

4.10 HYDROLOGY AND WATER QUALITY

This section evaluates potential hydrology and water quality impacts that could result from the Nevada County Housing Element Rezone. Mitigation measures for potential impacts are identified where applicable. Information in this section comes from County of Nevada GIS mapping analysis as well as existing federal, state, and local regulations.

4.10.1 ENVIRONMENTAL SETTING

CLIMATE

Located on the western slope of the Sierra Nevada Mountain Range, Nevada County (County) enjoys a temperate climate with seasonal variations consisting of hot dry summers and cold wet winters. Average temperatures range from a low of 34 degrees Fahrenheit (°F) in January to a high of 91°F in July. Precipitation falls primarily from November to April in the form of both rain and snow with snow falling most winters. The majority of precipitation falls in December, January, and February.

WATERSHEDS

The proposed project areas lie within the Upper Bear and Upper Yuba subbasins. Both subbasins exist within the American River subregion, which consists of roughly 5,375 square miles and includes portions of six counties. More specifically, the project sites are located within three watersheds (Sites 1-9, 14, and 17 are in the Wolf Creek Watershed, Sites 10-13 are in the Deer Creek Watershed, and Sites 15, 16, and 18 are in the Middle Bear Watershed).

The Upper Bear subbasin, which incorporates the Grass Valley area sites and the Lake of the Pines area sites, 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 flow patterns are high in the winter and spring and very low in the summer and fall. Bear River flows are regulated almost entirely by several storage reservoirs and numerous diversions.

The Upper Yuba subbasin, which incorporates the Penn Valley area sites, flows southward, then southwest, through the Sierra Nevada foothills. There are more than 100 jurisdictional dams and diversions in the Yuba River watershed which convey water to local users in the Bear and North Fork American River Watersheds. Flows in the watershed are also high in the winter and spring, but decrease quickly in late spring.

Both subbasins contain a significant amount of sediment and mercury as a result of past hydraulic mining that occurred in the area, and recent construction associated with rural housing development, logging, and recreation. Several rivers within both watersheds are listed on the Clean Water Act's 303(d) list of impaired waterbodies. The Yuba River still supports a highly valued population of steelhead trout, rainbow trout and fall-run Chinook salmon, along with other resident fish communities. The Bear River also supports a popular fishery for rainbow and brown trout; however, salmon and steelhead runs have declined from low flows in the lower river.

SURFACE WATER QUALITY

Common Stormwater Runoff Constituents

The most common categories of stormwater pollutants are described below. 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.

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. 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 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 or other non-moving water bodies. The orthophosphorous 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. 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).

Oxygen-Demanding Substances

Aquatic life is dependent on DO in water. When microorganisms consume organic matter, DO is consumed in the process. A rainfall event can deposit large quantities of oxygen-demanding substances in lakes and streams. A problem from low DO can result when the rate of oxygen-demanding material exceeds the rate of oxygen 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 runoff exceed public health standards for water contact recreation (including canoeing and rafting), almost without exception. Studies have found that total coliform bacteria counts exceed U.S. Environmental Protection Agency (EPA) water quality criteria at almost every site examined and almost every time it has rained. The coliform bacteria that are detected may not be a health risk in 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 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.

Monitoring and Evaluating Water Quality

The physical properties and chemical constituents of water have served traditionally as the primary measures for monitoring and evaluating water quality. Evaluating the condition of water with a water quality standard means evaluating its physical, chemical and/or biological characteristics. Water quality parameters for stormwater comprise a long list and are classified in many ways. In some cases, the concentration of a pollutant, rather than the annual load of that pollutant, is needed to assess a water quality problem.

The pH data characterizes the alkalinity or acidity of surface waters and is a general indication of the overall health of surface waters. A neutral pH is 7.0 and a neutral pH range is usually considered to be between 6.0 and 8.0. Turbidity measurement is a key test of water quality. Higher turbidity measurements are generally associated with higher metal concentrations, as metals tend to attach to small particles. Dissolved oxygen is a measurement of the amount of gaseous oxygen dissolved in an aqueous solution. It is an indication of the potential for various aquatic organisms to survive in a particular environment. Dissolved oxygen generally decreases as water temperature increases. Thus, water temperature also has an effect on aquatic habitat.

Water Quality Standards

The California Regional Water Quality Control Board, Central Valley Region, Water Quality Control Plan (Basin Plan) establishes the water quality standards for the Sacramento and San Joaquin River Basins. The standards set forth in the Basin Plan act as regulatory references for meeting state and federal requirements for water quality control. The Basin Plan does not specify target concentrations for lead, mercury, aluminum or magnesium, but it does specify targets for arsenic (10 µg/l), barium (100 µg/l), copper (5.6 µg/l), iron (300 µg/l) and manganese (50 µg/l). Concentrations of arsenic, barium and manganese in Wolf Creek fall within Basin Plan objectives, but concentrations of copper and iron exceed Basin Plan objectives.

FLOODING

According to the National Flood Insurance Program (NFIP), administered by Federal Emergency Management Agency (FEMA), portions of two of the proposed project sites (Sites 10 and 13 in the Penn Valley area) are located within a floodway and Special Flood Hazard Area (floodplain). The Flood Insurance Rate Map (FIRM) panel (06057C0608E) that covers the Penn Valley proposed project sites shows the area along Squirrel Creek that runs in between Sites 10 and 13 to be partially in a regulated floodway, and partially in a Special Flood Hazard Area (SFHA) with a 1-percent-annual-chance flood. Portions of the sites located within the SFHA will require flood insurance since these areas are subject to inundation by the 1-percent annual chance flood event. Portions of the sites located in the floodway should be kept free from encroachment in order to discharge the 1-percent-annual-chance flood without increasing flood levels by more than 1.0 foot.

All other proposed project sites are not within a NFIP designated flood hazard zone and would therefore have an extremely low risk of flooding.

4.10.2 REGULATORY SETTING

FEDERAL FRAMEWORK

Clean Water Act

The Clean Water Act (CWA) places the primary responsibility for surface water pollution control and water resources development planning with the states. However, the act requires the states to follow certain guidelines in developing their programs and allows the U.S. Environmental Protection Agency (EPA) to withdraw control from states with inadequate implementation mechanisms. The CWA requires states to adopt water quality standards for receiving surface water bodies and to have those standards approved by the EPA. Water quality standards consist of designating beneficial uses for a particular receiving water body (e.g., wildlife habitat, agricultural supply and fishing), along with water quality criteria necessary to support those uses. Water quality criteria are prescribed concentrations or levels of constituents, such as lead, suspended sediment, and fecal coliform bacteria or narrative statements which represent the quality of water that supports a particular use.

