

## 4.7 HYDROLOGY AND WATER QUALITY

This section evaluates potential hydrology and water quality impacts that could result from the proposed SOI Plan update (proposed project). Information in this section comes from County of Nevada GIS mapping analysis as well as existing federal, state, and local regulations. The evaluation includes a discussion of the proposed project compatibility with these required applicable regulations and provides mitigation measures, if needed and as appropriate that would reduce these impacts. The following analysis of the potential environmental impacts related to hydrology and water quality is derived primarily from the following sources and agencies:

- Federal Emergency Management Agency (FEMA);
- United State Army Corps of Engineers (USACE);
- State Water Resources Control Board (SWRCB);
- Regional Water Resources Control Board (RWQCB);
- California Department of Fish and Wildlife (CDFW);
- Nevada City Zoning Ordinance

### 4.7.1 ENVIRONMENTAL SETTING

The area climate generally consists of dry and mild to hot summers and relatively wet winters. In the upper elevation around Nevada City (City) and Grass Valley, snow levels are usually above 5,000 ft. The averages minimum and monthly maximum temperatures of from the Nevada City area in the foothills to the valley area near the Town of Lincoln from approximately 26 to 93 degrees Fahrenheit (°F). The proposed SOI Plan update area is in the eastern portion of the service area and encircles the City. In this area, the City's jurisdictional boundaries include approximately 1,470 incorporated acres (2018, Nevada County GIS data) and the current SOI (exclusive of the incorporated area) includes approximately 2,702 acres. General land uses in the watershed are residential dwellings, managed forests, and undeveloped land. Within its boundaries, the City provides a full portfolio of municipal services, including treated water, public sewer, and solid waste. These services, providers, and characteristics of their resources are provided in additional detail below.

#### Watersheds

The SOI Plan update area is located in two main watersheds with the vast majority being located in the southerly portion of the Yuba River Watershed. The southernmost portion of Removal Area 1 is located in the northernmost portion of the Bear River Watershed. Both these watershed basins are discussed in additional detail below. Within Nevada City and the SOI Plan update area is the smaller local watershed, the Deer Creek Watershed. The watershed basins are discussed in additional detail below.

**The Yuba River Basin** – The Yuba River has three forks: North, Middle, and South. The North and Middle Yuba Rivers come together below New Bullards Bar Reservoir and form the mainstem Yuba River. The South Fork and Middle Fork of the Yuba River combined make up the largest of three watershed areas within Nevada County. The Middle Fork of the River drains approximately 86 square miles of Nevada County and the South Fork drains approximately 343 square miles of the County before connecting with the Middle Fork of the Yuba River near Englebright Reservoir. There are more than 100 jurisdictional dams or diversions in the Yuba River Watershed. The diversions convey water to local users and to users in the Bear and North Fork American River Watersheds. A large amount of water is diverted from the watershed at Lake Spaulding on the South Fork for irrigation and power generation. The South Yuba River Watershed alone supports 20 reservoirs and 20 hydroelectric dams. The Deer and Squirrel Creeks flow westward into the Yuba River.

**The Bear River Basin** – The Bear River originates about 20 miles west of the crest of the Sierra Nevada in northern Placer County within the boundaries of the Tahoe National Forest. The Bear River forms just below Spaulding Reservoir via the Drum Canal and is the second-largest tributary to the Feather River. It flows in a southwesterly direction and drains approximately 277 square miles of Nevada County. The river receives flows from the Sierra Nevada Mountains and for much of its course it forms the boundary between Nevada and Placer Counties. The Bear River Watershed is located between two much larger watersheds, the Yuba to the north and American to the south. The watershed is heavily managed for water conveyance for agricultural water supply and hydropower development that serves the western foothills region and beyond. Some areas of the watershed have been degraded by historical hydraulic mining and mercury contamination. The watershed spans four counties: Nevada, Placer, Sutter and Yuba. The Wolf, Greenhorn, and Steephollow Creeks drain into the Bear River. The Bear River discharges from Rollins Reservoir and flows southwest into Lake Combie near the community of Meadow Vista and near an area with heavy development pressure. The Bear River turns west and is fed by Wolf Creek and then enters into Camp Far West Reservoir, the largest water body in the Bear River Watershed. The Bear joins the Feather River south of Yuba City/ Marysville (Sacramento River Watershed Program, 2018). The Bear and Yuba subbasins are located within the American River subregion, which consists of roughly 5,375 square miles and includes portions of six counties.

**Deer Creek Watershed** – The Deer Creek Watershed traces the southerly boundary of the Yuba River Watershed. Nevada City is at the approximate mid-point of the watershed and is approximately 12 miles west of the eastern watershed boundary near SR-20 and approximately 15 miles west of the watershed boundary near the Nevada County line. The watershed includes the area from Scotts Flat in the eastern reaches and Lake Wildwood in the western half. Deer Creek Watershed has been impacted from past uses including mining, development, water diversions, and agriculture (Friends of Deer Creek, 2011).

**Little Deer Creek Watershed** – Little Deer Creek Watershed encompasses much of the City and SOI Plan Update area and is a tributary to Deer Creek. Other waters within the SOI Plan Update area that are tributary to Deer Creek include Gold Run Creek, Oregon Ravine, Woodpecker Ravine, Woods Ravine, Rogers Williams Ravine, and Manzanita Ravine. All of these watercourses flow or combine to flow through the downtown of City (Nevada City, 2017). Historical mining that has occurred throughout the Deer Creek

watershed has affected the water quality of the area and downstream locations. Deercreek and its tributaries were used as water sources for gold processing as well as discharge locations for mine wastes that has most notably resulted in excess mercury that is still present in river sediments.

