5.5 WATER RESOURCES

This section summarizes existing conditions and policies, potential impacts, and mitigation for each of the topics listed below:

- Surface Water and Groundwater Resources (Section 5.5.1),
- Wastewater Systems (Section 5.5.2), and
- Water Quality (Section 5.5.3).

Stormwater drainage-related existing conditions and potential impacts are discussed in Section 5.6, Utilities, while potential flood hazards are discussed in Section 5.8, Human Health and Safety.

A variety of methodologies were used to define existing and projected surface water, groundwater, wastewater, and water quality conditions and potential impacts. In general, the surface water and groundwater sections use data provided by the water purveyors listed below and by the El Dorado County Water Agency (EDCWA). EDCWA is conducting an ongoing countywide water planning process using the same water demand estimates used in this section. The wastewater subsection incorporates data and other information from related and recent wastewater planning conducted by El Dorado Irrigation District (EID). The water quality subsection uses information provided by the County's Environmental Management Department (EMD), the Central Valley Regional Water Quality Control Board (RWQCB), and the U.S. Environmental Protection Agency (EPA). More information regarding the methodologies used in this section is provided in those locations where data are introduced or related impact discussions are found.

5.5.1 SURFACE WATER AND GROUNDWATER RESOURCES

This subsection addresses issues related to surface water system demand, operations, supply sources, and infrastructure of the three west-slope water purveyors that would be affected by the equal-weight alternatives being assessed in this EIR:

- EID,
- Georgetown Divide Public Utility District (GDPUD), and
- Grizzly Flat Community Services District (GFCSD).

The systems of these water purveyors would be affected by the population and employment growth associated with the equal-weight alternatives. With related increases in water needs, the water purveyors would have to take a variety of actions to meet the increase in water

demand. This subsection addresses these potential actions along with the potential physical environmental impacts that could result from the purveyors augmenting their existing water supply systems. Development on lands not served by these purveyors typically will rely on groundwater. Potential impacts related to changes in groundwater demand associated with the new population and employment growth also are addressed in this section.

One of the primary purposes of the General Plan is to designate land uses and define related policies from which future population and economic growth may be forecasted. It is the role of the county's water purveyors, with assistance from EDCWA, to provide surface water to the surface water users (customers) within their respective service areas. Water users that are not connected to the purveyors' surface water systems rely, for the most part, on groundwater pumped from private wells, and to a lesser extent, on small, local water systems that rely on springs and wells. Because future demand for surface water and groundwater is intrinsically linked to changes in residential, commercial/industrial, and agricultural development, the land use decisions associated with adoption of the General Plan affect both the amount of water that must be supplied by the water purveyors' surface water systems and the amount of water that must be supplied by local aquifers.

In recent years, state law has required more coordination between the land use planning activities of counties and cities and the related water planning activities of water purveyors and agencies. To help further such coordination, the population and employment growth projections used in this EIR (see Chapter 4, Land Use Forecasts and Development Estimates) were also used in the countywide water planning work being conducted by EDCWA with assistance from each of the county's water purveyors. The preliminary results of EDCWA's comprehensive water planning are expected to be published this spring in the Draft EDCWA Water Resources Development and Management Plan (EDCWA Water Plan). The population and employment growth projections noted above were used to develop the water demand projections used in this EIR section and the EDCWA water planning process. The water demand estimates are included in Appendix E. The EPS 2003 report focuses on residential and nonresidential water demand estimates and the Wood Rodgers 2003 report addresses agricultural water demand.

Other important data and other information being used by the EDCWA Water Plan planning team were provided to the authors of this EIR to further coordination between these two studies. Such information is cited as EDCWA 2003a. EDCWA is expected to complete its water planning process in July 2003 (EDCWA 2003a). The final EDCWA Water Plan will present the decisions of each of the west-slope water purveyors as to the future supply options they wish to pursue in light of the projected shortages associated with increased development (described later in this section). The EDCWA Water Plan will be used in future water rights

applications and CEQA (and National Environmental Policy Act [NEPA] if appropriate) compliance documents for new water supply projects. The water supply projects EID may pursue are described further in this section and Appendix E. Appendix E includes a brief overview of existing and potential EID supply sources, including their locations and existing and potential capacities.

The documents listed below provide more information regarding the many topics addressed in this subsection and are available for public review at the County Planning Department.

- *EID Urban Water Management Plan 2000 Update, EID, January 2001* (EID 2001a)
- *2002 Update to the Annual Water Demand and Supply Report* (EID 2002)
- *Draft Environmental Impact Report for the Acquisition, Permanent Repair, and Operation of the El Dorado Hydroelectric Project, and Acquisition of 17,000 Acre-Feet Per Year of New Consumptive Water, EID and Resource Insights, April 1999,* SCH #98082005 (EID 1999)
- *Draft Environmental Impact Statement for Hydropower License: El Dorado Project 184-065, California,* Federal Energy Regulatory Commission (FERC 2003)
- *Water Supply and Development, A User's Guide to California Statutes Including SB 221 and SB 610* (Association of California Water Agencies 2002)

EXISTING CONDITIONS

Physical Environment

Introduction

The major water supply source in El Dorado County is surface water diverted from streams and reservoirs, and conveyed to water users via canals and pipelines after it is treated at treatment plants. Access to groundwater is relatively limited (compared to surface water) as a result of geologic conditions and the related fragmented/fractured rock groundwater system found in the county, although groundwater remains the primary source of water in rural areas. Water supply availability is a function of natural conditions, such as climate (precipitation and evaporation), soil permeability, topography, and hydrogeology (including the capacity, location, and quality of aquifers), as well as management activities such as the construction and operation of distribution, storage, and treatment facilities.

The amount and timing of rainfall, snowfall, and snowmelt in the county is a major variable in determining water supply and makes water storage facilities especially important in El Dorado

County. Strong marine air that flows from the Pacific Ocean results in heavy precipitation, including snowfall, in the winter. Rainfall in the summer is light and is limited to a few scattered thunderstorms. Precipitation ranges from 25 inches per year in the lower elevations to about 50 inches per year in the upper elevations. Water supply is also a function of several other variables. For example, large fluctuations in water supply can occur during drought conditions. Additionally, El Dorado County has limited storage reservoirs at higher elevations, requiring water to be pumped from lower elevations such as Folsom Reservoir to service the fast-growing residential population on the west slope of the county.

Hydrological Setting

Surface Water

Surface water on the west slope of El Dorado County is contained in three principal watersheds: the Middle Fork American River, the South Fork American River, and the Cosumnes River (Exhibit 5.5-1).

Middle Fork American River

The Middle Fork American River watershed encompasses the northern region of the county and the southern region of Placer County. El Dorado County's portion of the watershed extends from the headwaters at Rockbound Valley in Desolation Wilderness, west to its terminus at the confluence with the North Fork American River, east of Auburn. The Rubicon River is the main tributary flowing into the Middle Fork, and receives flow upstream from the South Fork Rubicon River and Pilot Creek. Other principal water features within the watershed include Rubicon Reservoir, Loon Lake, Gerle Creek Reservoir, Robbs Peak Reservoir, and Stumpy Meadow Reservoir.

The peak runoff from this watershed, where precipitation occurs primarily as snowfall in the upper elevations of the watershed and rainfall in the lower elevations, is typically from March through June.

South Fork American River

The South Fork American River watershed encompasses the central region of the county, extending from the headwaters at Echo Summit, west to the terminus at Folsom Reservoir. The major tributaries contributing flow directly into the South Fork American River are Silver Fork American River, Silver Creek, Slab Creek, Rock Creek, and Weber Creek. Upstream tributaries are Caples Creek, South Fork Silver Creek, and Jones Fork Silver Creek.

Exhibit 5.5-1, Watersheds and Major Streams within El Dorado County (11x17)

Other water features within the watershed are Caples Lake, Silver Lake, Lake Aloha, Weber Reservoir (all managed by EID), Ice House Reservoir, Union Valley Reservoir, Junction Reservoir, Camino Reservoir, Brush Creek Reservoir, Slab Creek Reservoir (all managed by Sacramento Municipal Utility District [SMUD]), and Chili Bar Reservoir (managed by PG&E).

The peak runoff from this watershed, where precipitation occurs primarily as snowfall in the upper elevations of the watershed and rainfall in the lower elevations, is typically from March through June.

Cosumnes River

The Cosumnes River watershed encompasses the southern region of El Dorado County and the northwestern region of Amador County. The watershed extends from the headwaters along the Iron Mountain Ridge west to where the Cosumnes River enters Sacramento County. The major tributaries flowing directly into the Cosumnes River are the South, Middle, and North Fork Cosumnes Rivers, and Canyon Creek. Both Deer Creek and Carson Creek are also tributaries to the Cosumnes. The creeks drain a significant portion of western El Dorado County in the Cameron Park and El Dorado Hill/Latrobe areas, respectively. Bass Lake and Sly Park Reservoir (EID) are located in the Carson Creek watershed.

The watershed of the Cosumnes River is lower in elevation than the Middle Fork and South Fork American Rivers, with only about 16% of it above the 5,000-foot elevation. The peak runoff from the Cosumnes River, where precipitation occurs primarily as rainfall, is from January through April.

Groundwater

The geology of the west slope of El Dorado County is principally hard crystalline or metamorphic rock that forms the land surface, or underlies a thin soil or isolated alluvial cover. Although groundwater does not actually penetrate the hard rock mass, it can be found in fractures below the ground surface. The characteristics of the fracture system that affect the ability of water users to develop groundwater resources include the size and location of the fractures, the interconnection between the fractures, and the amount of material that may be clogging the fractures. In addition, the width of fractures generally decreases with depth. Recharge, movement, and storage of water in fractures of hard rock are, therefore, limited. As such, the long-term reliability of groundwater cannot be estimated with the same level of confidence as a porous or alluvial aquifer, which is common to the Central Valley of California (DWR 1989, 1990; USGS 1983).

Previous studies regarding groundwater availability in fractured rock indicate that well yields generally decline over time and that recharge is dependent primarily on the ability of localized precipitation to infiltrate into fractures. Additionally, water, if present, is usually found most abundantly in the first 250 feet of depth (DWR 1989, 1990; USGS 1983).

Regulatory and Planning Environment

The planning, development, and management of new water supplies to meet the growing water demand within El Dorado County is a complex undertaking involving the coordination of numerous local, state, and federal agencies. The decision to pursue a local water supply project is subject to the issuance of water rights, environmental review including CEQA and sometimes the federal equivalent, NEPA, or other regulatory permitting requirements, and often involves resolving complex issues among competing interests.

California's constitution, statutes, and common law erect a complex scheme of rights in surface water and groundwater. Rights in surface water are governed by a hybrid system of riparian and appropriative rights that are administered by the State Water Resources Control Board (SWRCB) and appropriative rights established before the advent of the SWRCB's jurisdiction in 1914. Riparian users are entitled to make reasonable use of the natural flow of water in the watercourse that their properties adjoin. Appropriative rights are established by diverting surplus water for nonriparian uses. The rights of riparians are essentially co equal ("correlative"), but are superior to appropriative rights. Water is allocated among appropriative users based on seniority, under the principle of "first in time, first in right." Accordingly, pre 1914 appropriative rights trump SWRCB established appropriative rights.

Groundwater that flows in subterranean streams is allocated by SWRCB according to the rules applicable to surface waters. Rights in groundwater that does not flow in such streams ("percolating" groundwater) are not administered by any state agency, but rather are adjudicated by courts on a case by case basis (and, to some extent, may be regulated by local governments). When groundwater becomes overdrafted, overlying users have first priority in using the available water, followed by appropriative users (users of groundwater away from the property from which it was pumped) in order of seniority. Where an appropriative user has been continuously withdrawing water from an overdrafted aquifer for more than 5 years, the appropriative right may become a prescriptive right, which is effectively treated as an overlying right for purposes of groundwater allocation.

Both surface water rights and groundwater rights are subject to a requirement in the state constitution that the use to which the water is put be reasonable and beneficial.

Water Planning-Related Legislation

Urban Water Management Planning Act of 1984

Since it was enacted in 1984, the Urban Water Management Planning Act has required public water purveyors that provide water for municipal purposes to more than 3,000 customers, or supply more than 3,000 acre-feet (af) of water annually, to develop written Urban Water Management Plans (UWMPs) in order to encourage the implementation of water conservation measures and long-term water supply planning. The UWMPs are reviewed by the California Department of Water Resources (DWR) and must describe a purveyor's water supply and demand conditions (existing and projected), water conservation measures (including methods for implementation and evaluation), and water shortage projections and contingency measures. Water purveyors, including EID, prepare UWMPs every 5 years. EID's last UWMP was prepared in 2000 and is described briefly later in this subsection.

Senate Bills 901 and 610

Senate Bill (SB) 901, which was signed into law in 1995, and SB 610, which became effective in 2002, require land use agencies, such as the County Planning Department, to consider the availability of water supplies when an EIR is required for approving certain types of larger development projects. Before SB 901 and SB 610, public water purveyors typically attempted to acquire new water supplies for any and all developments approved by counties and cities. SB 901 and SB 610 require a more formal and detailed analysis, including identification of the water purveyors that would provide water service to the project, analysis of whether the water demand associated with the proposed project has been included and assessed in the latest UWMP, and whether water demand can be met in single and multiple dry years.