Section 303(d) – Total Maximum Daily Loads

When water quality does not meet CWA standards and compromises designated beneficial uses (e.g., wildlife habitat, agricultural supply and fishing) of a particular receiving water body, Section 303(d) of the CWA requires that water body be identified and listed as

“impaired.” Once a water body has been deemed impaired, a Total Maximum Daily Load (TMDL) must be developed for the impairing pollutant(s). 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 (with a “factor of safety” included). Once established, the TMDL allocates the loads among current and future pollutant sources to the water body.

Section 401 Water Quality Certification

Under Section 401 of the CWA (33 USC 466 et seq.), every discharger that may discharge pollutants into the waters of the U.S. must apply for a federal permit or license (including permits under Section 404 of the CWA) to ensure that the proposed activity complies with state water quality standards.

Section 402 National Pollutant Discharge Elimination System General Construction Storm Water Permit

In 1972, the Federal Water Pollution Control Act (later referred to as the CWA) was amended to require National Pollutant Discharge Elimination System (NPDES) permits for the discharge of pollutants to navigable waters of the U.S. from any point source. In 1987, the CWA was amended to require that the EPA establish regulations for the permitting of municipal and industrial stormwater discharges under the NPDES permit program. The EPA published final regulations regarding stormwater discharges on November 16, 1990. The regulations require that municipal storm sewer system discharges to surface waters be regulated by a NPDES permit. NPDES permits are issued under the Federal Clean Water Act, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.).

STATE FRAMEWORK

Waters of the state consist of all surface water or groundwater, including saline waters, within the boundaries of the State of California. Nevada County requires adherence to all state and federal water quality standards, therefore the requirements listed below will pertain to all sites within the County’s jurisdiction.

California Toxics Rule

Because California had not established a complete list of acceptable water quality criteria, the EPA (under the authority of the CWA) established numeric water quality criteria in the form of the California Toxics Rule (CTR) (40 CFR 131.38), which was finalized May 18, 2000. CTR covers potentially toxic constituents in receiving waters with human health or aquatic life designated uses.

Porter-Cologne Water Quality Control Act

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 (Division 7 of the California Water Code). The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) grants the State Water Resources Control Board (SWRCB) and each of the nine Regional Water Quality Control Boards (RWQCBs) power to protect water quality, and is the primary vehicle for implementation of California’s responsibilities under the CWA. The applicable RWQCB for the project area is the Central Valley Regional Water Quality Control Board (CVRWQCB). Under the Porter-Cologne Act, the SWRCB and

RWQCBs have the authority and responsibility to adopt plans and policies, regulate discharges to surface and groundwater, regulate waste disposal sites and require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substances, sewage, or oil or petroleum products.

Central Valley Regional Water Quality Control Plan (Basin Plan)

As required by the California Water Code (Section 13240) and supported by the CWA, each RWQCB must formulate and adopt a water quality plan (Basin Plan) for its region. 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. The term “water quality standards,” as used in the CWA, 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. Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels needed to meet the beneficial uses, plans for improving water quality are included. 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.

The beneficial uses identified for Bear River by the Basin Plan include the following: municipal and domestic supply, agricultural irrigation and stockwatering, hydropower generation, water contact recreation (including canoeing and rafting), non-contact water recreation (such as hiking, camping or boating), warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat and wildlife habitat.

Beneficial uses identified for Wolf Creek consist of groundwater recharge and freshwater replenishment. The RWQCB has identified specific water quality objectives to support the designated beneficial uses that account for the presence of bacteria and aquatic growth substances, chemical constituents such as trace elements, color, DO, floating material, methylmercury, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity and turbidity.

The beneficial uses for Deer Creek include municipal and domestic supply, irrigation, stock watering, water contact recreation (including canoeing and rafting), non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, cold fish migration habitat, warm and cold spawning habitat, and wildlife habitat.

Non-Point Source Management Plan (SWRCB Resolution No. 88-123)

In addition to the Basin Plan, a number of water quality control plans and policies adopted by the SWRCB direct the RWQCB's actions. In 1988, the SWRCB adopted the Nonpoint Source Management Plan, which established the framework for statewide nonpoint source activities. Four of the six statewide objectives and implementation strategies to manage nonpoint source problems are included in the plan. Nonpoint source pollution comes from many diffuse sources including agriculture (pesticides, herbicides), urban runoff

(construction sites, roads, industry, and residential areas), marinas and boating, hydromodification and mining.

NPDES General Permit for Stormwater Discharges Associated With Construction Activity

As described previously, NPDES permits are required for discharges of pollutants to navigable waters of the U.S. These waters consist of surface waters such as lakes, rivers, streams, bays, the ocean, dry stream beds, wetlands and storm sewers that are tributary to any surface water body.

The RWQCB issues NPDES permits in lieu of direct issuance by the EPA, subject to review and approval by the EPA Regional Administrator (EPA Region 5 for the proposed project). The terms of these NPDES permits implement pertinent provisions of the CWA and the act's implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries and anti-degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable so as to achieve the CWA's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the California Water Code.

Construction activities disturbing one acre or more of land are subject to the permit requirements of the NPDES program. The developer must file a Notice of Intent (NOI) to seek coverage under the statewide General Construction Activity Stormwater Permit (General Permit) prior to the beginning of construction and prepare and maintain a Stormwater Pollution Prevention Plan (SWPPP) per County and state ordinances. The NOI would be submitted to the Division of Water Quality of the SWRCB. The SWPPP should be developed to meet the following objectives:

- Identify pollutant sources that may affect the quality of discharges of stormwater associated with construction activity from the construction site
- Identify, construct, implement and maintain best management practices (BMPs) to reduce or eliminate pollutants in stormwater discharges from the construction site during construction
- Develop a maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs)

LOCAL FRAMEWORK

As previously mentioned above, all sites will be subject to state ordinances in regards to compliance with the NPDES program and the preparation of a SWPPP. Additionally, Sites 10-18 will require compliance with the goals and objectives of the County standards, and Sites 1-9 will be subject to the stormwater and water quality standards from several Grass Valley City codes, plans, and programs.