## **Surface Water Quality**

### ***Water Quality***

The most common categories of stormwater pollutants include sediments, nutrients, trace metals, bacteria, and oil and grease. Water quality degradation can be caused by several sources, including wastewater disposal practices, stormwater runoff from parking lots and roadways, erosion, siltation, agricultural, mining, and logging operations, and some industrial operations. Receiving waters can assimilate a certain quantity of various runoff constituents. However, there are thresholds beyond which a measured constituent becomes a pollutant and results in an undesirable impact.

The State Water Resources Control Board (SWRCB) produces bi-annual qualitative assessments of statewide and regional water quality conditions. These assessments are focused on Clean Water Act (CWA) Section 303(d) impaired water listings and priority status for assignment of total maximum daily load (TMDL) requirements. Specifically, the Section 303(d) and TMDL assessments involve prioritizing waters on the basis of water quality (i.e., impaired) status and the necessity for assigning quantitative contaminant load restrictions (i.e., TMDLs), with these data submitted to the United States Environmental Protection Agency (USEPA) for review and approval.

### ***Sediment***

Sediment is made up of tiny soil particles that are washed or blown into surface waters. It is typically the major pollutant by volume in surface water. The smallest particles of earthy or rock material are part of the process of siltation. These silt elements typically consist of 80 percent soil or silt and less than 12 percent clay. Suspended soil particles can cause the water to look cloudy and be 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 is stream bank erosion, which may be accelerated by increases in peak flow rates and volumes of runoff due to urbanization. Agricultural operations are the largest source of sediment in rural areas.

### ***Nutrients***

Nutrients are a significant 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 or other non-moving water bodies. The orthophosphoric form of phosphorus is a readily available nutrient for plant growth. Orthophosphate from automobile emissions also contributes phosphorus in areas with heavy automobile traffic.

The ammonium form of nitrogen can also have severe effects on surface water quality. Ammonium is converted to nitrate and nitrite forms nitrogen in a process called nitrification. This process consumes

large amounts of oxygen, which can impair the dissolved oxygen (DO) 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 in excess of plant needs, nitrates can leach below the root zone, eventually reaching groundwater.

Generally, nutrient export is greatest from agricultural areas and developed areas with large impervious areas. Other problems resulting from excess nutrients are surface algal scums, water discolorations, odors, toxic releases, and overgrowth of plants. Common measures of 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 of concern because of their toxic effects on aquatic life and their potential to contaminate drinking water supplies. A shorter duration of exposure to a trace metal reduces its toxicity in the aquatic environment. The toxicity of trace metals in runoff also varies with the hardness of the receiving water. As total hardness of the water increases, so does the potential for adverse effects. Metals commonly found in urban runoff are lead, zinc, and copper. According to the General Plan EIR, the western portion of the County has naturally occurring elements such as heavy metals that can contribute to water quality degradation. Automobile emissions are also a major source of lead in urban areas. In the project area, pollution concerns from heavy metal mining include arsenic, iron, manganese, mercury, lead, and aluminum. A large fraction of the trace metals in stormwater runoff is attached to sediment. Sediment effectively reduces the level of trace metals that are immediately available for biological uptake and subsequent bioaccumulation (metals attached to sediment settle out rapidly and accumulate in the soil).

### ***Bacteria***

Bacteria levels in undiluted urban runoff can exceed public health standards for water. Bacteria can originate from both point and non-point sources are typically from anthropogenic sources. This Sources typically include unsatisfactory disposal of domestic sewage through the use of septic tanks and leach field systems, animal grazing, and to a lesser extent recreational activities such as backpacking within or close to waterways. Unproperly treated or uncontrolled waste from these sources can reach waterbodies resulting in contamination at the source and downstream. Natural sources of bacteria from domestic as well as wild animals also occur and can enters the water system (Waterboards, 2015, and Derlet et. all) 2006,

### ***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 in it. The major source of hydrocarbons in urban runoff is through leakage of crankcase oil and other lubricating agents from automobiles onto impervious surfaces. Hydrocarbon levels are highest in the runoff from parking lots, roads and service stations. Residential land uses generate less hydrocarbons export, although illegal disposal of waste oil into stormwater can be a local problem.

### ***Water Quality Assessment***

Both Deer Creek and Little Deer Creek are listed as 303(d) impaired water bodies. Deer Creek is listed as an integrated report category 5 for fecal indicator bacteria for a total length of approximately 16 miles from Deer Creek Reservoir to Lake Wildwood but the source is not known.

Little Deer Creek is listed for Integrated Report Category 5 for mercury and includes a length of stream approximately 4.06 miles in length. The exact source is unknown, but contaminants are most likely a result of past mining in the region.

Gold Run is listed for Integrated Report Category 5 for mercury for a length of approximately 1.9 miles. The exact source is unknown, but contaminants are most likely a result of past mining in the region (CVRWQCB, 2018).

### ***Groundwater***

Several key properties help determine whether the subsurface environment will provide a significant, usable groundwater resource. Most of California's groundwater occurs in material deposited by streams, called alluvium. Water infiltrates deep into the layers of sand and gravel, and silts and clays and coalesce into thin lenses and beds that contain water and are termed aquifers. California's groundwater basins usually include one or a series of alluvial aquifers with intermingled aquitards. Although alluvial aquifers are most common in California, other groundwater development occurs in fractured crystalline rocks, fractured volcanics, and limestones. This is the case in Nevada County where the majority of groundwater in the western portion of the County occurs in fractures of the hard rocks between 200 and 215 feet below ground. There is little groundwater found to occur in the alluvium and colluvium of the area. The groundwater in the Sierra Nevada foothills that is found is sourced from these reservoirs in fractured rock and that are recharged slowly overtime and generally well confined.