Senate Bill 221

SB 221 became effective in 2002 and requires written verifications of sufficient water supply from public water purveyors for residential development projects with more than 500 units when a tentative subdivision map is filed.

Water Purveyors and Related Agencies

The local, regional, state, federal, and private entities involved in the County's water resource planning and development process are described below.

Local Agencies

El Dorado County Water Agency

El Dorado County Water Agency (EDCWA) was created by an act of the California Legislature in 1959, and codified in §§96-11, 96-14, and 96-16 of the California Water Code. EDCWA's mission is to ensure that an adequate water supply is available for any present or future beneficial use or uses of lands or inhabitants of El Dorado County. Such uses include irrigation, domestic, fire protection, municipal, commercial, industrial, recreation, and all other beneficial uses and purposes. EDCWA is authorized to:

- construct, operate, and maintain works to develop water supply and hydroelectric energy to fund projects for the control, conservation, diversion, and transmission of water;
- serve as a flood control agency;
- conserve and reclaim water;
- import water into El Dorado County;
- secure and defend water rights for El Dorado County; and
- carry out technical and other necessary investigations.

EDCWA is in the process of conducting comprehensive and long-range water planning for, and with the assistance of, each of the county's water purveyors.

El Dorado County Local Agency Formation Commission

The County Local Agency Formation Commission (LAFCO) regulates local-agency boundary changes, including annexations and spheres of influence for each city and special district within the county. LAFCO is responsible for determining the boundaries and spheres of influence for each of the water purveyors in the county. Groundwater is the primary source of water for land not currently served by a water district. Areas seeking access to surface water supplies will likely require annexation to a public water purveyor. All such annexations must be approved by LAFCO.

El Dorado County Environmental Health Division

The County Environmental Health Division performs a number of public health services related to water supply, including regulating the drilling of groundwater wells through a well permit system. The Division is also responsible for enforcing the County's Well Standards Ordinance, which helps protect groundwater quality and public health by, among other things, including certain requirements related to monitoring wells and other protective measures.

Public Water Purveyors

EID, GDPUD, and GFCSD manage surface water supplies for the west slope. As shown in Exhibit 5.5-2, EID is the largest water provider, serving a significant portion of El Dorado County.

El Dorado Irrigation District

EID was formed in October 1925 to provide public water service to the city of Placerville as well as other residential, commercial, and industrial customers, and to provide irrigation water to local agricultural customers. Currently EID serves a population of approximately 87,000 people through more than 30,896 active residential and commercial service connections (EID 2001a). The current service area of EID encompasses approximately 220 square miles and is generally bounded by Sacramento County to the west, the South Fork American River to the north, the Eldorado National Forest to the east, and the North Fork Cosumnes River and Latrobe to the south. The elevation across the service area ranges from approximately 500 feet in the west to approximately 4,000 feet in the east.

The EID sphere of influence was established in the early 1980s by the County LAFCO and extends beyond the current EID service area for the purpose of identifying future potential areas of water service. This sphere of influence includes additional areas to the north, including additional areas north and south of the South Fork American River, and to the west including more than 40 square miles in Sacramento County. In addition, the sphere of influence extends south to the Amador County line and the Cosumnes River, and as far east as Omo Ranch, Happy Valley, and along the U.S. Highway 50 (U.S. 50) corridor to Strawberry.

The feasibility of providing water service throughout the existing EID sphere of influence was evaluated in EID's 1981 Water System Master Plan. It has been determined that at the full buildout planning scenario used in this EIR, EPS 2003, and the EDCWA water planning process, the EID service area boundary would be much smaller than that contained in the

current sphere of influence. This determination was based upon existing and planned land use densities, geographical limitations, and estimates regarding feasible expansions of EID infrastructure (EDCWA 2003).

EID has asked the County LAFCO to amend EID's sphere of influence to reflect the reduced sphere of influence being described in the EDCWA Water Plan planning process (EDCWA 2003a). Approval of the amendment by the LAFCO would be required, as would preparation of an environmental document pursuant to CEQA.

Georgetown Divide Public Utility District

GDPUD was formed in 1946 and subsequently began acquiring the water rights, facilities, and properties of the Georgetown Water Company. The GDPUD is the county's second largest public water purveyor in terms of service acreage and amount of water delivered. The GDPUD's service area encompasses approximately 75,000 acres in the northwestern portion of the county and includes the communities of Georgetown, Garden Valley, Greenwood, Cool, Auburn Lake Trail, Pilot Hills, and Kelsey. The LAFCO sphere of influence for the GDPUD encompasses approximately 173,000 acres. The elevation across the service area ranges from approximately 800 feet on the west edge to approximately 3,500 feet on the east edge. The GDPUD currently provides treated water to residential and commercial land uses and untreated water to agricultural land uses. GDPUD's major supply source is Stumpy Meadows Reservoir; the district had 3,592 accounts as of July 10, 2002, as reported in its 2001 Water Supply and Demand Summary (GDPUD 2002).

Grizzly Flats Community Services District

The GFCSD was formed in November 1987 when water rights and facilities were taken over from the privately owned Grizzly Park Water Company. The service area includes the Grizzly Park subdivision and a few larger perimeter lots covering a total area of approximately 1,100 acres. The LAFCO sphere of influence encompasses approximately 9,200 acres. The elevation across the GFSCD ranges from approximately 3,600 feet at the southwest end to approximately 4,200 feet at the northeast end. GFCSD currently provides treated water to residents within its service area. The GFCSD was formed for the purposes of water treatment and distribution.

Exhibit 5.5-2, Water Purveyor Districts and Service areas in El Dorado County (11x17)

State Agencies

California Department of Water Resources

DWR is responsible for the preparation of the California Water Plan, management of the State Water Project (an extensive water storage and conveyance project that is found in other parts of California), protection and restoration of the Sacramento-San Joaquin River Delta (Delta), regulation of dams, provision of flood protection, and other functions related to surface water and groundwater resources. These other functions include helping water agencies prepare their UWMPs and reviewing such plans to ensure they comply with the related Urban Water Management Planning Act.

State Water Resources Control Board

The State Water Resources Control Board (SWRCB) was established in 1967 to administer state water rights and water quality functions. The SWRCB and its nine RWQCBs administer water rights and enforce pollution control standards throughout the state. The SWRCB is responsible for the granting of water rights through an appropriation process following public hearings and appropriate environmental review by applicants and responsible agencies. In granting water rights permits, the SWRCB must consider all beneficial uses, including water for downstream human and environmental needs. In addition to granting the water rights needed to operate new water supply projects, the SWRCB also issues water quality-related certifications to developers of water projects under Section 401 of the federal Clean Water Act.

Central Valley Regional Water Quality Control Board

The Central Valley RWQCB is responsible for the preparation and implementation of basin water quality plans consistent with the federal Clean Water Act (see Section 5.5.3, Water Quality); the enforcement of these plans ensures that local water quality is protected. An RWQCB may become involved in water supply programs as a responsible agency with respect to project impacts on downstream beneficial uses. The west slope of El Dorado County is located in the watersheds of the American and Cosumnes Rivers and is within the jurisdiction of the Central Valley RWQCB.

California Department of Fish and Game

California Department of Fish and Game (CDFG) is a responsible agency with respect to the review of water rights applications and also is responsible for issuing lake and streambed alteration permits for new water supply projects, as appropriate. CDFG works in coordination

with state and federal agencies to mitigate the impacts of projects on fish and wildlife resources, and is responsible for enforcing the California Endangered Species Act. CDFG often helps establish instream flows (minimum releases below a dam or diversion structure) to maintain habitat below a project. Such release schedules are included in the water rights appropriation and can affect the yield of a project.

Federal Agencies

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation (USBR) is part of the U.S. Department of the Interior and is responsible for the development and conservation of much of the water resources in the western United States. While the original purpose of USBR was to provide for the reclamation of arid and semiarid lands in the west, the current mission of the USBR covers a wider range of interrelated functions. These functions include providing municipal and industrial water supplies; generating hydroelectric power; providing irrigation water for agriculture; improving water quality, flood control, and river navigation; providing river regulation and control and fish and wildlife enhancement; offering water-based recreation opportunities; and conducting research on a variety of water-related topics.

USBR owns and operates Folsom Reservoir and owns Jenkinson Lake, which is operated by EID. USBR holds many of the water rights for the water stored in Folsom. EID has a current contract to draw water from Folsom Reservoir. As authorized by Public Law (PL) 101-514, related to the Central Valley Project (CVP), EID and GDPUD have an opportunity to obtain up to an additional 15,000 af of water from USBR in the future.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS), in cooperation with other federal and state agencies, enforces the federal Endangered Species Act by evaluating the potential for impacts on candidate, threatened, and endangered fish and wildlife resources.

Federal Energy Regulatory Commission

FERC is responsible for the federal licensing of hydroelectric power projects, including EID's FERC Project 184. FERC licensing procedures involve a comprehensive review of a water project's environmental impacts via coordination with a project's proponent, state and federal agencies, and other stakeholders, often during a collaborative process. Instream flow changes, alternative reservoir levels, water quality protection measures, and other measures are often

suggested by resource agencies and other stakeholders and must be considered by FERC before it issues a project's license. For more information about the FERC process and Project 184, please refer to Related Plans and Projects below.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) is responsible for issuing permits for the placement of fill, or discharge of material into, waters of the United States. These permits are required under Sections 401 and 404 of the Clean Water Act. Water supply projects that involve instream construction, such as dams or other types of diversion structures (i.e., "filling"), trigger the need for these permits and related environmental reviews by USACE. USACE also is responsible for flood control planning and assisting state and local agencies with the design and funding of local flood control projects.

U.S. Geological Survey

The U.S. Geological Survey (USGS) National Water-Use Information Program is responsible for compiling and disseminating the nation's water-use data. The USGS works in cooperation with local, state, and federal environmental agencies to collect water-use information at the local level. The latest USGS groundwater data for El Dorado County are from 1995 and are summarized below under Private Wells and Groundwater Use.

Private Utility Companies: Pacific Gas and Electric Company

Pacific Gas and Electric (PG&E) is a private utility company established to provide electric power and natural gas services to customers throughout California. In 1999, PG&E transferred ownership and operation of the El Dorado Hydroelectric Project (FERC Project 184) to EID. PG&E still owns and operates a number of hydroelectric projects throughout the county, most notably, the Chili Bar Project.

Related Plans and Projects

Draft EDCWA Water Resources Development and Management Plan

EDCWA, with the assistance of EID and the other water purveyors in the county, is preparing the EDCWA Water Plan. The first draft of this plan is scheduled to be released in the spring of 2003, and the final draft is scheduled to be released in July 2003. The EDCWA Water Plan is intended to provide a blueprint for actions and facilities needed to address the county's projected water shortages into the future (EDCWA 2003b).

El Dorado Irrigation District Recycled Water Master Plan

The EID Recycled Water Master Plan (EID 2002) was released in December 2002. This plan provides EID with a framework for future decision-making regarding supply, demand, and system development for recycled water planning to 2025. The existing recycled water supply is limited by the capacity of existing storage and treatment facilities and wastewater influent flow during the summer. Improvements identified in the Recycled Water Master Plan, and to possibly be constructed by 2025, include expansion of the existing distribution system and construction of new distribution piping, storage facilities, and pump stations. The planned enlargements of treatment capacity at EID's El Dorado Hills and Deer Creek wastewater treatment plants (WWTPs), as described in Section 5.5.2, also are needed to expand existing recycled water supply.

EID and GDPUD Use of Central Valley Project Water

The CVP, initiated by USBR in 1935, stores and distributes millions of acre-feet of water each year for a variety of beneficial uses, including agriculture, urban, wildlife, and fishery uses. The CVP includes Folsom Dam and Reservoir. Section 206(c)(1) of PL 101-514 directs USBR to enter into a long-term municipal and industrial water supply contract with EDCWA for diversion from Folsom Reservoir. EID and GDPUD, through EDCWA, each have an opportunity to obtain an additional 7,500 afy of water from Folsom Reservoir or from the upstream American River pursuant to this law. This potential new water source is one of the alternative water supply sources being assessed for EID and GDPUD in the EDCWA water planning process summarized above. The environmental impact statement (EIS)/EIR study for the EDCWA PL 101-514 Water Services Contract was initiated by EDCWA and USBR shortly after passage of the law, but has been put on hold by these agencies because the EDCWA water planners need to ascertain whether this project remains a preferred option for EID and GDPUD to pursue among the other alternatives being assessed. In addition, it was felt that the County General Plan should be adopted first in order to help determine potential county water demands and needs into the future.

El Dorado Irrigation District Hydroelectric Project 184 (FERC Project 184-065)

EID purchased FERC Project 184 from PG&E to, in part, use for consumptive purposes some of the water previously used to generate hydroelectricity. This potential new water source is one of the alternative water supply sources being assessed for EID in the EDCWA water planning process summarized above. Assuming that the final EDCWA Water Plan verifies that this water supply option should still be pursued by EID, EID expects to be able to use some of the water from this project for consumptive purposes. The amount of water available from

this source will not be known, however, until a number of regulatory and legal proceedings have been completed. These proceedings are described in the following chronology of the project.