Nevada County General Plan Standards

The County General Plan (1995) Water Element (Chapter 11) identifies the primary goal:

(Goal 11.1): "Identify, protect and manage for sustainable water resources and riparian habitats" with the following related objectives:

- (1) Objective 11.1 promote and provide for conservation of domestic and agricultural water;
- (2) Objective 11.2 preserve and, where feasible, improve surface and subsurface water quality;
- (3) Objective 11.3 preserve and, where economically feasible, restore the density and diversity of water-dependent species and continuous riparian habitats;
- (4) Objective 11.4, preserve the integrity and minimize disruption of watersheds and identified critical water courses; and
- (5) Objective 11.5, support appropriate acquisition, development, maintenance and restoration of habitats suitable for wildlife enhancement.

The following policies are associated with objectives 11.1 through 11.5:

- Objective 11.1 One action policy and three directive policies are identified, including:
- (1) Policy 11.1, adopt water conservation standards consistent with state standards (action policy);
 - (2) Policy 11.2, encourage protection of resources that produce water for domestic and agricultural use;
 - (3) Policy 11.3, promote protection of water quality where water is transported in open canals;
 - (4) Policy 11.3A, provide a comprehensive and organized system of well log data.
- Objective 11.2 The following five directive policies are identified:
- (1) Policy 11.4, cooperate with state and local agencies to identify and reduce acceptable levels of point and non-point source pollution;
 - (2) Policy 11.5, maintain operation of the Nevada County Water Agency Advisory Council to continue efforts to protect and enhance County water resources;
 - (3) Policy 11.6, continue to enforce regulations related to the installation and operation of private sanitary waste disposal systems;
 - (4) Policy 11.6A, minimize the discharge of pollutants from new developments through appropriate design and maintenance requirements; and
 - (5) Policy 11.6B, provide a comprehensive and organized database on the effects of septic tank/leach field systems on groundwater quality.
- Objective 11.3 The following two action and directive policies are identified:
- (1) Policy 11.7, establish appropriate building setback requirements for perennial streams and significant wetlands to protect associated resource values (action policy); and
 - (2) Policy 11.8, use voluntary clustering of development to preserve stream corridors, riparian habitat, wetlands and floodplains.

- Objective 11.4 The following four directive policies are identified:
- (1) Policy 11.9, maintain low development densities in rural areas to protect existing watersheds;
 - (2) Policy 11.9A, ensure that grading and development plans include appropriate flood hazard protections and avoidance of additional flood damage potential prior to approval;
 - (3) Policy 11.9B, require that new utilities, critical facilities and non-essential public structures be located outside of 100-year floodplains where feasible, or avoid any associated increase to flood-related hazards; and
 - (4) Policy 11.9C, require that the habitable portions of residential structures within a 100-year floodplain be located above the 100-year flood level, and require that non-residential structures be appropriately elevated or flood-proofed without causing floodwater displacement where appropriate.
- Objective 11.5 The following two directive policies are identified:
- (1) Policy 11.10, cooperate with state/federal agencies and other applicable organizations to acquire, restore and maintain habitat areas; and
 - (2) Policy 11.11, encourage the U.S. Bureau of Land Management and U.S. Forest Service to restore/maintain habitat areas on federal lands.
- The County General Plan (1995) Soils Element (Chapter 12) identifies the primary goal:
- (Goal 12.1): to “Minimize adverse impacts of grading activities, loss of soils and soil productivity” with the following related objectives:
- (1) Objective 12.1 minimize earth movement and disturbance;
 - (2) Objective 12.2, minimize erosion due to road construction and maintenance; and
 - (3) Objective 12.3 minimize vegetation removal. The following policies are associated with objectives 12.1 and 12.2 (with no policies identified for objective 12.3 in Chapter 12):
- Objective 12.1 Three associated directive policies are identified, including:
- (1) Policy 12.1, enforce grading and erosion control requirements through appropriate monitoring efforts;
 - (2) Policy 12.2, enforce grading and vegetation removal requirements for activities not associated with a development project; and
 - (3) Policy 12.3, coordinate/encourage erosion control through efforts such as provision of public educational materials.
- Objective 12.2 Two associated directive policies are identified, including:
- (1) Policy 12.4, require erosion control measures as an element of all County contracts, discretionary permits and ministerial projects; and (2) Policy 12.5, provide support to the Resources Conservation

District and related agencies in providing education/support to assist the general public in implementing techniques to minimize erosion.

Nevada County Land Use and Development Code

Section L-II 4.3.17 Watercourses, Wetlands and Riparian Areas establishes policies to preserve the integrity and minimize disruption of watersheds and watercourses. To preserve stream corridors and riparian habitat, ensure adequate protection of stream values and protect stream corridors for wildlife movement and foraging. To avoid the impact of development on wetlands, or where avoidance is not possible, to minimize or compensate for such impacts, to provide for minimum setbacks to protect resources values, and to retain wetlands as non-disturbance open space.

Specifically, the chapter outlines the following development standards:

A project shall be approved only when not within the following non-disturbance buffers, unless a Management Plan is prepared, consistent with the U.S. Fish and Wildlife Service, State Department of Fish and Game, and U.S. Army Corps of Engineers standards below, or unless greater or lesser setbacks are delineated on the Zoning District Map, which shall be adhered to:

- For all applicable projects, the developer shall have a Biological Inventory prepared by a qualified biologist, to determine whether the habitat for the defined resource, or the resource itself may be affected by a proposed project.
- Within 100' of the high water mark of perennial streams and watercourses.
- Within 50' from the high water mark of intermittent watercourses.
- Within 100' of all wetlands and riparian areas.
- Within 100' of the canal water surface on the uphill side of a canal; and within 20' of the water surface on the downhill side of a canal.
- A project shall be approved only when it is determined by the Planning Agency that it will not adversely affect any wetlands over one acre, or riparian areas, and that it will result in no net loss of habitat functions or values of the wetlands or riparian area.
- Project developers shall obtain appropriate authorizations from the U.S. Fish and Wildlife Service, State Department of Fish and Game, and U.S. Army Corps of Engineers prior to project approval. Any provisions to avoid, mitigate, or compensate for impacts to the wetlands or riparian areas contained in such authorizations shall become conditions of project approval.
- If the above standards effectively preclude development of the project or a revised project, or adversely affect another environmentally sensitive resource, a Management Plan, prepared by a qualified biologist or botanist, shall be prepared that avoids or minimizes impacts to the resource.

An alternative is the on-site or off-site creation, restoration, replacement, enhancement, or preservation of wetlands or riparian areas. This alternative may be preferred where the remaining protected wetlands or riparian areas are small, isolated, and of low habitat value. Such areas shall take into account both site location and wetland or riparian type.