### **Flood Hazard**

Flooding typically occurs during the winter months between November through April. Severe flooding is more likely when the ground is already saturated or existing snow is melted by warmer rains. In general, the SOI Plan update area nor the City have significant, wide floodplains that are found in areas with less steep slopes.

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate maps partitions flood areas into three zones: Zone A for areas of 100-year flood; Zone B for areas of 500-year flood; and Zone C for areas of minimal flooding. The National Flood Insurance Program (NFIP) 100-year floodplain is considered the base flood condition, which is defined as a flood event of a magnitude that would be equaled or exceeded an average of once during a 100-year period. Floodways are defined as stream channels plus adjacent floodplains that must be kept free of encroachment as much as possible so that the 100-year floods can be carried without substantial increases (no more than one foot) in flood elevations. Most portions of the SOI Plan update area and City are not within a NFIP designated flood hazard zones and most areas are considered to have a low risk of flooding.

Areas within the SOI Plan update area that are subject to 100-year and 500-year flooding include Deer Creek west from Scott's Flat Reservoir through Nevada City west to Lake Wildwood and beyond. These areas are designated as Zone A or Zone AE. The remainder of the unincorporated portions of the SOI Plan update area are designated as Zone X. Definitions of these zones is provided below:

Zone A – is a Special Flood Hazard Area (SFHA) with a 1% annual chance of flooding for an area which no base flood elevation (BFE) has been determined.

Zone AE – SFHA with a 1% annual chance of flooding for an area which a BFE has been determined.

Zone X – are areas determined to be outside 500-year floodplain determined to be outside the 1% and 0.2% annual chance floodplains.

## Wastewater Treatment

Nevada City provides a full range of wastewater services including collection, treatment, and effluent/biosolids disposal. No other agencies were identified that could provide these services on a City-wide basis. In addition to the City's internal governance processes, the City's wastewater system is heavily regulated by state agencies in terms of discharge. Nevada City operates under an NPDES Permit from the Central Valley Regional Water Quality Control Board (LAFCo Wastewater MSR).

The City's Wastewater Treatment Plant (WWTP) discharges an approximate average of 470,000 gallons per day (gpd) of treated effluent into Deer Creek on a year-round basis. A discharge permit from the Central Valley Regional Water Quality Control Board (RWQCB) was most recently issued in June of 2017, as Order No. R5-2017-0060. This permit is part of the National Pollutant Discharge Elimination System (NPDES) and it places limitations on specific constituents of effluent that are allowed to be discharged into Deer Creek. Certain standards and levels to ensure adequate water quality must be tested and met. The constituents that are measured for include biochemical oxygen demand, total suspended solids, potential hydrogen (pH), ammonia, dichlorobromomethane, coliform, residual chlorine, and zinc. Discharge permits are reviewed every five years by the Central Valley RWQCB (LAFCo 2015, updated 2019).

## 4.7.2 REGULATORY SETTING

### Federal

#### ***Clean Water Act, Section 402, National Pollutant Discharge Elimination System***

Direct discharges of pollutants into waters of the U.S. are not allowed, except in accordance with the NPDES permit process established in Section 402 of the CWA. The Clean Water Act (CWA) (U.S. Government Code [USC], Title 33, Section 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. and has given the U.S. Environmental

Protection Agency (U.S. EPA) the authority to implement pollution control programs. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain nonpoint source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402).

Section 402 authorizes the California State Water Resources Control Board (SWRCB) to issue NPDES General Construction Storm Water Permits (Water Quality Order 99-08-DWQ). Non-point source discharges to stormwater are regulated under stormwater NPDES permits for municipal stormwater discharges, industrial activities, and construction activities.

### ***Clean Water Act, Section 303, List of Water Quality Limited Segments***

Section 303 of the CWA requires that the state adopt water quality standards for surface waters. When designated beneficial uses of a particular water body are being compromised by water quality, Section 303(d) of the CWA requires identifying and listing that water body as impaired. States are required to compile this information in a list and submit the list to U.S. EPA for review and approval. An affected waterbody, and associated pollutant or stressor, is then prioritized in a list of impaired waterbodies known as the 303(d) List. The CWA further requires the development of a Total Maximum Daily Load (TMDL) for each listing.

Once a water body has been deemed impaired, a Total Maximum Daily Load (TMDL) must be developed for each impairing water quality constituent. A TMDL is an estimate of the total load of pollutants from point, non-point, and natural sources that a water body may receive without exceeding applicable water quality standards (often with a “factor of safety” included, which limits the total load of pollutants to a level well below that which could cause the standard to be exceeded). Once established, the TMDL is allocated among current and future dischargers into the water body. In California, implementation of TMDLs is achieved through water quality control plans, known as basin plans. Basin plans contain specific water quality standards, as well as a program of implementation for how those water quality standards may be achieved. The project area is in the Central Valley Region and included in the Water Quality Control Plan (Basin Plan) of the California RWQCB Central Valley Region. The Basin Plan and required contents are discussed in additional detail below.

