 through HWQ-3, the proposed project would result in less than significant impacts during construction. Further, with compliance with Mitigation Measures HWQ-4 through HWQ-6, impacts related to increased surface water runoff and water quality would be reduced to less than significant levels. Thus, the proposed project would not significantly cumulatively contribute to impacts pertaining to hydrology or water quality.

Mitigation Measures: Refer to Mitigation Measures HWQ-1 through HWQ-6.

Level of Significance: Less Than Significant Impact With Mitigation Incorporated.

● **IMPLEMENTATION OF THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS COULD EXPOSE PEOPLE OR STRUCTURES TO FLOODING.**

Impact Analysis: Cumulative development could occur within a 100-year flood zone. However, all future development in a 100-year flood zone would be subject to Municipal Code Chapter 12.10, which would require applicants to provide plans depicting the nature, location, dimensions, and elevation of the area in question, as well as the existing or proposed structures, fill, storage of materials, and drainage facilities on a project-by-project basis. Further, as discussed in Impact Statement HWQ-3, development of the proposed project would not result in significant impacts pertaining to exposing people or structures to flooding nor would the project substantially change flood flows. Thus, the project would not significantly cumulatively contribute to impacts pertaining to flooding.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

5.9.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No unavoidable significant impacts related to hydrology and water quality have been identified following implementation of the recommended mitigation measures.