The following wetland or riparian area types shall be allowed as mitigation in descending order of general acceptability:

- In-kind, On-site
- In-kind, Off-site
- Out-of-kind, On-site
- Out-of-kind, Off-site

Such wetlands or riparian areas shall be maintained in perpetuity in order to compensate for the permanent effect of the project through recordation of a restrictive document. Such wetlands or riparian areas shall ensure full replacement of wetland or riparian areas lost at a minimum of not less than a 2:1 ratio.

Mitigation can involve the purchase of compensatory habitat acreage within Nevada County of comparable or superior quality within a qualified wetland or riparian area mitigation banking site in Nevada County ensuring full replacement consistent with the above standard. The bank developer shall provide assurance to the County that the created wetlands or riparian areas are permanently protected and maintained.

These standards shall not apply to open air structures, including docks, piers, boat hoists and canopies, as defined in Section 4.2.5.G.5.

Chapter V (Buildings) Article 19 (Grading) of the Nevada County Land Development Code sets forth rules and regulations to control excavation, grading and earthwork construction, including fills and embankments; establishes standards of required performance in preventing or minimizing water quality impacts from storm water runoff; establishes the administrative procedure for issuance of permits; and provides for approval of plans and inspection of grading construction, drainage, and erosion and sediment controls at construction sites. In particular, Article 19 establishes the following grading permit requirements:

- Except as exempted in Sec. L-V 19.3 of this Code, no person shall do any grading without first obtaining a grading permit from the Building Official. A separate permit shall be obtained for each site, and may cover both excavations and fills.
 - No person shall do or permit to be done any grading in such a manner that quantities of dirt, soil, rock, debris, or other material substantially in excess of natural levels are washed, eroded, or otherwise moved from the site, except as specifically provided for by a permit.
 - No person shall do or permit to be done any grading which may obstruct, impede or interfere with the natural flow of storm waters, whether such waters are unconfined upon the surface of the land or confined within land depressions or natural drainage ways, unimproved channels or watercourses, or improved ditches, channels or conduits, in such manner as to cause flooding where it would not otherwise occur, aggravate any existing flooding condition or cause accelerated erosion except where said grading is in accordance with all applicable laws, including but not limited to, these permit requirements.
 - Pond Construction and design shall be done in conformance with the most recent Conservation Practice Standard, "Pond" (Code 378) as published by the Natural Resources Conservation Service.

- The provisions of Section 105, Appendix Chapter 1, are applicable to grading. Additionally, the application shall state the estimated quantities of work involved.
- Grading shall be performed in accordance with the approved grading plan prepared by registered design professional, and shall be designated "engineered grading" The Building Official may waive this requirement if the proposed grading is minor in nature and would not endanger the public health, safety and welfare. This grading shall be designated "regular grading".

In issuing a permit, the Building Official may impose conditions as prescribed by Chapter V necessary to protect the health, safety and welfare of the public, to prevent the creation of a hazard to public or private property, and to assure proper completion of the grading, including, but not limited to:

- Mitigation of adverse environmental impacts as disclosed by any environmental document findings;
- Improvement of any existing unstable grading affected by this permit to comply with the standards of this Chapter;
- Protection of grading which would otherwise be hazardous;
- Dust, erosion and sediment control, and season of work, weather conditions, sequence of work, access roads and haul routes;
- Safeguard watercourses from excessive deposition of sediment or debris;
- Safeguard areas reserved for on-site sewage disposal, water supply and hazardous material storage;
- Assurance that the land area in which grading is proposed and for which habitable structures are proposed is not subject to hazards of land slippage or significant settlement or erosion;
- Compliance with all applicable provisions of the Nevada County Land Use and Development Code;

If grading operations are commenced before first securing a proper permit, no permit will be issued until illegal grading has stopped. In the event that no grading permit, erosion control permit or land use permit can be issued for such operation, the site shall be restored to its original condition to the extent feasible, and to the extent full restoration is not possible mitigation measures may be imposed to remediate any damage caused. Restoration shall be in conformity to an approved restoration plan.

Winter operations shall not be allowed if an immitigable high potential for accelerated erosion exists due to slope, rock or soil type, proximity to a stream or drainage course, magnitude or duration of disturbance, or other characteristics of the project and the site.

City of Grass Valley Stormwater Management Program

The City Stormwater Management Program (SWMP) was developed in June 2003 to address stormwater quality within the City's jurisdiction in compliance with a statewide general permit for discharging stormwater to waters of the state. The SWMP addresses a wide variety of activities conducted in urbanized areas of the City that are sources of pollutants in stormwater. The SWRCB identified the City as a municipality that would be subject to the General Permit for Discharges of Storm Water from Small Municipal Separate Storm Sewer Systems (referred to as "Small MS4 General Permit" where MS4 stands for Municipal

Separate Storm Sewer System). The City was identified by the SWRCB as a municipality that would be subject to this permit because: 1) it discharges stormwater to sensitive waterbodies (Yuba River and Bear River) listed as impaired; and 2) the area's population density is greater than 1,000 residents per square mile (in fact, there are more than 2,600 residents per square mile).

To comply with the permit, the City must implement BMPs that reduce pollutants in stormwater to the "maximum extent practicable" (MEP). MEP is the technology-based standard established by Congress in CWA Section 402(p)(3)(B)(iii). Technology-based standards establish the level of pollutant reductions that dischargers must achieve. MEP is generally a result of emphasizing pollution prevention and source control BMPs as the first lines of defense in combination with treatment methods serving as additional lines of defense, where appropriate. The MEP approach is an ever-evolving, flexible and advancing concept, which considers technical and economic feasibility. As knowledge about controlling urban runoff continues to evolve, so does that which constitutes MEP. The way in which MEP is met may vary among communities.

Consistent with EPA guidance, the Small MS4 General Permit requires the City to develop and implement six "minimum control measures" (referred to as "program elements" for the SWMP). These six program elements are:

- Public Education and Outreach
- Public Involvement and Participation
- Illicit Discharge
- Construction Activities
- New Development and Redevelopment
- Municipal Operations

The program elements, with control measures and associated BMPs, form a comprehensive programmatic framework that reduces pollutants in stormwater to the MEP. Implementation is monitored by a designated administrator and program effectiveness assessed annually over the permit period. The SWMP will be revised annually as necessary to address areas identified as deficient during the effectiveness evaluation process. Since adoption of the program, the City has been in compliance with the Small MS4 General Permit with regard to the six program elements.

In addition to the SWMP, the Stormwater Master Plan and Criteria, prepared by Cranmer Engineering, Inc., dated March 1986, is relevant to the design of stormwater facilities and future capacities of stormwater facilities in the City and is referenced in the City of Grass Valley Improvement Standards, dated March 2009.