## **Clean Water Act**

### ***Sections 404 and 401***

Section 404 of the CWA establishes programs to regulate the discharge of dredged and fill material in waters of the U.S., including wetlands. Waters of the U.S. are those waters that have a connection to interstate commerce, either directly via a tributary system or indirectly through a nexus identified in the USACE regulations. Under Section 401 of the CWA, the SWRCB must certify all activities requiring a 404 permit. Under the SWRCB, the RWQCB regulates these activities and issues water quality certifications for those activities requiring a 404 permit. For purposes of section 404 of the CWA, the limits of non-tidal waters extend to the Ordinary High Water (OHW) line, defined as the line on the shore established by the fluctuation of water and indicated by physical characteristics, such as natural line impressed on the bank,

changes in the character of the soil, and presence of debris. When an application for a Section 404 permit is made, the applicant must show it has:

- Taken steps to avoid impacts to wetlands or waters of the U.S. where practicable;
- Minimized unavoidable impacts on waters of the U.S. and wetlands; and
- Provided mitigation for unavoidable impacts.

If applicable, construction would also require a request for Water Quality Certification (or waiver thereof) from the Central Valley RWQCB. Project activities would adhere to State and federal water quality standards and would be in compliance with Sections 401 and 404 of the CWA.

## State

### ***State Water Resources Control Board***

The National Pollution Discharge Elimination System (NPDES) was established per the 1972 amendments to the Federal Water Pollution Control Act, or Clean Water Act (CWA), to control discharges of pollutants from point sources (Section 402). Amendments to the CWA created a new section to the Act, which is devoted to stormwater permitting, with individual states designated for administration and enforcement of the provisions of the CWA and the NPDES permit program. The State Water Resources Control Board (SWRCB) issues both general construction permits and individual permits under this program.

#### *Construction Stormwater General Permit*

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

The SWPPP specifies Best Management Practices (BMPs) intended to prevent all construction pollutants from contacting stormwater and with the intent of keeping all products of erosion from moving off-site into receiving waters; eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation; and are required to be inspected. Accordingly, the SWPPP must contain a visual monitoring program; a chemical monitoring program for “non-visible” pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the construction site discharges directly to a water body listed on the 303(d) list for sediment. Increased compliance tasks under the adopted 2009 Construction General Permit include project risk evaluation, effluent monitoring, receiving water monitoring, electronic data submission of the SWPPP and all other permit registration documents, and a Rain Event Action Plan (REAP), which must be designed to protect all exposed portions of a project site within 48 hours prior to any likely precipitation event.

### *Phase I and II Municipal Separate Storm Sewer System (MS4) Permits*

The Phase I and II MS4 permits require the Permittees to reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process (CVRWQCB, 2019).

### *Industrial Storm Water General Permit*

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ (CVRWQCB, 2019). The Statewide General Permit for Storm Water Discharges Associated with Industrial Activities, Order 2014-0057-DWQ Industrial General Permit (IGP) implements the federally required storm water regulations in California for storm water associated with industrial activities discharging to waters of the United States. The IGP regulates discharges associated with 10 federally defined categories of industrial activities. The Industrial General Permit regulates industrial storm water discharges and authorized non-storm water discharges from industrial facilities in California. The Industrial General Permit is called a general permit because many industrial facilities are covered by the same permit, but comply with its requirements at their individual industrial facilities. The State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (collectively, the Water Boards) implement and enforce the Industrial General Permit (SWRCB, 2019).

### *Waste Discharge Permit*

If USAGE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, a Waste Discharge Requirement (WDR) permit may be issued by Central Valley Water Board. Waste discharges that can be exempted from the California Code of Regulations (CCR) and typically include domestic or municipal wastewater, food processing related wastewater, and industrial wastewater. State regulations addressing the treatment, storage, processing, or disposal of waste are contained in Title 27, CCR, section 20005 et seq. (hereafter Title 27). Discharges that qualify for exemption from Title 27 must be consistent with the exemptions provided in Title 27 section 20090.

### *Dewatering Permit*

Construction or groundwater dewatering that is discharged to land requires coverage under State Water Board General Water Quality Order (Low-Risk General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low-Risk Waiver) R5-2013-0145. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

### *Regulatory Compliance for Commercially Irrigated Agriculture*

Discharges from commercial irrigated agricultural are required to obtain regulatory coverage under the Irrigated Lands Regulatory Program. There are two options to comply:

- Obtain Coverage Under a Coalition Group. Join the local Coalition Group that supports landowners with the implementation of the Irrigated Lands Regulatory Program. The Coalition Group conducts water quality monitoring and reporting to the Central Valley Water Board on behalf of its growers. The Coalition Groups charge an annual membership fee, which varies by Coalition Group.
- Obtain Coverage Under the General Waste Discharge Requirements for Individual Growers, General Order RS-2013-0100. Dischargers not participating in a third-party group (Coalition) are regulated individually. Depending on the specific site conditions, growers may be required to monitor runoff from their property, install monitoring wells, and submit a notice of intent, farm plan, and other action plans regarding their actions to comply with their General Order. Yearly costs would include State administrative fees (for example, annual fees for farm sizes from 11-100 acres are currently \$1,277 + \$8.53/Acre); the cost to prepare annual monitoring reports; and water quality monitoring costs.

## **California Water Code**

As discussed above, the primary responsibility for the protection of water quality in California rests with the SWRCB. The SWRCB sets Statewide policy for the implementation of State and Federal laws and regulations. To do this more effectively, the SWRCB is divided into nine regional water quality control boards (RWQCBs). The RWQCBs adopt and implement Water Quality Control Plans (Basin Plans) that recognize regional differences in natural water quality, actual and potential beneficial uses, and water quality problems associated with human activities.