On October 2, 1996, the SWRCB issued Decision 1635, granting the joint petition of EDCWA and EID (collectively, El Dorado) for partial assignment of State-Filed Application 5645. Decision 1635 authorized El Dorado to make consumptive use of up to 17,000 afy, made available from the South Fork American River watershed by the operations of a hydroelectric project then owned by PG&E, Project 184.

The sources of this 17,000-af entitlement are the natural flows of the South Fork, and water stored in Lake Aloha in El Dorado County, Caples Lake in Alpine County, and Silver Lake in Amador County. These three reservoirs are part of the Project 184 facilities.

Various participants in the SWRCB's administrative proceeding petitioned the SWRCB for reconsideration of Decision 1635. The SWRCB agreed to take its ruling under reconsideration. While the matter was under reconsideration, the EIR and Supplement to it that EDCWA had prepared for the project were invalidated by the County Superior Court, and the trial court's decision was upheld on appeal. In addition, Project 184 was severely damaged and rendered temporarily inoperable by the storms and floods of January 1997. Further, EID entered into an agreement with PG&E to acquire Project 184.

In 1999, EID certified a new EIR addressing the environmental impacts of acquiring, repairing, and operating Project 184, as well as obtaining the 17,000 af of additional consumptive water supply. This EIR was titled *Environmental Impact Report for the Acquisition, Permanent Repair, and Operation of the El Dorado Hydroelectric Project (Project 184) and Acquisition of 17,000 Acre-Feet Per Year of New Consumptive Water*. The SWRCB, which still had Decision 1635 under reconsideration, accepted this 1999 EIR into its evidentiary record.

On August 16, 2001, the SWRCB completed its reconsideration by issuing Order WR 2001-22. This order upheld Decision 1635's grant of 17,000 afy of consumptive water rights, but imposed additional conditions upon that approval. One of the additional conditions was Standard Term 91. Term 91 bans diversions of water at times when the state and federal water projects are releasing stored water to maintain water quality requirements in the Delta. The conditions that trigger Term 91 tend to occur during times when Project 184 is diverting water to storage and/or during times when EID will require additional water supplies. Therefore, the imposition of Term 91 would decrease the actual yield of the 17,000-af supply. It is not possible to ascertain the precise effect of Term 91 on the available supply from Project

184 at this time because, as noted below, Term 91 is being challenged in litigation and the FERC and SWRCB regulatory proceedings described below are not yet completed.

The SWRCB has since issued Water Rights Permit 21112 to El Dorado, in conformance with Order WR 2001-22. However, the matter is currently in litigation. Specifically, a coalition of parties including the League to Save Sierra Lakes sued to invalidate Order WR 2001-22 in its entirety. EID and EDCWA each filed suit to invalidate the SWRCB's imposition of Term 91. EID also filed litigation challenging two other aspects of Order WR 2001-22. In addition, the League to Save Sierra Lakes and CDFG have lawsuits pending that question the validity of EID's 1999 EIR, upon which the SWRCB also relied in issuing Order WR 2001-22.

The state court challenges to Order WR 2001-22 have been consolidated and briefed. The trial court held a hearing on the merits of the cases on March 14, 2003, and is expected to issue an opinion within 90 days thereafter. Because the Term 91 issue has attracted statewide attention, the trial court decision (however the court rules) is likely to be appealed. There is one challenge to Order WR 2001-22 pending in federal court; it is on hold while the state court litigation unfolds. The challenges to EID's 1999 EIR have been consolidated and are still pending in state court, but they have been inactive since shortly after their filing in 1999.

Project 184 is a hydroelectric facility and is thus subject to FERC licensing requirements. FERC licenses are intended to lead to the implementation of a comprehensive plan for improving or developing the affected waterways for all beneficial public uses. As part of the licensing process, FERC has convened a "collaborative working group" including EID, resource agencies, and members of the public. The collaborative is proposing protection, mitigation, and enhancement (PM&E) measures. FERC may decide to include some of the PM&E measures in the project's license because, under §§4(e) and 10(a)(1) of the Federal Power Act, FERC is required to consider proposed PM&E measures equally with a project proponent's power, water supply, and other "development" proposals. FERC is preparing an EIS as part of the licensing process. The EIS is assessing potential impacts of the project on Caples Lake, Silver Lake, Lake Aloha, Caples Creek, and the Silver Fork American River, among other locations. Such impacts could be caused by the wide range of operation and environmental enhancement proposals being raised by EID, resource agencies, and other members of the collaborative. (These proposals are described further under Impact 5.5-2 below.) The public draft of FERC's EIS for this project was made available to the public in March 2003. After FERC decides which PM&E measures should be incorporated into the definition of the project and related license, EID will prepare an EIR that will allow it to comply with CEQA and provide the SWRCB with the information it needs to determine whether to issue its Section 401 Water Quality Certification.

EID Urban Water Management Plan 2000 Update

The EID UWMP 2000 Update (EID 2001a) was adopted in January 2001. As required by the Urban Water Management Plan Act of 1984, the UWMP contains data on existing and future water demand and supply conditions, as well as a description of EID's programs for water conservation and water recycling, and water shortage contingency plans. While the UWMP includes much useful information about EID's water system and related conditions, the most current water demand projections, existing water supply conditions, and related shortage projections for EID are being developed for the Draft EDCWA Water Plan and are summarized under Impact 5.5-1 below. The next EID UWMP update is scheduled for release in 2005.

Existing Water Demand and Supply

This subsection provides a summary of existing water demand and supply conditions for each of the county's west-slope water purveyors. Existing water demand and supply is summarized in Table 5.5-1 (tables can be found at the end of the section) for each of the county's water purveyors and for other areas of the west slope. The table also includes estimates of demand and supply associated with each of the four equal-weight alternatives analyzed later in this section. The methodology used to prepare the water demand estimates is discussed in Appendix E (see EPS 2003 and Wood Rodgers 2003).

El Dorado Irrigation District

A brief overview of each of the following types of existing EID water system conditions is provided below:

- water system demand,
- water system supply sources,
- water shortage and related drought response strategies, and
- water conservation and recycling programs.

Existing Water Demand

As shown in Table 5.5-1, existing water demand for EID is estimated to range from 37,095 afy to 37,806 afy. This water demand is currently being served by EID within its existing service area boundary. The estimated demand within each EID customer category is provided in Appendix E along with water demand factors for each category of customers. The existing

water demand numbers in Table 5.5-1 serve as an important baseline for comparison to the projections of future water demand associated with each of the equal-weight alternatives.

Existing Water Supply

EID currently has a system firm yield of 43,280 afy. EID defines its firm yield as the amount of water that is available for it to use from a source in 95 out of 100 years with existing facilities, while incurring shortages of no more than 20% annually in 5 out of 100 years (EDCWA 2003a).

Table 5.5-2 summarizes each of EID's existing water supply sources and the firm yield of each source. These sources are described in Appendix E and also shown in Exhibit 5.5-3; they include Jenkinson Lake, El Dorado Forebay, Folsom Reservoir, and Crawford Ditch.

Existing Water Shortage Conditions and Drought Response Strategy

Under existing/baseline water demand levels, EID has enough supply to meet demand during normal (or average) water years, as well as single dry years (EID 2001a). However, in the event of 2 consecutive dry years, EID would enter a Water Alert and require voluntary conservation of up to 5% by the summer of the second year. With 3 consecutive dry years, the district would be in a Critical Water Emergency during the summer months and would require mandatory conservation levels up to 30%. To address these situations and other types of uncertainty, EID maintains a water shortage and drought response strategy called the 4-Stage Water Supply Matrix and Water Shortage Response Measures. These include prescribed measures for four levels of increasingly severe water shortage conditions. The four stages begin with the Water Alert and its associated actions. As water shortages become more severe, the remaining three stages sequentially trigger conservation activities designed to reduce water use and prohibit water uses that become wasteful as the water shortage increases (EID 2001a).

Recycled Water

In 2000, the use of recycled water in the EID service area met 1,671 af of potable water demand that would have otherwise been supplied by traditional sources. This represents approximately 6% of EID's total potable water demand (EID 2001a). The primary sources of recycled water are the El Dorado Hills and Deer Creek WWTPs. The recycled water is stored in a 66-million-gallon recycled water storage reservoir and is used during the summer months for irrigation (i.e., residential and public landscaping, and golf courses) and industrial

Exhibit 5.5-3, Existing and Potential EID Water Supply Sources (11x17)

purposes. Upon buildout of the Serrano development in El Dorado Hills by approximately 2012, approximately 400 more homes with "dual plumbed systems" will use recycled water for landscape irrigation purposes. Approximately 3,000 afy is expected to be saved by such systems by the year 2010 (EID 2001a). Without expansion of existing facilities and infrastructure, the existing facilities can supply approximately 4,912 afy of recycled water in a dry year, 5,413 afy in a normal year, and 5,912 afy in a wet year (EID 2002). Because EID's customers use less water in dry years, less treated water is available for recycling. If EID adds new storage, pumping, and conveyance facilities for recycled water, as described in the Recycled Water Master Plan discussed earlier in this section, EID's projected supply of recycled water in 2025 would be approximately 9,553 afy during a dry year, 10,510 afy during a normal year, and 11,469 afy during a wet year (EID 2002). These supplies would be in addition to those shown in Table 5.5-2 and could be used to help meet the projected shortages shown in Table 5.5-1.

Water Conservation

As required by the Central Valley Project Improvement Act of 1992, EID has implemented a water conservation plan that meets criteria established by USBR, including all of the Best Management Practices (BMPs) that cover urban water use. EID also has implemented 10 additional urban and agricultural water conservation programs, including the first irrigation management system in the state. Some of the required BMPs had already been implemented by EID by 1992. These include metering of all water, billing from meter readings, water education programs, elimination of declining block rates, irrigation water scheduling, prohibitions on wasting water, line/pipe irrigation ditches, leak detection and repair, landscape efficiency requirements, designation of a water conservation coordinator, and a pump efficiency program. Five new BMPs—both interior and exterior water audits for residential and commercial properties, the provision of water efficiency kits for pre-1980 residential units, an ultra-low-flush toilet replacement program, and farm irrigation management improvements—were implemented in 1995. EID estimates that these water conservation programs saved 2,200 af in 2000 (EID 2001a).

Georgetown Divide Public Utilities District

Existing Water Demand

GDPUD serves approximately 10,000 people in an area of 75,000 acres in the northern portion of El Dorado County. Existing water demand is made up of current plus authorized water sales. Authorized water sales are defined as current inactive meters plus nonmetered parcels within assessment districts, plus preseason (April) agricultural requirements when

needed. As of 2001, GDPUD served 3,215 residential and commercial accounts, and 377 irrigation accounts with a total demand of 10,914 afy (GDPUD 2002). In addition, there are 1,504 existing parcels in the GDPUD service area that are unserved or have inactive meters. Water demand figures for GDPUD and from the district's 2001 Water Supply and Demand Report are shown below in Table 5.5-3.

As shown in Table 5.5-1, the baseline GDPUD water demand range used for planning purposes is 10,956 to 11,068 afy.

Existing Water Supply and Related Infrastructure

GDPUD's primary source of water supply is Stumpy Meadows Reservoir. The reservoir, built in 1962, has a capacity of 20,000 af. Stumpy Meadows Reservoir is located on Pilot Creek, approximately 13.5 miles east of Georgetown within the basin of the Middle Fork American River. Water is supplied to the reservoir directly from Pilot Creek and through a diversion from Onion Creek. The firm yield of the project is 12,200 af, allowing for critical-year deficiencies of up to 50% in untreated water and 10% in treated water in accordance with criteria adopted by the GDPUD board on May 13, 1997 (GDPUD 2002). GDPUD's firm yield was established through modeling and is defined as the yield that its system can reliably deliver in 95 out of 100 years, while incurring shortages of no more than 10% annually for domestic service and 50% for untreated water in 5 out of 100 years (EDCWA 2003a).

Water Shortage and Drought Response Strategy

GDPUD does not have a formal dry-year contingency plan. However, during a critically dry year GDPUD would require a 50% reduction in water deliveries to agricultural users based on allotted, contracted water amounts (Gau, pers. comm., 2003).

Recycled Water

Because GDPUD does not operate wastewater treatment systems, it does not currently produce recycled water and does not expect to in the future.

Water Conservation

While GDPUD has not implemented the water conservation BMPs that have been implemented by EID, GDPUD does actively promote water conservation by encouraging use of water conserving plumbing fixtures, drought tolerant landscaping, and proper irrigation techniques. GDPUD and the County's resource conservation districts have a joint project to

help educate water users in wise water use practices, and GDPUD staff is available to advise customers (Gau, pers. comm., 2002).

Grizzly Flat Community Services District

Existing Water Demand

GFCSD provides water service to primarily residential uses. Based on 1997 data, the GFCSD has 290 full-time customers and 163 part-time water users, requiring a total water demand of 136 afy. The water production records for 2001, showing 132 afy of water use, indicate that existing water demand has not changed substantially since 1997 (EDCWA 2003).

For planning purposes, and as shown in Table 5.5-1, baseline water demand for GFCSD is assumed to be 157 afy (see EPS 2003 in Appendix E for more information).

Existing Water Supply and Related Infrastructure

GFCSD's current water supply comes from Big Canyon and North Canyon, which are surface water tributaries in the North Fork Cosumnes River basin, under a pre-1914 water rights agreement. Water from these two sources is diverted via the Eagle Ditch to GFCSD's raw-water-storage reservoir and then treated at the adjacent water treatment plant before the water is distributed to the Grizzly Park subdivision. The net safe yield of the direct diversions that could be conveyed to the water treatment plant has been calculated to be 144 afy. GFCSD's safe yield is defined as the available water supply during the most critical hydrological season of the historical period of analysis (EDCWA 2003a).