City of Grass Valley Community Design Guidelines

The City of Grass Valley adopted Community Design Guidelines in February 2003 that include specific erosion and sediment control guidelines. The erosion and sediment control guidelines were taken by permission from the Nevada County Resource Conservation District and incorporated by reference in the Grass Valley Design Review Manual. General, temporary and permanent erosion control guidelines are specified and required to be included in final project design.

City of Grass Valley 2020 General Plan

The 2020 General Plan includes several goals, objectives and policies with respect to protection of natural hydrologic resources, including the following:

Conservation/Open Space Element

Goal 1-COSG	Provide a balance between development and the natural environment, protecting and properly utilizing Grass Valley's sensitive environmental areas/features, natural resources and open space lands.
Objective 4-COSO	Reduction of urban development impacts on native vegetation, wildlife and topography.
Objective 6-COSO	Assurance of appropriate resource conservation and environmental protection measures as prerequisites to development.
Goal 2-COSG	Protect, enhance and restore hydrologic features, including stream corridors, flood plains, wetlands and riparian zones.
Objective 8-COSO	Minimize interference with the natural functions of flood plains and naturally flood-prone areas.
Goal 6-COSG	Assure compliance with and understanding of air and water quality regulations and standards.
Objective 15-COSO	Protection of ground and surface water quality.
Objective 16-COSO	Inclusion of air and water quality considerations in land use decisions rendered by the Planning Commission and City Council.
Policy 3-COSP	Encourage clustering, density averaging and other techniques in larger-scale new developments, as means of preserving open space and natural systems.
Policy 5-COSP	Carefully regulate development on steep slopes.
Policy 6-COSP	Prevent excessive alteration of the natural topography.
Policy 9-COSP	Carefully regulate development for location in flood hazard areas.
Policy 21-COSP	Continue to implement water quality improvement plans, including storm water separation and sewage treatment plant expansion.

Safety Element

Goal 1-SG	Reduce the potential risk of death, injury, property damage and economic and social dislocation resulting from hazards.
Objective 3-SO	Reduction of risk from exposure to flood hazards.
Policy 5-SP	Maintain or return to open space lands subject to flooding.

City of Grass Valley Development Code

Article 5 (Resource Management) Chapter 17.50 (Creek and Riparian Resource Protection) of the Grass Valley Development Code specifies standards to protect watercourses and riparian areas from the effects associated with development. Chapter 17.50 applies to any development adjacent to or crossed by any creek shown as a blue line on any current U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle map, as well as three specific watercourses (Magenta Ravine, Peabody Creek and Slide Ravine). In particular, Chapter 17.50 requires a site-specific streambed analysis to identify the precise boundary/top of bank of a watercourse, and establishes the following development standards:

- For properties being annexed into the City, each proposed structure shall be set back from the watercourse: 30 feet in a lot with an average depth of less than 155 feet, 40 feet in a lot with an average depth between 156-175 feet, 60 feet in a lot with an average depth between 176-225 feet and 100 feet in a lot with an average depth of more than 226 feet
- No developed feature, other than a path or trail, may be constructed within a watercourse setback
- No natural features located within a watercourse setback may be altered with the exception of work that is authorized for flood control purposes by permits issued by the California State Department of Fish and Game, and/or all other applicable local, State, and Federal agencies having authority over the creek or as otherwise provided by the Chapter
- Above ground drainage improvements shall be designed to be unobtrusive and fit in with the natural environment through use of native plant materials or other natural and neutral materials
- If watercourse bank stabilization is necessary, rehabilitation with an emphasis on maintaining the natural character of the watercourse and riparian area is preferred over other more intrusive techniques (concrete channels and other mechanical stabilization, etc.), if feasible
- Proposed subdivisions and other development shall provide public access to watercourses
- Open space areas within watercourse setbacks shall include planting for riparian enhancement with native shrubs and trees
- Open space areas outside of watercourse setbacks may include paths and trails, lighting, benches, play and exercise equipment and trash receptacles, where appropriate

Article 6 (Site Development Regulations) Chapters 17.60 (Grading Permit Requirements and Procedures) and 17.62 (Grading, Erosion and Sediment Control Standards) of the Grass Valley Development Code, collectively known as the City of Grass Valley Grading Ordinance (Grading Ordinance), establish standards for grading, including filling and excavation activities. The provisions set forth in the Grading Ordinance apply to all excavation, fill or other grading activities occurring within the City. Specifically, the Grading Ordinance requires a grading permit from the City's Engineering Department for any excavation or fill; dredging activities involving wetlands or riparian areas; earthwork, paving, surfacing or other construction that alters an existing drainage pattern of surface water leaving a site; and any other grading activity that causes substantial erosion. In addition to requiring a

grading permit for certain activities, the Grading Ordinance also establishes standards for the proper conduct of grading operations, as well as site development activities not involving grading permits. Requirements and standards established by the Grading Ordinance include the following:

- Approval of a Dust Prevention and Control Plan by the City Engineer. The plan must demonstrate that the discharge of dust from the construction site would not occur, or can be controlled to an acceptable level depending on the particular site conditions and circumstances. It must also comply with the NPDES Stormwater Regulations as adopted by the City.
- Drainage improvements for site runoff, including runoff from all roadways and other impervious surfaces, shall be engineered to minimize erosion.
- BMPs for construction shall be implemented to reduce erosion and sediment (minimal grading during the rainy season, slope surface stabilization, use of plastic covering and erosion control devices, prohibition on washing construction vehicles, etc.).
- Excavations and fills should be limited to minimum amount necessary and shall be designed to maximize retention of natural land forms and features with final contours blended with adjacent natural terrain to achieve a consistent grade and natural appearance.
- Grading shall be designed and grading operations shall be conducted to minimize the removal or disturbance of native vegetation to the maximum extent feasible.
- Where natural vegetation has been removed through grading in areas that are not to be occupied by structures, the areas shall be replanted in compliance with an approved revegetation plan and the Grading Ordinance to prevent erosion after construction is completed.
- Grading, dredging or diking shall not alter any intermittent or perennial stream, or natural body of water, except as permitted through approval of a grading permit in compliance with the Grading Ordinance, any planning permits required by the City's Development Code, and any necessary permits from the California Department of Fish and Game, Army Corps of Engineers, and Regional Water Quality Control Board
- Specific setbacks from property lines for cut and fill slopes.
- Design and construction of drainage systems and facilities in compliance with the City's Storm Water Management Plan, the City Improvement Standards, and all other applicable City drainage requirements.
- Proposed grading projects shall include design provisions to retain offsite natural drainage patterns, and limit the quantities and velocities of peak runoff to predevelopment levels.
- Grading or structures are not permitted in an area determined by the City Engineer to be subject to flood hazard by reason of inundation, overflow, high velocity or erosion with some exceptions.