### ***Central Valley Water Quality Control Board***

The Central Valley Water Quality Control Board (CVRWQCB) is required to formulate and adopt Basin Plans for all areas with the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. The Basin Plan reflects, incorporates and implements applicable portions of a number of national and statewide water quality plans and policies, including the Porter-Cologne Act, California Water Code and the CWA. Basin Plans are reviewed every three years and assesses for appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. The Basin Plan includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region and includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain water quality standards. For water bodies with quality below the levels needed to meet the beneficial uses, plans for improving water quality are included.

The CVRWQCB revised their current Basin Plan in May of 2018. This Basin Plan covers the entire area included in the Sacramento and San Joaquin River drainage basins and is bound by the crests of the Sierra Nevada on the east and the Coast Range and Klamath Mountains on the west. The Basin Plan contains water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program for implementation for achieving water quality objectives within the plan area. Federal regulations require each state to adopt water quality standards for protection of public health and welfare, enhance the quality of water and serve the purposes of the CWA. In California, the beneficial uses, water quality objectives, and Antidegradation Policy are the state's water quality standards. More specifically, the Antidegradation Policy states that all discharge or waste to high-quality waters must apply best practicable treatment of control not only to prevent a condition of pollution or nuisance from occurring but also to maintain the highest water quality. An antidegradation analysis is a mandatory element in the NPDES system and land discharge Waste Discharge Requirements (WDR's) permitting process (CVRWQCB, 2018).

### **Nevada City Municipal Code**

The Nevada City Municipal Code (NCMC) provides the requirements and regulations related to development and overall operations within the City. The NCMC also provides specific guidance related to some of the elements related to hydrology and water quality. More specifically, title 13 of the NCMC discusses public services include the water system, the sewer system, underground utility districts, and specifically pertaining to this Chapter of the EIR, floodplain management.

#### ***Section 13.20.010***

This section of the municipal code includes a discussion of the Findings of Fact and recognizes that certain areas are subject to periodic inundation by flood hazards. This section further states the purpose of the chapter is to reduce losses from flood hazards and includes five methods to reduce losses from floods. This includes restrictions of uses in certain areas; protection of vulnerable areas; control floodplain alteration; control filling, dredging and grading, and prevent or regulate construction of flood-barriers

## **4.7.3 STANDARDS OF SIGNIFICANCE**

The following significance criteria for hydrology and water quality were derived from the Environmental Checklist in the State CEQA Guidelines, Appendix G. An impact of the project would be considered significant and would require mitigation if it would meet one of the following criteria.

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

- Result in substantial erosion or siltation on- or off-site.
- Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite.
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Impede or redirect flood flows.
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

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## 4.7.4 PROJECT IMPACTS AND MITIGATION

This EIR evaluates four project alternatives. The following impact evaluation focuses on the LAFCo/City Preferred Consensus Alternative (Consensus Alternative) which has been identified as the Preferred Alternative in accordance with CEQA requirements. Impacts for the other alternatives are discussed in Chapter 6.0 Alternatives. In some instances; however, impacts related to the overall SOI Plan update may be presented when applicable and to help illustrate the environmental effects in the framework of the overall SOI Plan update. The impacts are discussed in terms of direct and indirect impacts. Direct impacts are those that occur immediately upon initiation of a project such as ground disturbance or demolition of existing structure(s). Indirect impacts occur when a project would induce growth into areas such as through the extension of infrastructure and that extension could facilitate new development or result in an annexation that could enable future development.

### Impacts Discussion Overview

The Impacts Discussion Overview describes the characteristics of the Consensus Alternative, development potential, assumptions for provision of services, and City and environmental review requirements related to hydrology and water quality resources. This discussion is applicable to each impact, Impact HYD-1 through HYD-8, below, but is provided here to avoid repetitive discussion.

The Consensus Alternative would update the SOI Plan area, and future development projects under City jurisdiction would occur only after being annexed to the City. The majority of these undeveloped areas within the Consensus Alternative area are designated for estate residential, rural residential, or open space with minor areas designated for planned development, employment centers, public uses, or service commercial. The lands that would be annexed are anticipated to be built out over time and development in these areas is anticipated to be consistent with the existing designations and planning documents.

Within the Consensus Alternative boundaries there are four priority annexation areas. These areas in general are already developed, are in close proximity to, or are already being served by existing water or wastewater lines. These areas are in logical locations for extension of City municipal services and represent a logical progression of City boundaries. The majority of the remaining undeveloped areas

within the Consensus Alternative area are designated for estate residential, rural residential, or open space with minor areas designated for planned development, employment centers, public uses, or service commercial.

In addition, the six potential development areas identified by the City are discussed throughout this document. These sites do not yet have any development approval and the specific project footprints are unknown. Annexation and the anticipated timeline for build out would occur over a period of time and is anticipated to be at similar densities as to what is shown in the project description and in accordance with existing City planning documents.

All future development within the Consensus Alternative area, including the six potential development areas identified by the City, would be subject to City design and review as part of City's project review process. All projects would be evaluated for consistency with the NCGP, Nevada City Municipal Code, and Nevada City Design Guidelines. The City also has authority to prezone all future annexations to Nevada City, and for annexations that include new development, the City would be able to specify conditions to ensure that future projects would incorporate all required elements of the listed development guidance documents related to preservation of scenic vistas. The project by project review also would include a City led CEQA analysis and as applicable, would require project-specific mitigation measures or binding conditions of approval to reduce impacts related to hydrology and water quality

***Impact HYD-1: a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?***

Water quality, waste discharges, and water quality is managed by the RWQCB and specifically the CVRWQCB in the vicinity of the SOI Plan update area. The SOI Plan update area is characterized by hilly with steep to gently sloping terrain, perennial and intermittent streams in a forested environment. The Consensus Alternative would not directly implement any development proposals, new construction, new entitlements or improvements, and it would not change any existing land use designations in any of these areas. The Consensus Alternative would not result in any direct impacts to water quality or result in the direct violation of a water quality standard or waste discharge requirements.