GFCSD was issued two permits by SWRCB on August 18, 1989: Permit 20357 and Permit 20358. Permit 20357 authorizes GFCSD to divert water from an unnamed tributary to the Steely Fork Cosumnes River, the total not to exceed 3 afy from November 1 through June 15. This water flows from Grizzly Creek into Porters Pond for fire suppression purposes. Questions have been raised regarding contamination of this water from septic systems located near the pond. There are currently no facilities to treat this water.

Permit 20358 authorizes GFCSD to divert water to storage from North Canyon and Big Canyon. The water appropriated under this permit is not to exceed 31 afy, to be collected between November 1 and June 15. This permit is understood to be for diversion to storage rather than for consumption and, therefore, is more than adequate to allow seasonal storage in the existing raw-water reservoir with its active capacity of about 15 af.

Recycled Water

Because GFCSD does not operate wastewater treatment systems, it does not currently and does not expect to produce recycled water in the future.

Water Conservation, Water Shortage, and Drought Response Strategy

GFCSD does not have an established contingency plan for drought periods or dry years at this point. However, during the drought of the early 1990s, GFCSD placed a moratorium on new construction and restrictions on outdoor watering (Dunlop, pers. comm., 2003).

Small Water Systems

In addition to the public facilities owned by EID, GDPUD, and GFCSD, 183 small private or community water systems are operated in the county, including 106 on the west slope, serving approximately 3,700 connections. These systems cover a wide range of uses including schools, restaurants, campgrounds, mobile home parks, summer homes, and multifamily residential use. These systems rely primarily upon wells or springs to meet their water demands (EDCWA 2003a).

Private Wells and Groundwater Use

Groundwater supply is of great importance to El Dorado County residents living outside of the areas served by surface water (also referred to as water purveyor service areas). In 1989, the County studied mean well yields in response to rapid population growth and a growing dependence on groundwater. The study concluded that the yield of wells is probably sufficient to meet domestic needs of individual users and that some residences may need storage tanks to provide adequate water during peak use (DWR 1989). In 1995, the USGS estimated that approximately 38,970 people were served by groundwater in El Dorado County, including both the west slope and the Lake Tahoe area. Of these, 22,420 were "self-supplied," meaning they used private wells (USGS 1995). Table 5.5-4 shows groundwater withdrawals by land use for 1995.

Existing, or baseline, groundwater demand on the west slope was also estimated for this EIR and the EDCWA water planning process and is discussed further in the related impact assessment section below. Baseline groundwater demand for planning and impact assessment purposes, in west-slope areas not served by public water purveyors, is estimated to be 15,261 afy (see EPS 2003 in Appendix E). This groundwater demand is met by private wells or small water systems that depend on wells or springs for their supplies.

Agricultural Water Use

Virtually all of the agricultural water use within El Dorado County occurs on the west slope. Water used for such agricultural purposes as watering orchards and vineyards is supplied by both public water purveyors and private wells. Data are not readily available on the amount of water supplied by private wells. Of the agriculture water supplied by public water purveyors, most of this is surface water supplied by EID and GDPUD (see EPS 2003 and Wood Rodgers 2003 in Appendix E).

An estimate of existing and projected agricultural water demands was prepared by Wood Rodgers (Wood Rodgers 2003) for EDCWA and is included in Appendix E. These estimates are summarized below and were conducted for the ongoing EDCWA water planning process and were used for this EIR. They are based on an analysis of the land's suitability for agricultural uses as well as potential slope constraints that could restrict agricultural development.

Existing Agricultural Water Demand

Three major suppliers provide surface water to approximately two thirds of the agricultural land in the county: El Dorado Irrigation District (EID), Georgetown Divide Public Utility District (GDPUD), and Grizzly Flats Community Services District (GFCSD). Water for the remaining agricultural areas comes from small water systems that obtain their supply from community systems, individual groundwater wells, and riparian diversions. This discussion focuses on surface water from the two largest districts. Very little is known at present about the supply and use of groundwater in El Dorado County.

In 2000, the countywide total of irrigated agricultural land uses was estimated to be 9,471 acres (based on crop report information and restricted materials permits), with most of that acreage (6,625 acres) being used for pasture and deciduous (i.e., fruit trees that lose their leaves) areas and 2,846 acres being used for crops such as vineyards, Christmas trees, olive and citrus orchards, and berries (Wood Rodgers 2003). Table 5.5-5 shows acreages and water use by crop type.

In 2000, the estimated amount of water applied for agricultural uses was 11,939 acre-feet (af) (Wood Rodgers 2003). Irrigated agricultural lands within EID's service boundaries received 5,950 af of water in 2000 (Table 5.5-6) (Wood Rodgers 2003). The demand for agricultural

water could increase[1] to 13,745 af by 2025, primarily as a result of a 10%-per-year increase in demand for water for vineyard, Christmas trees, olive/citrus, berries, etc., based on recent trends in more water intensive agricultural operations in the county as identified by Wood Rodgers. Growth in this category of agricultural production is assumed to take place first on choice soils in agricultural districts within the water district service areas, and then on choice soils in agricultural districts outside those areas, where water is less readily available. By 2025, all likely potential irrigable land is assumed to be developed with irrigable crops. Pasture, deciduous, and other agricultural lands are assumed to increase only minimally through 2010 and not at all thereafter because agricultural expansion in EID's service area is assumed to focus primarily on the vineyard, Christmas tree, etc. category (EDCWA 2003).

Irrigated agricultural lands within GDPUD boundaries received 4,351 af of water in 2000 (Table 5.5-7) (Wood Rodgers 2003). This demand could increase to 7,710 af by 2025. In contrast to agricultural water demand in EID, demand in this district for vineyard, Christmas trees, olive/citrus, berries, etc., is assumed by Wood Rogers to grow at 15% per year through 2010, then slow to 10% per year through 2025, and continue growing through 2050. These growth estimates are based, as described above, on the assumption that agricultural land in the water district service areas will develop before land outside the service areas; in addition, the Wood Rodgers estimates assume that agricultural growth will slow as the demand for water increases throughout the county over time.

The GFCSD had overall demand for 157 af of water in 1999/2000 (Wood Rodgers 2003) and an available firm supply of 144 af. No specific information is available regarding the agricultural water demand within the district's boundaries; this area is included in the discussion below of areas outside the major purveyors' boundaries.

Although no service provider monitors agricultural water use in areas outside the three major water districts, irrigated agricultural lands in other areas of the county are estimated to have received 1,638 af of applied water in 2000, based on the acreage under restricted materials permits (Table 5.5-8) (Wood Rodgers 2003). (Note that, as described in Table 5.2-3, these numbers are based on Agricultural Commission data for restricted materials [i.e., pesticide and herbicide] permits; therefore, organic farms, family farms, and timber operations are not included.) Agricultural water demand in the outlying areas is estimated to increase to 1,820 af by 2010 and to 2,860 af by 2025. This increase is assumed to be entirely from vineyards,

[1] The agricultural water demand estimates provided by Wood Rodgers are based on an analysis of land suitability and slope constraints that does not take into account potential financial, institutional, and environmental constraints that could limit the expansion of EID and GDPUD surface water facilities. Such facilities would likely be needed to serve much of the EID and GDPUD agricultural water demand estimated by Wood Rodgers.

Christmas trees, olive/citrus, berries, etc.; no increase in pasture and deciduous acreage is assumed.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Thresholds of Significance

The General Plan would result in a significant impact if development would:

- result in the need for substantial new surface-water supply sources and related storage, treatment, and conveyance facilities to meet water demand and avoid reductions in service levels;
- result in significant environmental impacts associated with the development of these surface-water supply sources and storage, treatment, and conveyance facilities; or
- reduce groundwater supplies, or interfere with groundwater recharge, such that there would be a substantial decline in the groundwater available for existing or future groundwater users. (For example, levels could drop to a point that cannot support existing or planned land uses for which permits have been granted, or could cause significant environmental effects as groundwater users develop new sources or surface water purveyors expand their service areas to serve areas with insufficient groundwater supplies.)

Impact **5.5-1**

Increased Water Demand and Likelihood of Surface Water Shortages Resulting from Expected Development. The population and employment growth associated with each alternative would increase surface water demand and the likelihood of surface water shortages. As a result of related reductions in the service levels of surface water customers, and the inability of water purveyors to serve new development, this impact is considered **significant**. Projected surface-water shortages in 2025 would be the largest under the Environmentally Constrained and 1996 General Plan alternatives, followed by the Roadway Constrained 6-Lane "Plus" Alternative and then the No Project Alternative. At buildout the 1996 General Plan Alternative would result in the largest projected shortages, followed by the Environmentally Constrained, Roadway Constrained 6-Lane "Plus," and No Project alternatives. Impact significance before and after mitigation is shown in the table below.

Impact	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-1: Increased Water Demand and Likelihood of Surface Water Shortages Resulting from Expected Development	S_3	S_4	S_2	S_3	S_1	S_2	S_1	S_1
Mitigation	**Significance After Mitigation***							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-1(a), Implement Mitigation Measure 5.1-3(a); 5.5-1(b), Ensure that Surface-Water Supplies are Adequate and Physically Available Before Any New Development Occurs; and 5.5-1(c), Support Development of Water Conservation and Recycling Projects that Can Help Reduce Water Demand and Projected Shortages	SU_3	SU_4	SU_2	SU_3	SU_1	SU_2	SU_1	SU_1

* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.

The population and employment growth associated with each alternative would cause an increase in county water demand. Surface water and groundwater demand would increase as a result of new residential, commercial, and industrial development in the county, and to a lesser extent, from increases in the acreage of land under irrigated agricultural production.

Using the water demand projections in Table 5.5-1, and related analyses from EDCWA of the existing, available, and firm supplies of the west-slope purveyors' water systems (EDCWA 2003a), the projected and potential shortage conditions associated with each equal-weight alternative can be defined. The results of this analysis are summarized in Table 5.5-1. Note

that the water supply projections in Table 5.5-1 do not assume any new water conservation, recycling or supply projects. For example, Project 184 and CVP water under PL 101-514 are considered new supply projects in this EIR; thus potential contribution to existing water supplies from these and other potential new projects are not included in Table 5.5-1.

No Project Alternative (Alternative #1)

Relevant Goals/Policies—No Project Alternative

The relevant goals included in the 1996 General Plan that are applicable to the No Project Alternative are Policies HO-5a and HO-5b, 5.1.1.1 and 5.1.1.2, 5.1.2.1 through 5.1.2.4, 5.1.3.1 and 5.1.3.2, 5.2.1.1 through 5.2.1.8, 5.7.1.1, 7.3.1.2 and 7.3.1.3, 7.3.5.1 through 7.3.5.5, and 8.2.1.1 through 8.2.1.3.

No Project Alternative (2025)—Impact Discussion

The No Project Alternative at 2025 would likely cause major increases in surface water demand and the likelihood of water purveyor shortages and reductions in service levels. The subsections below describe these impacts in more detail.

Policies HO-5a and HO-5b, 7.3.1.2, and 7.3.5.1 through 7.3.5.5 would all encourage more water conservation in the county. However, the magnitude of the projected shortages described in the subsections below are such that all three west-slope purveyors would still need to pursue new supply projects even if they implemented more conservation and recycled water projects (EDCWA 2003). The potential savings associated with new and feasible conservation efforts by the west-slope purveyors is being assessed in the ongoing water planning study being conducted by EDCWA. As noted above under Existing Conditions, EID has already implemented water conservation BMPs (consistent with USBR's related criteria) plus 10 additional conservation programs. Thus, future opportunities for major new water savings in the EID service area are relatively limited. However, additional conservation efforts within the service areas of the other two west-slope water purveyors would likely have a greater effect on the future water demand shown in Table 5.5-1. More aggressive conservation policies than those included in this alternative are also warranted given the magnitude of the projected shortages, the uncertainty surrounding the availability of future supplies, and the difficulty involved in trying to build water supply projects.

Policies 7.3.1.3 and 8.2.1.1 would encourage more water reclamation (or recycling) for purposes of irrigating landscapes and agricultural land. While these policies may help "stretch" EID's limited supplies during dry periods (the critical planning period used to estimated the

firm yields and projected shortages in Table 5.5-1), new water recycling projects in the county only have the potential to help meet a relatively small portion of EID's projected shortages. (The other west-slope purveyors do not have WWTPs—the source of recycled water in the county.) As described further in Section 5.5.3, the maximum amount of recycled water expected to be available for use by EID customers was estimated by EID in its Recycled Water Master Plan (EID 2002). A total of approximately 9,553 afy of recycled water is expected to be available by the year 2025 during dry water years, an increase of 4,641 afy compared to what is available under existing conditions. The additional recycled water is projected to be available and used if (1) EID implements all of the planned treatment capacity improvements recommended in the Recycled Water Master Plan for both of its WWTPs and as described in Section 5.5.3, and (2) EID's ongoing negotiations with real estate developers regarding the installation of "dual plumping" systems, as found in the Serrano development, are successful as expected. (Hammer and Kontonickas, pers. comm., 2003). While an increase in the availability and use of recycled water would help augment EID's supplies, the potential increase in recycled water supply defined above and in the Recycled Water Master Plan would be relatively small compared to the projected EID shortages shown in Table 5.5-1. Mitigation Measure 5.5-6(a) in Section 5.5.3 has the potential to increase the availability of recycled water supplies in the county beyond that envisioned in the Recycled Water Master Plan (by adding more storage capacity); however, the feasibility of this mitigation measure is unknown and untested, and therefore not reliable. Even though new recycled water projects would not avoid major shortages in the county, more aggressive recycled water policies than those included in this alternative are warranted given the magnitude of the projected shortages, the uncertainty surrounding the availability of future supplies, and the difficulty involved in trying to build water supply projects.