4.10.3 ENVIRONMENTAL ANALYSIS

THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the *CEQA Guidelines*, there would be a significant hydrology or water quality impact if:

- The proposed project violates any water quality standards or waste discharge requirements
- The proposed project substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)
- The proposed project substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or offsite
- The proposed project substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increases the rate or amount of surface runoff in a manner that would result in flooding on or offsite
- The proposed project creates or contributes runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
- The proposed project will otherwise substantially degrade water quality
- The proposed project places 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
- The proposed project places within a 100-year flood hazard area structures which could impede or redirect flood flows
- The proposed project exposes people or structures to a significant risk of loss, injury or death involving flooding, including as a result of the failure of a levee or dam
- The proposed project could be inundated by seiche, tsunami, or mudflow

AREAS OF NO PROJECT IMPACT

The following impacts either are not applicable to the project or are not reasonably foreseeable:

- The proposed project will otherwise substantially degrade water quality

Future development of the proposed project area would not otherwise degrade water quality beyond the impacts discussed in this section. Therefore, no further water quality impacts would result. Any future development within the proposed project area would be required to undergo separate environmental review that would analyze potential impacts on water quality.

- The proposed project could be inundated by seiche, tsunami or mudflow

A seiche is the tide-like rise and drop of water in a closed body of water caused by earthquake-induced seismic shaking or strong winds. The proposed project areas could experience moderate ground shaking caused by earthquakes occurring along offsite faults. However, this level of seismic shaking would not be expected to generate wave motion. All of the project sites, including those sites near the Lake Combie, are at elevations higher than the water level of the lake such that there is no danger of inundation from a seiche. A tsunami is a series of large waves generated by a strong offshore earthquake or volcanic eruption. Tsunamis form in the open ocean and would, therefore, not be a concern for the proposed project area. Finally, the relatively thin soil mantle overlying bedrock within the project area is not conducive to causing damaging mudslides.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Water Quality / Waste Discharge

4.10-1 THE PROPOSED PROJECT COULD VIOLATE WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS.

Level of Significance Before Mitigation: Potentially Significant Impact

Impact Analysis

A project's impacts on water quality vary depending on three time periods: (1) during the earthwork and construction phase of the project, when the potential for erosion, siltation and sedimentation would be the greatest; (2) following construction, prior to the establishment of any ground cover, when erosion potential may remain relatively high; and (3) following completion of future development, when impacts related to sedimentation would decrease markedly, but those associated with urban runoff would increase.

Future construction activities associated with all of the proposed project sites could negatively affect the water quality of surface waters. Grading and other earth-moving activities during construction would expose soils, which could be eroded and deposited into the surrounding water bodies. This in turn would increase the amount of sediment and turbidity in these water bodies, which could harm aquatic life. Additionally, chemicals or fuels could accidentally spill and be released into receiving waters. The accidental introduction of toxic compounds into surface waters could adversely alter water chemistry.

Future development within all of the proposed project sites would be required to comply with state and local water quality regulations designed to control erosion and protect water quality during construction. This includes compliance with the requirements of the NPDES General Permit for Stormwater Discharges Associated with Construction Activity (General Permit). The General Permit would require preparation and implementation of a SWPPP. The SWPPP must include erosion and sediment control BMPs that would meet or exceed measures required by the General Permit, as well as BMPs that control hydrocarbons, trash and debris and other potential construction-related pollutants. Erosion control BMPs are designed to prevent erosion, whereas sediment controls are designed to trap sediment once it has been mobilized. The General Permit requires a SWPPP to include a menu of BMPs to be selected and implemented based on the phase of construction and the weather conditions to effectively control erosion and sediment, as well as proper handling of hydrocarbons, hazardous material and trash and debris onsite. Compliance with state and county water quality regulations would reduce construction-related water quality impacts to a less than significant level.

Additionally, in the Grass Valley area (Sites 1-9), future developers would be required to comply with BMPs identified in the City's SWMP, erosion and sediment control guidelines identified in the City's Community Design Guidelines, applicable 2020 General Plan policies designed to reduce and control pollutants resulting from construction activities, and the specific standards established by the City's Development Code designed to protect watercourses and riparian areas from the effects associated with development. The implementation of BMPs would prevent or minimize environmental impacts and ensure that discharges during the construction phase of the project would not cause or contribute to the degradation of water quality in receiving waters. BMPs may include, but would not be limited to: soil binders, earth dikes and drainage swales, silt fences, sediment basin/traps, gravel bag berms, street sweeping and vacuuming, sand bag/straw bale barriers, vehicle and equipment cleaning, stabilized construction entrances, spill prevention and control, solid waste management, hazardous waste management, concrete waste management, catch basin inserts, good housekeeping practices and sanitary septic water management.

While sedimentation is the primary source of water quality impacts during construction, it would not be considered a significant issue during post-construction and operation because most of the area proposed for development would be paved or landscaped, which would stabilize soils for the long term. However, paved areas would result in an increase in the amount of impervious surfaces within the project area and would increase stormwater runoff generation and flows. In addition, new housing development would result in greater vehicular use of new and existing nearby roadways, which could potentially increase contaminants that would be carried in runoff and discharged into receiving waters. Therefore, after construction and during the life of the proposed project, non-point-source pollutants would be the primary contributors to potential water quality degradation. Non-point-source pollutants would be washed by rainwater from rooftops, landscaped areas, parking areas and other impervious surfaces into the onsite drainage system. Future development within the proposed project area would also contribute non-point-source pollutants to the drainage system, such as chemicals from maintenance and cleaning supplies; landscape materials and products (pesticides, herbicides and fertilizers); oil, grease and heavy metals from automobiles; and petroleum hydrocarbons from fuels.

Pollutant concentrations in runoff from a site depend on numerous factors, including:

- Land use conditions
- Implementation of BMPs
- Site drainage conditions
- Intensity and duration of rainfall
- Climatic conditions preceding the rainfall event

Limiting development adjacent to creeks would significantly reduce the potential for trash or other pollutants associated with urban runoff to be discharged into them. Moreover, planting native vegetation and restoring eroded areas along creeks, as well as minimizing grading near creeks, prohibiting creek trail bridge crossings from encroaching into the streambed below the top of the bank and using existing ranch roads for path locations along creeks would help to prevent erosion and sedimentation of creeks.