Indirect impacts from the Consensus Alternative could occur if grading, excavation, and other earthmoving activities that have the potential to cause substantial erosion to occur as a result of project implementation after annexation. If erosion is not prevented or contained during construction, sediments and particulates, along with other contaminants found on the project site, could be conveyed off-site and into downstream waters, resulting in water quality degradation and the subsequent violation of water quality standards.

Priority Annexation Area #1 contains the existing Caltrans facility and Priority Annexation Area #2 contains the existing County Juvenile Hall. There are no plans to expand or construct additional buildings on these sites and the potential for degradation to water quality is slight. Priority Annexation areas #3 and #4 contain an existing cemetery, rural residential uses and a few undeveloped parcels. Extension of services could encourage development of the undeveloped parcels but substantial development that could result

in significant violations of water quality standards is not anticipated. It should be noted, there are no proposed plans for further development of these areas.

The consensus alternative does include six potential development areas. Future development of these areas would be subject to the City's review and regulation when development plans are submitted, and/or application(s) filed. These areas are all greater than one acre and would be required to obtain a Construction General Permit. The Construction General Permit requires implementation of a SWPPP, which would include BMPs designed to reduce potential impacts from water degradation and storm water runoff. Construction BMPs may include, but are not limited to, stabilization of construction entrances, straw wattles on embankments, and sediment filters on existing inlets. The SWPPP must be kept on-site, updated as needed while construction progresses, and would contain a summary of the structural and non-structural BMPs to be implemented during both construction and post-construction periods. The SWPPP would also contain a site map(s) showing the construction perimeter, existing and proposed buildings, storm water collection and discharge points, general pre- and post-construction topography, drainage patterns across the site, and adjacent roadways; a visual monitoring program; a chemical monitoring program for "non-visible" pollutants, should the BMPs fail; and a sediment monitoring plan, should the site discharge directly into a water body listed on the 303(d) list for sediment. BMP's would be verified installed and verified pursuant to the nonpoint source practices and procedures as required by the City's Public Works Department.

All future development within the City after annexation would be subject to City design and review as part of City's project review process including CEQA analysis. As part of the CEQA analysis, the potential for impacts to hydrology and water quality would be considered, and as discussed above, proper permitting and water quality protection measures would be incorporated as conditions of project approval or as project-specific mitigation. Preparation, implementation, and participation with both the NPDES General Permit and the Construction General Permit, including the SWPPP and BMPs, would reduce potential impacts to water quality to acceptable levels. As a result, impacts associated to water quality in this regard and wastewater discharge requirements would be less than significant.

**Mitigation Measures:** No Mitigation Measures are Required.

**Impact HYD-2:**        ***b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?***

Existing development within the Consensus Alternative area is sparse and generally consists of rural residential, undeveloped properties, open space, and limited commercial uses. The potential for groundwater recharge from these areas is substantial due to the general lack of impervious surfaces. If substantial development occurs within the Consensus Alternative area the potential for groundwater recharge could be reduced. The Consensus Alternative does not propose any development within the SOI Plan Update area. If approved, the Consensus Alternative would not result in any entitlements for development or change existing NCGP Land Use or zoning designations. In this regard, direct impacts to groundwater recharge would not occur and mitigation would not be required.

Indirectly, the Consensus Alternative has the potential to induce growth and reduce the potential for groundwater recharge. No additional development within Priority Annexation Areas #1, #2, #3, and #4 is proposed and any new development that could be enabled from future annexation within the Consensus Alternative would be limited to a few single rural residential lots. The effects from this on groundwater recharge would be minimal.

Future development of the six potential development areas would be subject to the City's review and regulation and would be evaluated when development plans are submitted, and/or application(s) filed. It also is anticipated that any new development in these areas would be sufficiently sized to require the incorporation of LIDs. LIDs would use biofiltration and stormwater retention methods such as vegetated swales, water retention and detention basins, and other landscaped drainage features. These drainage features capture and treat water on-site and provide an opportunity for the water to infiltrate and recharge groundwater instead of being immediately conducted to downstream receiving waters.

Lastly, as potable water services are extended, the existing residences and other land uses that are currently using water wells to obtain water, could have the opportunity to switch and use NID supplied water. NID receives the majority of its water supply from surface water that is runoff from the Sierra Nevada Mountains. If existing well users switch to NID supplied water, this would have the effect of reducing groundwater use in these areas. Because of these reasons, adoption of the Consensus Alternative could result in an overall reduction of groundwater use and would not result in indirect impacts to groundwater and groundwater recharge. Therefore, the Consensus Alternative would not result in groundwater overdraft, substantially deplete local groundwater levels, or substantially redirect storm water such that natural basin recharge would be precluded. These impacts would be less than significant, and no mitigation is required.

**Mitigation Measures:** No Mitigation Measures are Required.

**Impact HYD-3:** *c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:*

*i) Result in substantial erosion or siltation on- or off-site?*

The Consensus Alternative does not propose any development within the SOI Plan Update area. If approved, the Consensus Alternative would not result in any entitlements for development or change existing land use or zoning designations. In this regard, direct impacts to drainage patterns including through the alteration of a stream or river, or addition off impervious surfaces resulting in substantial runoff would not occur. No mitigation would be required.