Policy 5.1.2.1 requires the approving authority to review the adequacy of all public utility service before discretionary projects are approved. Policy 5.1.2.2 states that the provision of public services to new discretionary development shall not result in a reduction of service levels below established standards. While these policies would increase the likelihood that sufficient water supplies are available to serve new development, and would help protect existing service levels, they are not sufficient to avoid the projected shortages shown in Table 5.5-1 since they do not apply to ministerial development and do not have a clear or unambiguous definition of "available" or "adequate" supplies or services. A more explicit definition of such terms is needed to help ensure projects are not approved on the basis of water supplies being available "on paper" but not physically available as described further in the mitigation section below. Therefore, these policies would not be sufficient in reducing the likelihood of the major shortages associated with this alternative.

Increase in Surface Water Demand

As shown in Table 5.5 1, most of the increase in water demand caused by this alternative at 2025 would occur within the EID service area, while the area outside the service-area boundaries of the three purveyors would experience the greatest growth in terms of percentage change. Total water demand under the No Project Alternative at 2025 is estimated to range from 56,543 afy to 65,049 afy for EID and from 12,030 afy to 15,277 afy for GDPUD, and is estimated to be 197 afy for GFCSD. Compared to existing water demand, and using the upper end of the respective demand ranges, this alternative would cause about a 72% increase in total water demand for EID, a 38% increase in such demand for GDPUD, and a 25% increase in total water demand for GFCSD. The total water demand for other county areas on the west slope would be about 13,498 afy to 16,358 under No Project 2025 conditions, and would primarily be supplied by groundwater, if sufficient groundwater supplies are available. This alternative would therefore cause about a 121% increase in total water demand for other county areas. To the extent that groundwater supplies are not available, this demand could lead to increased demand for surface water resources and proposals for expanded service areas for the water purveyors. This is discussed in Impact 5.5-3.

Thus, the upper end of total west-slope water demand associated with the No Project Alternative at 2025 would be approximately 96,881 afy, an increase of about 72% from the total west-slope water demand of 56,437 afy under existing/baseline conditions. This is the lowest increase in demand among the equal-weight alternatives.

Increase in the Likelihood of Purveyor Water Shortages and Reductions in Service Levels

The results of the analysis summarized in Table 5.5-1 indicate that the No Project Alternative at 2025 would likely cause a major increase in the likelihood of future water shortages for EID, GDPUD, and GFSCD. Based on the firm yield of its current supplies, EID's projected water shortages under this alternative would range from 13,263 afy to about 21,769 afy. In other words, up to approximately 33% of EID's expected 2025 demand would not be met. GDPUD's shortages under this alternative at 2025 would be up to approximately 3,077 afy, meaning that up to about 20% of its 2025 demand would not be met. GFCSD would experience shortages of up to approximately 53 afy, and about 22% of its 2025 water demand would not be met. With a minor exception for GFCSD, none of these other purveyors are expected to have shortages under existing conditions.

If the purveyors experience the types of shortages shown in Table 5.5-1, water service levels would drop noticeably and water customers of all types could experience rationing, major watering restrictions, and adverse impacts on their lifestyles. For example, under EID's

existing Stage 4, "Critical Water Emergency" guidelines, 20% to 30% reductions in demand are expected (EID 2001a). The upper end of the projected shortages for EID under 2025 No Project Alternative conditions (Table 5.5-1) represent a 33% shortage, or necessary reduction in demand. To achieve such savings, all agricultural plantings in EID's service area must be deferred, and all outside watering with potable water would be prohibited(EID 2001a). When shortages end, customers could replace lawns and plants that may have died during the shortage, which may result in significant expenditures. Agricultural customers of EID could experience significant disruptions if they do not have readily available alternative sources such as groundwater. Even those customers with access to groundwater could be affected if water tables are reduced during times of drought. As described in the existing setting section above, GDPUD also can be expected to reduce water deliveries to agricultural customers during major shortages (Gau, pers. comm., 2003).

In addition to causing reductions in the existing service levels of water purveyors' customers, such shortage conditions would likely not allow purveyors to serve new development. Existing commercial, industrial, and agricultural businesses would likely experience reductions in production, income, and employment (especially water-intensive businesses including irrigated agriculture, food processing, and the electronics industry). The Wood Rodgers agricultural water use study conducted for the EDCWA Water Plan and this EIR has estimated, based on a land suitability analysis, that there could be a fairly large increase in agricultural production within the EID and GDPUD by 2025 and beyond (see Wood Rodgers 2003 in Appendix E). Future agricultural production (and related income and employment benefits) from potential new vineyards, Christmas tree plantations, olive and citrus orchards, etc. may not take place if the shortages associated with this alternative and summarized in Table 5.5-1 occur.

The magnitude of the projected shortages associated with the No Project Alternative at 2025 would likely cause all three west-slope water purveyors to pursue a combination of new water conservation, recycling, and/or supply projects. While the projected 2025 shortages are smaller under the No Project Alternative than under the other equal-weight alternatives, conservation and recycling programs are not likely to be sufficient to satisfy the increased demand. All three purveyors would likely pursue new water supply projects to avoid prolonged shortages (EDCWA 2003a). This impact is considered significant. The new supply projects under consideration by these purveyors and their potential environmental effects are considered in the discussion of Impact 5.5-2.

No Project Alternative (Buildout)—Impact Discussion

As described below, the No Project Alternative under buildout conditions would lead to major water demand increases and projected shortages. For the same reasons as discussed above

under 2025 conditions, the policy associated with this alternative would only lead to minor reductions in these projected shortages.

As shown in Table 5.5 1, most of the increase in water demand caused by this alternative at buildout is projected to occur within the EID service area, while the area outside the service-area boundaries of the three purveyors and the GFCSD service area would experience the greatest growth in terms of percentage change. Total water demand under this alternative is estimated to range from 61,645 afy to 70,151 afy for EID and from 13,619 afy to 18,270 afy for GDPUD, and is estimated to be 499 afy for GFCSD. Compared to existing water demand, and using the upper end of the respective demand ranges, this alternative could cause about a 85% increase in total water demand for EID, a 65% increase in such demand for GDPUD, and a 218% increase in total water demand for GFCSD. The total water demand for other county areas on the west slope is projected to be about 17,263 afy to 26,948 afy under No Project Alternative buildout conditions, and primarily could be supplied by groundwater, if sufficient groundwater supplies are available. This alternative could therefore cause about a 264% increase in total water demand for other county areas. To the extent that groundwater supplies are not available, this demand could lead to increased demand for surface water resources and proposals for expanded service areas for the water purveyors. This is described further under Impact 5.5-3.

Thus, the upper end of total west-slope water demand associated with the No Project Alternative at buildout could be approximately 115,868 afy, an increase of about 105% from the total west-slope water demand of 56,437 afy under existing/baseline conditions.

These water demand increases could lead to the same types of impacts as those described for 2025 conditions but with a greater magnitude of projected shortages. EID's projected water shortages by buildout would range from 18,365 afy to about 26,871 afy. In other words, up to approximately 38% of EID's demand at buildout potentially would not be met. GDPUD's shortages under this alternative at buildout could be up to approximately 6,070 afy and about up to 33% of its buildout demand potentially would not be met. GFCSD could experience shortages up to approximately 355 afy, and about 71% of its buildout water demand potentially would not be met.

As noted in the discussion of 2025 conditions, the magnitude of the projected shortages would likely cause all three west-slope water purveyors to pursue new water supply projects to avoid prolonged shortages. This impact is considered significant. The new supply projects under consideration by these purveyors and their potential environmental effects are considered in the discussion of Impact 5.5-2.

Roadway Constrained 6-Lane "Plus" Alternative (Alternative #2)

Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative

The relevant policies that are applicable to the Roadway Constrained 6-Lane "Plus" Alternative are Policies LU-7a, AF-2a, PS-1a and PS-1b, PS-1d through PS-1g, PS-2a and PS-2b, PS-2f, PS-3a through PS-3c, and PS-10a.

Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion

The Roadway Constrained 6-Lane "Plus" Alternative at 2025 would likely cause major increases in surface water demand and the likelihood of water purveyor shortages and reductions in service levels. These impacts are described in more detail below.

This alternative includes some policies that would help reduce the magnitude of the projected shortages, but not to the extent that new supply projects would need to be pursued by the west-slope water purveyors. For example, under Policy PS-3b, the County shall encourage the reclamation and reuse of wastewater (also referred to as water recycling). As explained above under No Project Alternative (2025)—Impact Discussion, such a policy can help "stretch" EID's water supplies, but would not have a major effect on reducing the large projected shortages in Table 5.5-1. Nevertheless, more aggressive recycled water and conservation policies than those included in this alternative are warranted given the magnitude of the projected shortages, the uncertainty surrounding the availability of future supplies, and the difficulty involved in trying to build water supply projects.

Policies PS-1f and PS-1g both would increase the likelihood that water supplies are adequate to serve new development and protect existing service levels. However, unlike the mitigation described later in this section, these policies only apply to discretionary development, as opposed to both discretionary and ministerial development, and they do not have clear and unambiguous definitions of what constitutes "adequate" or "available" water supplies when discretionary decisions are made. Therefore, these policies would not be sufficient in reducing the likelihood of the major shortages associated with this alternative.

This alternative would cause the second lowest estimated increases in water demand and related shortages by 2025. Most of the increase in water demand caused by the Roadway Constrained 6-Lane "Plus" Alternative at 2025 would occur within the EID service area. The area outside the service-area boundaries of the three purveyors would experience the greatest growth in demand in terms of percentage change. Total water demand under the Roadway Constrained Alternative is estimated to be up to 67,188 afy for EID and up to 15,362 afy for

GDPUD, and is estimated to be 204 afy for GFCSD by 2025. Compared to existing water demand, and using the upper end of the respective demand ranges, this alternative would cause about a 78% increase in total water demand for EID, a 39% increase in such demand for GDPUD, and a 132% increase in total water demand for GFCSD. The total water demand for other areas on the west slope would be up to approximately 17,186 afy under Roadway Constrained 6-Lane "Plus" Alternative conditions at 2025; this demand would primarily be supplied by groundwater, if sufficient groundwater supplies are available. This alternative would therefore cause about a 132% increase in total water demand for other county areas at 2025. To the extent that groundwater supplies are not available, this demand could lead to increased demand for surface water resources and proposals for expanding the service areas of the water purveyors. This is described further under Impact 5.5-3.

The upper end of total west-slope water demand associated with the Roadway Constrained 6-Lane "Plus" Alternative at 2025 would thus be approximately 99,940 afy, an increase of about 77% from the total west-slope water demand of 56,437 afy under existing/baseline conditions.

These water demand increases would lead to the same types of impacts as those described for the No Project Alternative at 2025, including a greater likelihood of major surface-water shortages. However, the magnitude of these potential impacts would be larger under Roadway Constrained 6-Lane "Plus" Alternative buildout conditions because the magnitude of the related and projected shortages would be larger. The results of the analysis summarized in Table 5.5-1 indicate that this alternative at 2025 is projected to cause a major increase in the likelihood of future water shortages for EID, GDPUD, and GFSCD. Based on the firm yield of its current supplies, EID's projected water shortages by 2025 would range up to about 23,908 afy. In other words, up to approximately 36% of EID's baseline demand would not be met. GDPUD's shortages under 2025 conditions would be up to approximately 3,162 afy and about up to 21% of its baseline demand would not be met. GFCSD would experience shortages up to approximately 60 afy, and about 29% of its baseline water demand would not be met.

The magnitude of these projected shortages would likely cause all three west-slope water purveyors to pursue new water supply projects to avoid prolonged shortages. This impact is considered significant. The new supply projects under consideration by these purveyors and their potential environmental effects are considered under Impact 5.5-2.

Roadway Constrained 6-Lane "Plus" Alternative (Buildout)—Impact Discussion

The Roadway Constrained 6-Lane "Plus" Alternative at buildout would likely cause major increases in surface water demand and the likelihood of water purveyor shortages and

reductions in service levels. These impacts are described in more detail below. For the same reasons as discussed above, the policies associated with this alternative would only lead to minor reductions in these projected shortages. Nevertheless, more aggressive recycled water and conservation policies than those included in this alternative are warranted given the magnitude of the projected shortages, the uncertainty surrounding the availability of future supplies, and the difficulty involved in trying to build water supply projects.

Most of the increase in water demand caused by this alternative at buildout is projected to occur within the EID service area, but in terms of percentage change, most of the increase would be in the GFCSD service area and outside the boundaries of the three west-slope purveyors.