To ensure stormwater and water quality are adequately addressed upon the future development of the proposed project area, it will be required for all sites to adhere to Mitigation Measures 4.10-1a – 4.10-1b. The implementation of Mitigation Measures 4.10-1a and 4.10-1b would reduce potential impacts on water quality and storm water discharge to a

less than significant level by reducing pollutants in stormwater discharges to the maximum extent practicable.

Mitigation Measures:

The following mitigation measure applies to Sites 10 and 13:

- 4.10-1a Prior to approval of a Site Plan, grading plan, or any permit authorizing construction for a property within the RH Combining District, the project developer shall to the satisfaction of the Director of the County Planning Department:

Establish all floodplains as Environmentally Sensitive Areas (ESAs) in compliance with the ESA maps in Chapter 3.0. The placement of structures on Sites 10 and 13 must avoid the floodplain ESA. Should development within the floodplain ESA be required, then the developer shall obtain a discretionary use permit for any development within the floodplain and a ministerial management plan for any development within the floodplain 100 foot setback. Prior to construction or vegetation removal, the floodplain ESA shall be designated as an ESA on plans and specifications. All work proposed within the ESA shall not begin until the ESAs are delineated on the ground with orange safety fencing. A biologist shall verify the limits of the ESA fencing on the ground prior to construction. The ESA fences shall remain in place for the entire duration of construction. No earth-moving activities, vehicles, heavy equipment, lay-down areas, or other construction shall be permitted within the ESAs unless as part of a mitigation plan approved by the appropriate permitting agencies. The boundaries of the ESAs shall be clearly shown on all final plans and specifications.

The following mitigation measure applies to all sites:

- 4.10-1b Prior to approval of a Site Plan, grading plan, or any permit authorizing construction for a property within the RH Combining District, the project developer shall to the satisfaction of the Director of the County Planning Department (or City of Grass Valley Planning Department for Sites 1-9) prepare a Water Quality Management Plan that implements the following items:

Best Management Practices to protect water quality. The contractor shall implement standard Best Management Practices during and after construction. These measures include, but are not limited to:

- a) Construction in or near drainages shall only occur during the dry season.
- b) Coordination with CDFW, U.S. Army Corps of Engineers, and Regional Water Quality Control Board to obtain all required permits and comply with all terms and conditions of the permits.
- c) At no time shall heavy equipment operate in flowing water or saturated soils.
- d) Prior to the start of work, install silt fencing, straw bales, sediment catch basins, straw or coir logs or rolls, or other sediment barriers to keep erodible soils and other pollutants from entering drainages.

Retain existing ground cover to further reduce the potential impacts of the project on erosion along the steep bank. Before the first heavy rains and prior to removing the barriers, soil or other sediments or debris that accumulates behind the barriers shall be removed and transported away for disposal.

- e) Disruption of soils and vegetation near Squirrel Creek (on Sites 10 and 13) shall be minimized to limit potential erosion and sedimentation; disturbed areas shall be graded to minimize surface erosion and siltation; bare soils shall be immediately stabilized and re-vegetated. Seeded areas shall be covered with broadcast straw or mulch. If straw is used for mulch or for erosion control, utilize only certified weed free straw to minimize the risk of introduction of noxious weeds, such as yellow star thistle.
- f) The contractor shall exercise every reasonable precaution to protect nearby water bodies from pollution with fuels, oils, bitumen, calcium chloride and other harmful materials, Construction byproducts and pollutants such as oil, cement, and wash water shall be prevented from discharging into or near these resources and shall be collected and removed from the site. No slash or other natural debris shall be placed in or adjacent to water bodies. All construction debris and associated materials and litter shall be removed from the work site immediately upon completion.
- g) Provide copies of these BMPs to the Contractors and their workers to assure compliance with mitigation measures during construction.

The following mitigation measure applies to all sites:

- 4.10-1c Prior to approval of a Site Plan, grading plan, or any permit authorizing construction (or as part of the annexation request for sites 1-9) for a property within the RH Combining District, the project developer shall submit, to the satisfaction of the Director of the County Public Works Department (for Sites 10-18), or City Engineer (for Sites 1-9), a project-specific hydrology report to verify expected pre- and post-project stormwater volumes from the proposed development, projected peak storage capacity of detention basins, and percolation characteristics of the soil. The hydrology reports shall confirm that adequate stormwater conveyance and capacity is available in either the region or onsite basins, depending on the chosen option, as well as no net increase in stormwater flow rate to the County's or City's storm drainage system.

The following mitigation measure applies to Sites 1-9:

- 4.10-1d Prior to approval of an annexation request for a property within the RH Combining District, the project developer shall submit, to the satisfaction of the City Engineer (for Sites 1-9), a water quality management plan which include measures that filter pollutants from stormwater in order to ensure that discharged water meets applicable City standards, such as:

Source Control BMPs

- Permeable pavers/pavement

- Hybrid parking areas/parking groves
- Roof runoff controls (i.e., rain barrels)
- Efficient irrigation to minimize runoff of excess irrigation water

Treatment Control BMPs

- Vegetated swales within parking lots
- Vegetated swales on lots (adjacent to pads)
- Bioretention
- Hydrodynamic separators/wet vaults
- Drain inserts

Flow Control BMPs

- Detention

Level of Significance After Mitigation: Less Than Significant Impact

Groundwater Supply / Recharge

4.10-2 THE PROPOSED PROJECT WOULD NOT SUBSTANTIALLY DEplete GROUNDWATER SUPPLIES OR INTERFERE SUBSTANTIALLY WITH GROUNDWATER RECHARGE SUCH THAT THERE WOULD BE A NET DEFICIT IN AQUIFER VOLUME OR A LOWERING OF THE LOCAL GROUNDWATER TABLE LEVEL.

Level of Significance Before Mitigation: Less Than Significant Impact With Mitigation

Impact Analysis

Future development of the proposed project sites would obtain water from the Nevada Irrigation District (NID), and would not directly extract groundwater for its water supply. However, the future development of the proposed project sites would result in a net increase of impermeable surface area. Increasing the amount of impermeable surface could indirectly impact surface water and groundwater recharge rates. Therefore, potential impacts on groundwater supply and recharge would require mitigation to confirm that adequate stormwater conveyance and capacity is available in either the region or on-site basins.

Mitigation Measures:

The following mitigation measure applies to all sites:

Implement Mitigation Measure 4.10-1c.