Indirectly, the Consensus Alternative has the potential to induce growth and result in alteration of the course of a stream or river resulting in downstream erosion from subsequent development. No additional development within Priority Annexation Areas #1, #2, and #4 is proposed and any new development that could occur after annexation would be limited to a few rural residential lots. The effects from the potential changes to these sites is anticipated to be minimal and would not change the course of a stream or river.

As discussed in Chapter 4.3 Biological Resources, City Code Chapter 17.80.120 contains regulations regarding the prohibition of development within riparian and adjacent to stream zones. The City prohibits building closer than 100 feet from a perennial stream and closer than 25 feet from seasonal water (unless a variance is granted). In addition, sections 401 and 404 prohibit the release of dredge or fill materials into waters of the U.S. These requirements also would ensure that the easternmost portion of Annexation Areas #3 (APN# 036-310-039), which is within or adjacent to a FEMA flood zone would not be constructed in a location that would substantially alter the existing drainage pattern, or create impervious surfaces such that substantial siltation or erosion occur.

Regarding the six potential development areas, these sites would be subject to the City's review and regulation when development plans are submitted, and/or application(s) filed. Although the specific footprint and site conditions and areas of disturbance are unknown, these projects, if they occur, would be subject to the same codes and laws related to limitation on construction activities within a stream or river. These projects all are greater than one acre in size and would be required to prepare a SWPPP in accordance with an NPDES permit as discussed in Impact HYD-1, above.

Lastly, as discussed in the Impacts Discussion Overview, all annexation projects would be subject to a City lead CEQA review which would require projects comply with all applicable water quality standards. Therefore, conformance with applicable, standards, laws, and regulations pertaining to water quality would ensure these impacts are less than significant.

**Mitigation Measures:** No Mitigation Measures are Required.

**ii) *Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?***

The Consensus Alternative does not propose any development within the SOI Plan Update area. If approved, the Consensus Alternative would not result in any entitlements for development or change existing NCGP Land Use or zoning designations. In this regard, direct impacts to drainage patterns including through the creation of impervious surfaces such that on or off-site flooding would not occur.

The project would not alter precipitation amounts or intensities, nor is it anticipated to require any additional water to be imported to serve the future project sites. Some additional run-off would occur from new impervious surfaces if construction occurs; however, the overall increased surface area would be minimal and the potential for on-site or off-site run-off would be minimal. No additional development within Priority Annexation Areas #1, and #2, is proposed and no additional run-off is anticipated. Indirectly adoption of the SOI Plan update could result in new development in Priority Annexation areas #3 and #4. This has the potential to create additional impervious surfaces if new structures are built. Construction on these sites; however, would be within a rural landscape, increased run-off would be minimal, and would be required to comply with all applicable RWQCB, CVRWQCB, and City requirements related to water runoff and control.

City Municipal Code Chapter 13.20.101 Statutory Authorization would apply to future annexations and projects that could occur in the Consensus Alternative area if they are within flood zones. In part, the purposes of this chapter are to protect human life and health; minimize damage and reduce the effects on uses in flood zones. More specifically, section 13.20.050 sets forth provisions for flood hazard reduction including anchoring, use of construction materials resistant to flooding, and a requirement that in a zone A, the lowest floor be elevated at least one foot above the base flood elevation. Other requirements such as structure design and certification by a registered professional engineer or architect are required.

As discussed in Impact HYD-1 abHYD-2, future development of the six potential development areas would be subject to the City's review and regulation, and they would be required to obtain an NPDES Construction General Permit and implement a SWPPP and associated BMPs. Depending on the size and types of future projects, projects would be required to incorporate LIDs which would help retain stormwater on-site, control downstream erosion and sedimentation, prior to release of water to downstream areas. Lastly, all projects subject to annexation would require subsequent CEQA review, which would require an evaluation of impacts to hydrology and water quality. As part of the review process, the City would require future projects to incorporate conditions of approval or mitigation measures as needed to protect water quality. These required elements associated with project approval would reduce impacts to less than significant. No mitigation is required.

**Mitigation Measures:** No Mitigation Measures are Required.

**iii) *Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?***

The Consensus Alternative does not propose any development within the SOI Plan Update area. If approved, the Consensus Alternative would not result in any entitlements for development or change existing NCGP Land Use or zoning designations. In this regard, direct impacts to drainage patterns such that it would contribute runoff in exceedance of the existing or planned stormwater drainage systems would not occur.

As discussed in Impacts HYD-1, HYD-3, and HYD-4, depending on the location, size, and nature of annexation areas and future projects, some projects would be required to obtain a Construction General Permit. The Construction General permit requires implementation of a SWPPP, which would include BMPs to minimize the erosion caused by storm water runoff and protect downstream receiving waters. Preparation, implementation of all required NPDES permits, including implementation of SWPPPs and associated BMPs, would reduce the potential for storm water flows from carrying potential contaminants off-site during construction. This would reduce the potential for future annexation and subsequent development to create or contribute substantial amounts of pollutants to runoff. These impacts would be less than significant.

Future projects as needed, would incorporate LIDs and biofiltration and stormwater retention areas such as swales and water retention and detention basins. These stormwater treatment measures would be designed according to the anticipated flows to capture, store, and treat stormwater runoff, before releasing the water downstream. These measures would reduce potential impacts to less than significant.

All annexations would require subsequent CEQA review, which would require an evaluation of impacts to hydrology and water quality and the inclusion of conditions of approval and mitigation measures as needed. In addition, this evaluation would include verification of conformance to NPDES and all other standards and requirements to project water quality. This would reduce impacts to less than significant. No mitigation is required.