The specific increases in total water demand under the Roadway Constrained 6-Lane "Plus" Alternative at buildout are shown in Table 5.5-1 and are projected to be notably higher than those associated with this alternative under 2025 conditions. The upper end of total west-slope water demand associated with this alternative at buildout could be approximately 124,607 afy, an increase of about 121% from the total west-slope water demand of 56,437 afy under existing/baseline conditions. To the extent that groundwater supplies are not available, the large increase in water demand associated with this alternative and outside the service area of the three west-slope purveyors could lead to increased demand for surface water resources and proposals for expanding the service areas of the water purveyors. This is described further under Impact 5.5-3.

These water demand increases could lead to the same types of impacts as those described for the No Project Alternative at 2025, including a greater likelihood of major surface water shortages. However, the magnitude of these potential impacts is expected to be larger under Roadway 6-Lane "Plus" Constrained Alternative buildout conditions because the magnitude of the related and projected shortages would be larger. The results of the analysis summarized in Table 5.5-1 indicate that this alternative at buildout could cause a major increase in the likelihood of future water shortages for EID, GDPUD, and GFSCD. The magnitude of these projected shortages would likely cause all three west-slope water purveyors to pursue new water supply projects to avoid prolonged shortages. This impact is considered significant. The new supply projects under consideration by these purveyors and their potential environmental effects are considered under Impact 5.5-2.

Environmentally Constrained Alternative (Alternative #3)

Relevant Goals/Policies—Environmentally Constrained Alternative

The relevant policies that are applicable to the Environmentally Constrained Alternative are Policies LU-7a, AF-2a, PS-1a and PS-1b, PS-1d through PS-1g, PS-2a and PS-2b, PS-2f, PS-3a, PS-3c, and PS-10a (please refer to the Roadway Constrained 6-Lane "Plus" Alternative above). In addition, Policy PS-3b applies to this alternative, but the language differs from that under the Roadway Constrained 6-Lane "Plus" Alternative. Under this alternative, Policy PS-3b would require the County to "identify the types of projects that must utilize reclaimed water." This is in contrast with the Roadway Constrained 6-Lane "Plus" Alternative's Policy PS-3b, which would encourage the reclamation and reuse of wastewater.

Environmentally Constrained Alternative (2025)—Impact Discussion

The Environmentally Constrained Alternative at 2025 would likely cause major increases in surface water demand and the likelihood of water purveyor shortages and reductions in service levels. These impacts are described in more detail below.

Policy PS-3b under the Environmentally Constrained Alternative would encourage more use of reclaimed (or recycled) water. Therefore, compared to the other equal-weight alternatives, this alternative has the greatest potential to help increase recycled water use in the county. However, as explained above under No Project Alternative (2025)—Impact Discussion, such a policy can help "stretch" EID's water supplies, but is not expected to have a major effect on reducing the large projected shortages in Table 5.5-1. Thus, EID would still experience large shortages under this alternative if Policy PS-3b is adopted and successfully implemented. The opportunity for recycled water use within the service areas of the other purveyors is limited because they do not have WWTPs.

Similar to the other equal-weight alternatives, this alternative includes policies that would encourage more water conservation; however, more aggressive water conservation policies are warranted given the magnitude of the projected shortages associated with this alternative, the uncertainty surrounding the availability of future supplies, and the difficulty involved in trying to build water supply projects.

Most of the increase in water demand caused by this alternative at 2025 would occur within the EID service area, while the area outside the service area boundaries of the purveyors and the GFCSD service area would experience the greatest growth in terms of percentage change.

The specific projected increases in demand in total water demand under the Environmentally Constrained Alternative at 2025 are shown in Table 5.5-1. The upper end of total west-slope water demand associated with this alternative at 2025 would thus be approximately 104,438 afy, an increase of about 85% from the total west-slope water demand of 56,437 afy under existing/baseline conditions. To the extent that groundwater supplies are not available, the large increase in water demand associated with this alternative and outside the service area of the three west-slope purveyors could lead to increased demand for surface water resources and proposals for expanding the service areas of the water purveyors. This is described under Impact 5.5-3.

These water demand increases would lead to the same types of impacts as those described for the No Project Alternative at 2025, including a greater likelihood of major surface water shortages. However, the magnitude of these potential impacts would be larger under Environmentally Constrained Alternative 2025 conditions because the magnitude of the related and projected shortages would be larger.

The results of the analysis summarized in Table 5.5-1 indicate that this alternative at 2025 would likely cause a major increase in the likelihood of future water shortages for EID, GDPUD, and GFSCD. The magnitude of these projected shortages would likely cause all three west-slope water purveyors to pursue new water supply projects to avoid prolonged shortages. This is considered a significant impact. The new supply projects under consideration by these purveyors and their potential environmental effects are considered under Impact 5.5-2.

Environmentally Constrained Alternative (Buildout)—Impact Discussion

The buildout scenario for this alternative includes the same recycled water-related policy (Policy PS-3b) discussed above under Environmentally Constrained 2025—Impact Discussion. Therefore, compared to the other equal-weight alternatives, this alternative would likely lead to more use of recycled water over time as buildout conditions are approached. However, given the magnitude of the EID shortages in Table 5.5-1, EID would still experience large shortages under this alternative if Policy PS-3b is adopted and successfully implemented. The opportunity for recycled water use within the service areas of the other purveyors is limited because they do not have WWTPs.

Similar to the other equal-weight alternatives, this alternative includes policies that would encourage more water conservation; however, more aggressive water conservation policies are warranted given the magnitude of the projected shortages associated with this alternative, the

uncertainty surrounding the availability of future supplies and the difficulty involved in trying to build water supply projects.

Most of the increase in water demand caused by this alternative at buildout is projected to occur within the EID service area, while the area outside the service-area boundaries of the purveyors and the GFCSD service area would experience the greatest growth in terms of percentage change.

The specific increases in total water demand under the Environmentally Constrained Alternative at buildout are shown in Table 5.5-1 and are projected to be notably higher than those associated with this alternative under 2025 conditions. The upper end of total west-slope water demand associated with this alternative at buildout could thus be approximately 127,788 afy, an increase of about 126% from the total west-slope water demand of 56,437 afy under existing/baseline conditions. To the extent that groundwater supplies are not available, the large increase in water demand associated with this alternative and outside the service area of the three west-slope purveyors could lead to increased demand for surface water resources and proposals for expanding the service areas of the water purveyors. This is described further under Impact 5.5-3.

These water demand increases could lead to the same types of impacts as those described for the No Project Alternative at 2025, including a greater likelihood of major surface water shortages. However, the magnitude of these potential impacts is expected to be larger under Environmentally Constrained Alternative buildout conditions because the magnitude of the related and projected shortages would be larger. The results of the analysis summarized in Table 5.5-1 indicate that this alternative at buildout could likely cause a major increase in the likelihood of future water shortages for EID, GDPUD, and GFSCD. The magnitude of these projected shortages would likely cause all three west-slope water purveyors to pursue new water supply projects to avoid prolonged shortages. This impact is considered significant. The new supply projects under consideration by these purveyors and their potential environmental effects are considered under Impact 5.5-2.

1996 General Plan Alternative (Alternative #4)

Relevant Goals/Policies—1996 General Plan Alternative

For the relevant policies of the 1996 General Plan Alternative, please refer to the policies listed above under Relevant Goals/Policies—No Project Alternative.

1996 General Plan Alternative (2025)—Impact Discussion

The 1996 General Plan Alternative at 2025 would likely cause major increases in surface water demand and the likelihood of water purveyor shortages and reductions in service levels. These impacts are described in more detail below. For the same reasons described above under No Project Alternative (2025)—Impact Discussion, the policies associated with this alternative would only lead to minor reductions in these projected shortages. While this alternative includes policies that encourage more water conservation and recycled water use, more aggressive water conservation policies are warranted given the magnitude of the projected shortages associated with this alternative, the uncertainty surrounding the availability of future supplies and the difficulty involved in trying to build water supply projects.

Most of the increase in water demand caused by this alternative at 2025 would occur within the EID service area, while the area outside the service-area boundaries of the purveyors and the GFCSD service area would experience the greatest growth in demand terms of percentage change.

The specific increases in total water demand under the 1996 General Plan Alternative at 2025 are shown in Table 5.5-1. The upper end of total west-slope water demand associated with this alternative at 2025 would thus be approximately 105,031 afy, an increase of about 86% from the total west-slope water demand of 56,437 afy under existing/baseline conditions. To the extent that groundwater supplies are not available, the large increase in water demand associated with this alternative and outside the service area of the three west-slope purveyors could lead to increased demand for surface water resources and proposals for expanding the service areas of the water purveyors. This is described further under Impact 5.5-3.

These water demand increases would lead to the same types of impacts as those described for the No Project Alternative at 2025, including a greater likelihood of major surface water shortages. However, the magnitude of these potential impacts would be larger under 1996 General Plan Alternative 2025 conditions because the magnitude of the related and projected shortages would be larger. The results of the analysis summarized in Table 5.5-1 indicate that this alternative at 2025 would likely cause a major increase in the likelihood of future water shortages for EID, GDPUD, and GFSCD. The magnitude of these projected shortages would likely cause all three west-slope water purveyors to pursue new water supply projects to avoid prolonged shortages. This impact is considered significant. The new supply projects under consideration by these purveyors and their potential environmental effects are considered under Impact 5.5-2.

1996 General Plan Alternative (Buildout)—Impact Discussion

The 1996 General Plan Alternative at buildout would likely cause major increases in surface water demand and the likelihood of water purveyor shortages and reductions in service levels. These impacts are described in more detail below. For the same reasons described above under No Project Alternative (2025)—Impact Discussion, the policies associated with this alternative would only lead to minor reductions in these projected shortages. While this alternative includes policies that encourage more water conservation and recycled water use, more aggressive water conservation policies are warranted given the magnitude of the projected shortages associated with this alternative, the uncertainty surrounding the availability of future supplies, and the difficulty involved in trying to build water supply projects.

Of the four equal-weight alternatives, this alternative would cause the largest estimated increases in water demand and related shortages at buildout. Most of the increase in water demand caused by the 1996 General Plan Alternative at buildout is projected to occur within the EID service area, while the area outside the service area boundaries of the three purveyors and the GFCSD service area would experience the greatest growth in demand terms of percentage change.

The specific increases in total water demand under the 1996 General Plan Alternative at buildout are shown in Table 5.5-1 and are projected be notably higher than those associated with this alternative under 2025 conditions. The upper end of total west-slope water demand associated with this alternative at buildout could thus be approximately 146,641 afy, an increase of about 160% from the total west-slope water demand of 56,437 afy under existing/baseline conditions. To the extent that groundwater supplies are not available, the large increase in water demand associated with this alternative and outside the service area of the three west-slope purveyors could lead to increased demand for surface water resources and proposals for expanding the service areas of the water purveyors. This is described further under Impact 5.5-3.

These water demand increases could lead to the same types of impacts as those described for the No Project Alternative at 2025, including a greater likelihood of major surface water shortages. However, the magnitude of these potential impacts is expected to be larger under 1996 General Plan Alternative buildout conditions because the magnitude of the related and projected shortages would be larger. The results of the analysis summarized in Table 5.5-1 indicate that this alternative at buildout could cause a major increase in the likelihood of future water shortages for EID, GDPUD, and GFSCD. The magnitude of these projected shortages would likely cause all three west-slope water purveyors to pursue new water supply projects to

avoid prolonged shortages. This impact is considered significant. The new supply projects under consideration by these purveyors and their potential environmental effects are considered in the discussion of Impact 5.5-2.

Mitigation Measure 5.5-1—No Project Alternative

The County shall implement all of the following measures:

- Mitigation Measure 5.5-1(a): Implement Mitigation Measure 5.1-3(a)
- Mitigation Measure 5.5-1(b): Ensure that Surface Water Supplies are Adequate and Physically Available Before Any New Development Occurs
- Mitigation Measure 5.5-1(c): Support Development of Water Conservation and Recycling Projects that Can Help Reduce Water Demand and Projected Shortages

These mitigation measures are described below. With the implementation of these measures, Impact 5.5-1 would remain significant and unavoidable.

Mitigation Measure 5.5-1(a): Implement Mitigation Measure 5.1-3(a)

As discussed above under No Project Alternative (2025)—Impact Discussion, the policies associated with this alternative that require a review of adequacy of supplies for discretionary development would likely only have a minor effect on reducing the large shortages caused by this alternative. In addition to not applying to ministerial development, these policies do not have clear and unambiguous definitions of the key terms "adequate" or "available" when referring to water supplies. These policies are insufficient to avoid the impacts described above.

Mitigation Measure 5.1-3(a) described in Section 5.1, Land Use and Housing, would apply the General Plan's water supply policies to both discretionary and ministerial development decisions and would provide a mechanism to promote compliance with those policies. However, as described below, additional mitigation is needed.

Mitigation Measure 5.5-1(b): Ensure that Surface Water Supplies are Adequate and Physically Available Before Any New Development Occurs

Neither Mitigation Measure 5.1-3(a) nor any policy in any of the equal-weight alternatives defines the standards to be used by the County to ascertain the availability of water to serve a particular project. Moreover, Measure 5.1-3(a) and related policies only require that adequate

supplies be available at the time of construction, i.e., "concurrent with development." This creates a risk that a project could be approved and would rely upon of a contemplated water project for which all water rights and other regulatory approvals have not been secured. Thus, a water supply project needed to serve a proposed project that is assumed to be available in a plan, or "on paper," may not be physically available when needed. Accordingly, the General Plan should include a policy that requires that water be physically available to serve proposed development at the time the County's discretionary or ministerial decisions are made.