Level of Significance After Mitigation: Less Than Significant Impact

Erosion / Siltation from Drainage Alteration

4.10-3 THE PROPOSED PROJECT COULD SUBSTANTIALLY ALTER THE EXISTING DRAINAGE PATTERNS OF THE SITE OR AREA,

***WHICH COULD RESULT IN SUBSTANTIAL EROSION OR
SILTATION ON OR OFFSITE.***

Level of Significance Before Mitigation: Potentially Significant Impact

Impact Analysis

Because future development would involve vegetation removal, grading, earth excavation and the construction of roads, sidewalks and buildings, it would alter existing drainage patterns and increase the potential for erosion and/or siltation. As previously discussed under Impact 4.10-1, implementation of standard erosion control measures (SWPPP) would be required to minimize the risk during construction. In addition, implementation of Mitigation Measures 4.10-1b and 4.10-1c would reduce potential erosion and siltation impacts associated with altering existing drainage patterns during the life of the project to a less than significant level.

Mitigation Measures:

The following mitigation measure applies to all sites:

Implement Mitigation Measures 4.10-1b and 4.10-1c.

Level of Significance After Mitigation: Less Than Significant Impact

On or Offsite Flooding Impacts from Drainage Alteration

***4.10-4 THE PROPOSED PROJECT COULD SUBSTANTIALLY ALTER
THE EXISTING DRAINAGE PATTERN OF THE SITE OR AREA,
WHICH COULD SUBSTANTIALLY INCREASE THE RATE OR
AMOUNT OF SURFACE RUNOFF IN A MANNER THAT WOULD
RESULT IN FLOODING ON OR OFFSITE.***

Level of Significance Before Mitigation: Potentially Significant Impact

Impact Analysis

Future development of the proposed project sites would increase the amount of impervious surfaces through the construction of new building pads, streets, sidewalks and structures, which would result in changes to the absorption rates, drainage patterns and the corresponding rate and amount of surface runoff. Such changes could potentially result in on- or off-site flooding. BMPs outlined in Mitigation Measures 4.10-1b and 4.10-1d would help reduce the velocity of flows and encourage infiltration before runoff enters the stormwater drainage system.

These mitigation measures, and compliance with the General Permit and County and City policies and regulations, would reduce potential impacts on flooding from site alteration to less than significant.

Mitigation Measures:

The following mitigation measure applies to all sites:

Implement Mitigation Measures 4.10-1b and 4.10-1d.

Level of Significance After Mitigation: Less Than Significant Impact.

Storm Drainage System Capacity

4.10-5 THE PROPOSED PROJECT COULD CREATE OR CONTRIBUTE RUNOFF WATER THAT WOULD EXCEED THE CAPACITY OF EXISTING OR PLANNED STORMWATER DRAINAGE SYSTEMS OR PROVIDE SUBSTANTIAL ADDITIONAL SOURCES OF POLLUTED RUNOFF.

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis

As stated in the impact discussions above, the proposed project would result in changes to absorption rates, drainage patterns and the corresponding rate and amount of surface runoff within the project area. New development associated with the proposed project would require the construction of adequately sized storm drainage facilities that would connect to existing storm drainage systems.

Implementation of Mitigation Measure 4.10-1c would reduce potential impacts on drainage systems or polluted runoff by requiring project-specific hydrology reports to verify no net increase in stormwater runoff from the project area and water quality BMPs. Therefore, impacts would be less than significant.

Mitigation Measures:

The following mitigation measure applies to all sites:

Implement Mitigation Measure 4.10-1c.

Level of Significance After Mitigation: Less Than Significant Impact.

Flood Hazard

4.10-6 THE PROPOSED PROJECT COULD PLACE HOUSING WITHIN A 100-YEAR FLOOD HAZARD AREA, OR PLACE WITHIN A 100-YEAR FLOOD HAZARD AREA STRUCTURES WHICH COULD IMPEDE OR REDIRECT FLOOD FLOWS.

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis

Portions of Sites 10 and 13 in the Penn Valley Area were identified to be within the floodway and 100-year flood hazard area. None of the other sites were at risk of being within a 100-year flood hazard area where structures could impede or redirect flood flows.

The FIRM map panel that covers the Penn Valley proposed project sites (06057C0608E) shows portions of Sites 10 and 13 to be located in flood hazard zones. Specifically, portions of Sites 10 and 13 are located in the Squirrel Creek floodway, which will restrict development in the northeast portion of Site 10 and the southeast portion of Site 13. A portion of both sites are also located in a Special Flood Hazard Area (SFHA) that is subject to inundation by the 1-percent-annual-chance flood event (also known as the 100-year flood event) determined by detailed methods. Portions of Site 13 are also located within the 0.2-percent-annual-chance flood (also known as the 500 year flood event) zone. The flood hazard areas have been

mapped as Environmentally Sensitive Areas (ESAs) and development within the ESAs must be avoided.

As per Mitigation Measure 4.10-1a, if residential development were to occur in the ESA, mitigation would require a discretionary use permit for development within the floodplain and a ministerial management permit for development within the 100-foot floodplain setback. Implementation of Mitigation Measure 4.10-1a would reduce potential impacts on flood hazards to a less than significant level.

Mitigation Measure:

The following mitigation measure applies to Sites 10 and 13:

Implement Mitigation Measure 4.10-1a.

Level of Significance After Mitigation: Less Than Significant Impact.

Dam Failure Impacts

4.10-7 THE PROPOSED PROJECT COULD EXPOSE PEOPLE OR STRUCTURES TO A SIGNIFICANT RISK OF LOSS, INJURY OR DEATH INVOLVING FLOODING, INCLUDING AS A RESULT OF THE FAILURE OF A LEVEE OR DAM.

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis

As discussed under Section 4.10-6 above, Sites 10 and 13 are the only sites that are within the flood hazard zone. Implementation of Mitigation Measure 4.10-1a would reduce potential impacts to less than significant, since the measure would require the developer to avoid the ESAs when developing on the sites. Based on a review of topographic and flood maps, none of the project sites are located downstream of a dam or within a dam inundation area. The potential for risk, loss, injury, or death from installation of new structures within dam inundation areas is minimal within the proposed project sites. The project would not involve the construction of inhabited structures within a dam inundation area, nor would it change the structural integrity of any existing dams or levees. As such, the project has a less than significant impact as a result of dam failure.

Mitigation Measure:

The following mitigation measure applies to Sites 10 and 13:

Implement Mitigation Measure 4.10-1a

Level of Significance After Mitigation: Less Than Significant Impact

This Page Intentionally Left Blank