**Mitigation Measures:** No Mitigation Measures are Required.

**Impact HYD-4:           d) In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?**

The Consensus Alternative does not propose any development within the SOI Plan Update area. If approved, the Consensus Alternative would not result in any entitlements for development or change existing NCGP Land Use or zoning designations. In this regard, direct impacts associated with a flood hazard, tsunami, or seiche would not occur.

The SOI Plan Update area is greater than 100 miles from the Pacific Ocean and inundation from a tsunami would not impact the proposed project. Within the Consensus Alternative area there are FEMA mapped flood zones within and adjacent to Deer Creek and three small lakes/pond south of Red Dog Road, Charles Marsh Pond in Coyote Diggins' Park, and Hirschman's pond south of Indian Flat Road. None of the Priority Annexation Areas are within an area that would be affected by a seiche, but priority Annexation Area #3 is adjacent to Deer Creek (APN# 036-310-039) within or adjacent to a FEMA flood zone designated AE.

Any future annexation request and development application related to this lot or regarding the six potential development areas, would be subject to the City's review and regulation when development plans are submitted, and/or application(s) filed. Additionally, all project subject to annexation would require subsequent CEQA review, which would require an evaluation of impacts to flooding. This would include a formal evaluation of the FEMA quality and incorporation of conditions of approval and mitigation measures as needed. This would reduce impacts to less than significant.

It is unknown the exact footprint of the six potential development areas and impacts associated with flooding would be determined upon subsequent plan review by the City. In addition, all future annexation projects would undergo site-specific CEQA review at which time the potential for impacts from flooding and seiche, if applicable, would be analyzed and conditions of approval and mitigation proposed if needed. This is anticipated to reduce impacts to less than significant. No mitigation is required.

**Mitigation Measures:** No Mitigation Measures are Required.

**Impact HYD-5: *Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?***

The Consensus Alternative does not propose any development within the SOI Plan Update area. If approved, the Consensus Alternative would not result in any entitlements for development or change existing NCGP Land Use or zoning designations. In this regard, direct impacts associated with obstruction of a water quality control plan would not occur.

As part of all future annexations, the City would evaluate annexations and the project conformance with RWQCB plans and policies, City guidelines, and for CEQA compliance. Projects would be evaluated for with NPDES permits, and incorporation of SWPPP's, BMP's, and other requirements of the Basin Plan, including permitting for septic systems (should they be proposed), and on-site water retention required by MS4 permits. This would ensure that all future projects do not in conflict with a water quality control plan. In regard to a sustainable ground water management plan, the Consensus Alternative would likely result in extension of water lines into unincorporated areas. This would have the likely effect of reducing reliance on ground water wells. NID would be the likely water supplier. Use of NID would reduce demands on ground water withdrawal as most NID water is supplied from surface water from the Sierra Nevada Mountains. Thus, impacts in this regard would be less than significant.

**Mitigation Measures:** No Mitigation Measures are Required.

## 4.7.5 CONCLUSION

As discussed above, the Consensus Alternative would not result in any direct impacts on hydrology and water quality because approval of the project would not authorize any development or issue any development entitlements. Impacts in this regard would not occur.

All future proposed annexations would be subject to plan and design review by the City. This include site-specific CEQA analysis as required by City Municipal Code. All sites would be evaluated for their potential to result in impacts to hydrology and water quality. If required, all drainage improvements planned for future projects would be designed to satisfy the RWQCB's MRP requirements, and all other applicable requirements and standards such as obtained NPDES permits and implementing SWPPP's with BMP's. In addition, long term water quality standards are anticipated to be improved or maintained through implementation of LIDs on future projects. Such design features would help ensure that operational impacts associated with water quality standards and wastewater discharge requirements would be less than significant. The City does not use groundwater; thus, the project would not result in impacts to local groundwater. Existing drainage areas also would be protected through conformance with all RWQCB's requirements and all other applicable standards and that drainage patterns leading to substantial on-site or off-site erosion does not occur. The Consensus Alternative area is not susceptible to tsunamis, and although it is unlikely, would be evaluated to determine susceptibility to seiches and flooding on Deer Creek and other waterways. Furthermore, the project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan would be less than significant.

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## 4.7.6 CUMULATIVE IMPACTS

Cumulative impacts to hydrology and water quality could occur as new development, redevelopment, and existing uses are ongoing within the watershed and within the Consensus Alternative area. Parts of the watershed, largely within Nevada City, are already urbanized, but surrounding areas are predominantly rural residential uses with some scattered industrial and commercial uses. Growth on the boundaries of the City is anticipated to consist of slightly more dense development and areas further into the SOI area are anticipated to be consistent with existing land use patterns. New development projects would result in some increases in impervious surfaces, and thus could generate increased runoff from the affected project sites. Future developments in the watershed would be required to comply with the SWRCB and CVRWQCB. Depending on the size of future projects, they would be required to obtain and comply with all required water quality permits and the Water Quality Control Plan, as needed and prepare and implement SWPPPS, implement BMPs, including LID BMPs to minimize runoff, erosion, and storm water pollution, and MS4. As part of these requirements, projects, depending on size and locations, would be required to implement and maintain source controls, and treatment measures to minimize polluted discharge and prevent increases in runoff flows that could substantially decrease water quality. Conformance to these measures would minimize runoff from those sites and reduce contamination of runoff with pollutants. Therefore, related projects are not expected to cause substantial increases in storm water pollution. With compliance with State and local mandates, cumulative impacts would be less than significant, and project impacts would not be cumulatively considerable.

***Mitigation Measures:*** No Mitigation Measures are Required.