Therefore, the County shall implement the following new policy.

> **New Policy:** Prior to granting any discretionary or ministerial land use approval in an area served by a public water purveyor or an approved private water system, the applicant must demonstrate and the County must confirm that the surface water supply from existing water supply facilities is adequate and physically available to meet the highest demand that could be permitted by the approval on the lands in question. "Adequate and physically available" means existing supply sources, for which the applicable water supplier has a present legal entitlement, with sufficient capacity to serve new development at the time the approval takes place, and where there are no impediments to the use of those existing supply sources. A water supply is "sufficient" if the total water supplies available during normal, single dry, and multiple dry years within a 20-year projection will meet the highest projected demand associated with the proposed project, in addition to existing and planned future uses within the area served by the water supplier, including, but not limited to, agricultural and industrial uses. An applicant must obtain a will serve letter from the applicable water supplier demonstrating that the supplier has an adequate and physically available water supply and can and will serve the proposed project from that supply.

Mitigation Measure 5.5-1(c): <u>Support Development of Water Conservation and Recycling Projects that Can Help Reduce Water Demand and Projected Shortages</u>

Each of the alternatives includes a policy that the County will support the efforts of water purveyors in retaining and seeking new water supplies (see Policies 5.1.1.1 and 5.2.1.1 in the No Project and 1996 General Plan alternatives and Policy PS-2a in the Roadway Constrained 6-Lane "Plus" and Environmentally Constrained alternatives.). However, as described in more detail under Related Projects and Plans above and under Impact 5.5-2 below, the ability of the west-slope water purveyors to develop major new water supply projects is in question. A large number of uncertainties surround these potential projects and such projects must satisfy numerous regulatory requirements and withstand various legal challenges.

For example, EID's Project 184 is entangled in complex litigation involving the significance of its potential environmental impacts and the reasonableness of "Term 91" in the SWRCB's Order WR 2001-22. The significance of its potential environmental affects, and related PM&E measures that may be included in the project's operating license by FERC, are being addressed by FERC in its ongoing NEPA and hydroelectric licensing processes, and will also be addressed in a planned EIR that the SWRCB will use in its permitting process. Term 91 bans EID diversions from Folsom Reservoir (the Project 184 diversion point for EID) at times that the state and federal water projects are releasing water from Folsom Reservoir and other major storage facilities to maintain Delta water quality. If EID and EDCWA do not succeed in their Term 91-related litigation, and FERC includes PM&E measures in the Project 184 license that reduce the firm yield of the project, then EID would not be able to use the full 17,000 afy for consumptive purposes as it has proposed. Thus, not only would the firm yield of this project be less than EID has proposed, but there is always the possibility that litigation could further impede this project.

Therefore, given the uncertainty surrounding future water supply projects, the difficulty involved in trying to build such projects, and the magnitude of the potential shortages in Table 5.5-1, it is important to place a strong emphasis on water conservation and recycling to ensure that the County is making the most efficient use possible of existing supplies. Accordingly, the County shall implement the following new policy:

> **New Policy:** The County shall support water conservation and recycling programs and projects that can reduce future water demand consistent with the policies of this General Plan. The County will develop and implement a water use efficiency program for existing and new residential, commercial/industrial, and agricultural uses. The County will also work with each of the County's water purveyors to develop a list of the types of uses that must use reclaimed water if feasible. The feasibility of using reclaimed water will be defined with specific criteria developed with public input and with the assistance of EID, and will be coordinated with their ongoing reclaimed water (also referred to as recycled water) planning and implementation process. The County shall encourage all water purveyors to implement the water conservation-related Best Management Practices already being implemented by EID and in compliance with the related criteria established by USBR.

Implementation of the three mitigation measures described above would not reduce Impact 5.5-1 to a less-than-significant level. While Mitigation Measure 5.5-1(b) would help protect the supplies of existing customers, supplies would still not be adequate with these three measures to serve new development, including existing commitments. Therefore, Impact 5.5-1 would remain significant and unavoidable.

Mitigation Measure 5.5-1—Roadway Constrained 6-Lane "Plus" Alternative

Please refer to the proposed mitigation measures for the No Project Alternative above. With the implementation of these measures, Impact 5.5-1 would remain significant and unavoidable.

Mitigation Measure 5.5-1—Environmentally Constrained Alternative

Mitigation Measure 5.5-1(a): Implement Mitigation Measure 5.1-3(a)

Please refer to the proposed mitigation measure for the No Project Alternative above.

Mitigation Measure 5.5-1(b): Ensure that Surface Water Supplies are Adequate and Physically Available Before Any New Development Occurs

Please refer to the proposed mitigation measure for the No Project Alternative above.

Mitigation Measure 5.5-1(c): Support Development of Water Conservation and Recycling Projects that Can Help Reduce Water Demand and Projected Shortages

Mitigation Measure 5.5-1(c) for this alternative differs from that for the Roadway Constrained 6-Lane "Plus" Alternative because under this alternative, Policy PS-3b is already a fairly aggressive policy from the standpoint of requiring more recycled water use in the county. The water conservation-related contents of the measure are appropriate for this alternative, however, for the reasons described above. Therefore, the County shall implement the following new policy:

> **New Policy:** The County shall support water conservation programs and projects that can reduce future water demand consistent with the policies of this General Plan. The County will develop and implement a water use efficiency program for existing and new residential, commercial/industrial, and agricultural uses. The County shall encourage all water purveyors to implement the water conservation Best Management Practices already being implemented by EID and in compliance with the related criteria established by USBR.

For the reasons described under the No Project Alternative, implementation of the three mitigation measures above would not lower Impact 5.5-1 to a less-than-significant level. Therefore, Impact 5.5-1 would remain significant and unavoidable.

Mitigation Measure 5.5-1—1996 General Plan Alternative

Please refer to the proposed mitigation measures for the No Project Alternative above. With the implementation of these measures, Impact 5.5-1 would remain significant and unavoidable.

Impact **5.5-2**

Potential Environmental Impacts Associated with the Development of New Surface Water Supplies and Related Infrastructure. To meet increased demand associated with population and employment growth within their service areas, water purveyors would need to develop new sources of surface water supply. Development of new supply sources and related infrastructure would cause physical environmental impacts. This impact is considered **significant** for all four EIR alternatives.

	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
Impact	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-2: Potential Environmental Impacts Associated with the Development of New Surface Water Supplies and Related Infrastructure	S_3	S_4	S_2	S_3	S_1	S_2	S_1	S_1
	Significance After Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
Mitigation	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-2: Encourage Mitigation of the Environmental Impacts of Future Water Supply and Infrastructure Projects	SU_3	SU_4	SU_2	SU_3	SU_1	SU_2	SU_1	SU_1

* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.

The rankings in the table below were done assuming that the potential for significant environmental impacts associated with new water supply projects correlates with the magnitude of the projected shortages the projects would be designed to avoid. Therefore, the severity of this impact in 2025 would be greatest under the 1996 General Plan and Environmentally Constrained alternatives, followed by the Roadway Constrained 6-Lane "Plus" Alternative, and then by the No Project Alternative. Even the No Project Alternative, however, would require additional supply projects that would be likely to have significant environmental effects. At buildout the severity of the impact would be greatest under the 1996 General Plan Alternative, followed by the Environmentally Constrained, Roadway Constrained 6-Lane "Plus," and No Project alternatives. Impact significance before and after mitigation is shown in the table below.

To address the projected shortages associated with development under the General Plan, as described above, each of the west-slope water purveyors would likely need to develop new water supply projects. EID expects to pursue one or more of the new projects listed below to avoid the water shortages summarized in Table 5.5-1 (EDCWA 2003a). Given the magnitude of the shortages, it is reasonable to assume that EID will need to pursue at least two of the projects listed below. The lists below indicate the amount of potential supply associated with each project where that information is available. The firm yield of any given project may be less than the potential supply because of characteristics of the supply source or conditions (e.g., Term 91) imposed on the use of that source. In the absence of detailed information regarding these factors, it is not possible to predict the firm yield of these projects.

- Purchase of CVP water from USBR under PL 101-514 (this project is proposed to provide EID with an additional 7,500 afy)
- Obtaining more water for consumptive purposes from FERC Project 184 (EID has proposed to use 17,000 afy from this project for consumptive purposes)
- Rediversion of Existing Pre-1914 and Reservoir Storage Water Rights (EID has proposed to use 4,560 afy of these rediverted rights)
- Expansion of reservoir capacity to increase the firm yield of existing and new sources of supply (potential reservoir projects include the Texas Hill Reservoir, Alder Reservoir, Squaw Hollow Reservoir, Expanded Weber Reservoir, and the Bray Reservoir Projects)
- Main canal lining from the El Dorado Forebay to the Reservoir 1 water treatment plant to reduce water loss and increase the firm yield of existing and new supplies
- Installation of 2-foot flashboards at Jenkinson Lake to increase storage by 1,280 af

- Conducting leak detection studies to increase the firm yield of existing and new supplies
- Construction of a Capps Crossing Dam and Reservoir to increase the firm yield of existing supplies
- Use of water from the Marble Valley limestone mine quarry to supplement the EID's recycled water supply
- Transfers of water rights from other water rights holders

GDPUD can be expected to pursue one or more of the following new projects to avoid the water shortages defined in Table 5.5-1 (EDCWA 2003a).

- Purchase of CVP water from USBR under PL 101-514 (this project is proposed to provide GDPUD with an additional 7,500 afy)
- Canyon Creek Dam and Reservoir
- Traverse Dam and Reservoir
- Greenwood Dam and Reservoir
- Otter Creek Diversion Dam
- Transfers of water rights from other water rights holders

In light of the projected shortages in Table 5.5-1, GFCSD is considering two new and relatively small (350 acre-feet or less in total capacity) reservoir storage projects:

- Spring Flat Reservoir, and
- Potts Reservoir (EDCWA 2003b).

While it is not known at this time which specific projects the water purveyors will rely upon to address the shortages shown in Table 5.5-1, there is a strong possibility that, because they are actively pursuing it via the FERC licensing process, EID will continue to pursue Project 184 and the PL 101-514 CVP water supply project. There is also a strong possibility that GDPUD will also continue to pursue this project. Therefore, the subsections below and Tables 5.5-9 through 5.5-11, provide a brief overview of the types of environmental impacts that might be caused by Project 184, the PL 101-514 CVP water supply project, and the other water supply projects the purveyors may decide to pursue as a result of the projected shortages associated with the equal-weight alternatives. This impact is considered significant.

Potential Environmental Impacts of Project 184

As discussed above under Related Plans and Projects, FERC is conducting an EIS study of EID's proposal to operate Project 184, including its desire to use 17,000 afy from this project for consumptive purposes. The subsection noted above also describes how FERC must assess potential protection, mitigation, and enhancement measures as it determines the best approach for comprehensively managing waterways, and balancing environmental enhancement measures with a project proponent's power proposals and other developmental plans (as required by §§4(e) and 10(a)(1) of the Federal Power Act). The wide range of alternatives and environmental enhancement measures being considered by FERC, EID and the stakeholders involved in the collaborative process is reflected in the recently released (released on March 2003) Draft EIS for the El Dorado Project Number 184-065 Hydropower License (FERC 2003).

The project alternatives and environmental measures addressed in FERC's Draft EIS, range from implementation of the applicant's [EID's] proposed action to decommissioning of Project 184. The primary alternatives analyzed in the Draft EIS are EID's proposed action and recommendations made by the resource agencies and other interested parties, particularly the U.S. Forest Service (USFS) and CDFG. The proposed action would continue operation of the El Dorado Project as it historically has been operated, with the addition of various nonoperational environmental protection and enhancement measures, such as:

- maintenance of minimum flows in project-affected reaches;
- adherence to reservoir withdrawal requirements described in a "Lake Level Operational Commitment";
- development of a plan to implement ramping rates (a commitment to release water gradually, thus avoiding large, sudden flow releases from the upper lakes);
- implementation of protective measures for sensitive plants and animals;
- presentation via the Internet of information on summer and fall lake levels and flows downstream of the El Dorado diversion dam; or
- an increase in public awareness regarding public access areas and effects of using undeveloped areas, and preparation of a Historic Properties Management Plan.

Under the Lake Level Operational Commitment, EID would operate the project as required by SWRCB Decision 1635, which may allow EID to divert a total of 17,000 afy for consumptive

purposes from Folsom Reservoir (as discussed above in Related Plans and Projects, Term 91 in the SWRCB's related Order WR 2001-22 may reduce the yield of this project for EID).

Resource agencies and stakeholders involved in the collaborative licensing process recommended numerous other environmental enhancement measures in addition to those summarized above and included in EID's proposed action. These measures included alternative lake levels to be met at Caples, Silver, and Aloha Lakes. Based on an analysis of EID's proposed action, agency and stakeholder recommendations, and the analysis of related power impacts, FERC also developed staff recommendations. These recommendations were refined further based on results of an economic analysis and a Recommended Alternative was developed: the proposed action with additional staff-recommended measures. This alternative is based on EID's proposed action, with environmental enhancement measures in addition to, or in lieu of, EID's proposed environmental measures. Because no final decision has been made by FERC, the conditions imposed in the FERC license may be different than those defined and assessed as part of the Recommended Alternative in the Draft EIS.

Table 5.5-9 summarizes the range and types of effects that could occur from the project alternatives described above.

Potential Environmental Impacts of the PL 101-514 CVP Water Supply Project

The PL 101-514 CVP Water Supply Project is another project that may be pursued as a result of the projected shortages described above. EDCWA, on behalf of and with assistance from EID and GDPUD, started an EIS/EIR for this project with USBR. Titled the EDCWA PL 101-514 Water Services Contract EIS/EIR, this study has been placed on hold until: (1) the County's General Plan adoption process is complete, and (2) the EDCWA Water Plan is adopted and determines whether pursuing 15,000 afy of CVP water is one of the preferred water supply options for EID and GDPUD to pursue (these two purveyors would each receive 7,500 afy from this project) (EDCWA 2003). If EDCWA elects to pursue the project, the PL 101-514 EIS/EIR will be completed and will include a detailed assessment of related and project-level environmental impacts and mitigation measures.

The EIS/EIR's Supplemental Notice of Intent (NOI) was published in the Federal Register on June 4, 1998 (63 FR No. 107, 30512), and the information contained in the NOI was used to provide an overview of the types of environmental impacts that may be caused by this project (Table 5.5-10). The NOI says that the EIS/EIR will assess the potential impacts of alternative diversion points and other project facilities. The diversion points "include a point near the confluence of the American and Sacramento Rivers and several upstream locations on the Middle Fork of the American River." If this project is pursued by EDCWA, EID, and GDPUD,

EID would likely divert CVP water under the contract with USBR at its existing diversion point at Folsom Reservoir, while GDPUD is holding discussions with the Placer County Water Agency (PCWA) to see whether it could use the diversion facility that PCWA plans to construct near the proposed Auburn Dam site upstream of Folsom Lake (EDCWA 2003). The PCWA project has completed its NEPA and CEQA compliance process and is now in the design phase prior to construction (EDCWA 2003). GDPUD and PCWA may decide to share this diversion facility, or GDPUD may decide to construct a separate diversion facility on the river; in either case, GDPUD would need to construct a new pumping station at the river and a new pipeline on the southern side of the Middle Fork American River canyon to pump and convey the CVP water uphill to the GDPUD service area shown on Exhibit 5.5-2.

Potential Environmental Impact of Water Rights Transfers

The maximum and combined yield of the most prominent water supply projects being pursued by EID, or placed on hold pending the results of this General Plan process and the EDCWA Water Plan, is about 29,060 afy (these three projects and their estimated yields are described above). As noted above, it is possible that the firm yield of these projects may be less. Even if these projects combined to provide EID with their maximum yield, they would not supply enough water to meet the upper end of the projected shortages associated with the buildout scenarios of the Roadway Constrained 6-Lane "Plus" or Environmentally Constrained alternatives. The entire range of projected shortages associated with the 1996 General Plan Alternative's buildout scenario exceeds the maximum and combined yield of these potential projects. A similar situation exists for GDPUD. The maximum yield of the most prominent water supply project it is pursuing is 7,500 af (the PL 101-514 project). However, the upper end of the range of projected GDPUD shortages associated with the buildout scenario of both the Environmentally Constrained and 1996 General Plan alternatives exceed the potential yield of this project. If these projects and the other yield-enhancing projects described above do not come close to achieving their maximum potential, the available supply could be insufficient to satisfy buildout demand under several of the alternatives. If the projects identified fail to provide the contemplated supply, then it is possible that the purveyors will seek to acquire water rights from other water rights holders. No such programs have been proposed and it is not possible to predict the source of the rights that could be acquired. It is also speculative to try and predict what water users may be the supplier of water in a new transfer project. Many water right holders are found "downstream" of EID and GDPUD, and/or are hydrologically connected via the CVP. Major uncertainty also exists regarding what, if any, new infrastructure would be needed to put the transferred water to use.

In general, however, such water rights transfers have been found to have the types of potential impacts identified in Table 5.5-11. Water right transfers, including any new diversion,

pumping, conveyance, or other infrastructure that in some cases may be needed to put the transferred water to use, can cause the types of potential environmental impacts summarized in Table 5.5-11. Water right transfers are also known for their complex legal issues, and potential "third party effects." Third party effects can occur when the seller in a water rights transaction transfers some or all of their rights out of a watershed, to the purchaser of the rights, who may be located in a different watershed. Water users downstream of the seller, who often hold rights that are "junior" to those of the seller and depend upon the return flow from water put to use by the upstream water rights seller, can experience a reduction in available water supplies. Similar reductions in supply can occur when the seller in a water rights transaction sells some of their groundwater rights and such rights leave the groundwater basin. Water supply reductions in both situations can cause major and adverse income, employment, and other socioeconomic impacts on individual water users, their businesses, or the communities in which they live.

Potential Environmental Impacts of Other New Water Supply Projects and Related Infrastructure

To help meet the increase in water demand and avoid the projected shortages shown in Table 5.5-1, various types of new surface water infrastructure will likely be needed by EID, GDPUD, and GFCSD. These include primarily new and expanded reservoirs and distribution systems. The location of potential reservoir sites currently under consideration is shown in Exhibit 5.5-3. The water purveyors have not decided what specific diversion, pumping, storage, treatment, or conveyance facilities to construct. The type, size, and location of infrastructure cannot be finalized until (1) it is determined through this General Plan adoption process how much future water demand must be met by new water supply projects, (2) the EDCWA planning process helps the purveyors decide which water supply projects to pursue, and (3) preliminary engineering assessments are conducted for improvements to related water system infrastructure, including the specific sizing and siting of facilities and definition of related construction, operation, and maintenance procedures. Despite the uncertainty, it is likely that given the magnitude of the projected shortages shown in Table 5.5-1, the types of system infrastructure described here will be needed in the future should the County adopt any of the four equal-weight alternatives. Table 5.5-11 provides a brief overview of the types of environmental impacts that could be caused by the types of water system infrastructure that the county's west-slope purveyors may pursue.

As noted earlier in this subsection, there is much uncertainty regarding the ability of the west-slope purveyors to successfully implement controversial and complex water supply projects. Therefore, Table 5.5-11 has been prepared to broadly cover a wide range of potential environmental impacts that also may be associated with future water supply projects

that are not covered in the previous and related tables (Tables 5.5-10 and 5.5-11). The types of impacts described in Table 5.5-11 would likely affect the types of resources that are described in the existing Physical Environment portions of other sections in this EIR, including the Biological Resources, Cultural Resources, Land Use and Housing, and Agriculture and Forestry.

Once new water supply and system infrastructure projects are proposed, the west-slope water purveyors will need to address the types of environmental impacts described in Table 5.5-11 in future, project-level CEQA (and perhaps NEPA) compliance documents.

Potential Environmental Impacts of Lining or Piping Canals, Ditches, or Streams

Some of EID's canals (also referred to as "ditches" or "streams"), which are used to convey surface water to its customers, have relatively high loss factors (up to 40% or 50%) (EDCWA 2003a). In the EDCWA water planning process, EID is considering lining or piping portions of such canals as the Main Canal and Crawford Ditch. This would increase the availability of water supplies for its customers. As discussed previously, this is one of the many options being considered by EID in the EDCWA water planning process. Table 5.5-12 provides a brief overview of the types of environmental impacts that could be caused by lining or piping canals.

In summary, all of the alternatives have the potential to cause significant environmental impacts from surface water supply-related impacts because the water demand increases and related shortages they would cause would likely lead to the construction of new water supply projects, related system infrastructure, and/or the lining or piping of canals.

No Project Alternative (Alternative #1)

Relevant Goals/Policies—No Project Alternative

The relevant policies that are applicable to the No Project Alternative are Policies LU-7a, AF-2a, PS-1a and PS1b, PS-2a through PS-2c, PS-3a through PS-3c, PS-4a through PS-4c, HO-5a, HO-5b, 5.1.1.1 and 5.1.1.2, 5.1.2.1 through 5.1.2.4, 5.1.3.1 and 5.1.3.2, 5.2.1.1 through 5.2.1.8, 5.7.1.1, 7.3.1.2, 7.3.1.3, 7.3.5.1 through 7.3.5.5, and 8.2.1.1 through 8.2.1.3.

No Project Alternative (2025)—Impact Discussion

While the No Project Alternative under 2025 conditions would cause water demand increases and related water shortages that are smaller than those associated with buildout conditions and the other alternatives, such increases and shortages would still be large enough that new water

supply projects, related system infrastructure, and/or the lining or piping of canals would be required. For example, EID would experience up to a 72% increase in its water demand, GDPUD would experience up to a 38% increase in its demand, and GFCSD would have a 25% increase in its demand (see Table 5.5-1). This impact is considered significant.

No Project Alternative (Buildout)—Impact Discussion

As shown in Table 5.5-1, and summarized in a previous subsection, the No Project Alternative under buildout conditions would cause substantial increases in water demand and projected shortages for all three west-slope water purveyors. These purveyors would thus need to pursue and construct new water supply and infrastructure projects that have the potential to cause the significant environmental effects summarized above. Therefore, this impact is considered significant.

Roadway Constrained 6-Lane "Plus" Alternative (Alternative #2)

Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative

The relevant policies that are applicable to the Roadway Constrained 6-Lane "Plus" Alternative are Policies LU-7a, AF-2a, PS-1a and PS-1b, PS-2a and PS-2c, PS-3a through PS-3c, and PS-4a through PS-4c.

Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion

As shown in Table 5.5-1 and summarized in a previous subsection, this alternative at 2025 would cause substantial increases in water demand and projected shortages for all three west-slope water purveyors. These purveyors would thus need to pursue and construct new water supply and infrastructure projects that have the potential to cause the significant environmental effects summarized above. Therefore, this impact is considered significant.

Roadway Constrained 6-Lane "Plus" Alternative (Buildout)—Impact Discussion

As shown in Table 5.5-1 and summarized in a previous subsection, this alternative at buildout is projected to cause substantial increases in water demand and projected shortages for all three west-slope water purveyors. These purveyors could thus need to pursue and construct new water supply and infrastructure projects that have the potential to cause the significant environmental effects summarized above. Therefore, this impact is considered significant.

Environmentally Constrained Alternative (Alternative #3)

Relevant Goals/Policies—Environmentally Constrained Alternative

For the relevant policies of the Environmentally Constrained Alternative, please refer to the policies listed above under Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative except that under Goal PS-4, the Roadway Constrained 6-Lane "Plus" Alternative contains one additional policy. Under the Environmentally Constrained Alternative the policies are renumbered PS-4a through PS-4d.

Environmentally Constrained Alternative (2025)—Impact Discussion

As shown in Table 5.5-1 and summarized in a previous subsection, this alternative at 2025 would cause substantial increases in water demand and projected shortages for all three west-slope water purveyors. These purveyors would thus need to pursue and construct new water supply and infrastructure projects that have the potential to cause the significant environmental effects summarized above. Therefore, this impact is considered significant.

Environmentally Constrained Alternative (Buildout)—Impact Discussion

As shown in Table 5.5-1 and summarized in a previous subsection, this alternative at buildout is projected to cause substantial increases in water demand and projected shortages for all three west-slope water purveyors. These purveyors could thus need to pursue and construct new water supply and infrastructure projects that have the potential to cause the significant environmental effects summarized above. Therefore, this impact is considered significant.

1996 General Plan Alternative (Alternative #4)

Relevant Goals/Policies—1996 General Plan Alternative

For the relevant goals of the 1996 General Plan Alternative, please refer to the policies listed above under the Relevant Goals/Policies—No Project Alternative.

1996 General Plan Alternative (2025)—Impact Discussion

As shown in Table 5.5-1 and summarized in a previous subsection, this alternative at 2025 would cause substantial increases in water demand and projected shortages for all three west-slope water purveyors. These purveyors would thus need to pursue and construct new

water supply and infrastructure projects that have the potential to cause the significant environmental effects summarized above. Therefore, this impact is considered significant.

1996 General Plan Alternative (Buildout)—Impact Discussion

As shown in Table 5.5-1 and summarized in a previous subsection, this alternative at buildout is projected to cause substantial increases in water demand and projected shortages for all three west-slope water purveyors. These purveyors could thus need to pursue and construct new water supply and infrastructure projects that have the potential to cause the significant environmental effects summarized above. Therefore, this impact is considered significant.

Mitigation Measure 5.5-2: Encourage Mitigation of the Environmental Impacts of Future Water Supply and Infrastructure Projects

Mitigation Measure—No Project Alternative

Regardless of the supply options selected by the water purveyors, developing increased supply to accommodate the growth expected under the various equal-weight alternatives would likely have significant effects on the environment. Mitigation for many of those impacts will be identified during the environmental review process for those projects. In some cases mitigation measures may reduce the water supply available from the proposed project. The decisions regarding the mitigation measures to be adopted will be made by the project sponsors and affected regulatory agencies. For most of these projects, the County will have little or no regulatory authority to require mitigation. Although the County cannot eliminate the significant effects associated with the water supply projects, it can encourage the water purveyors to reduce the scope of those impacts where feasible. Therefore, the County shall implement the following new implementation measure:

> **New Policy:** The County shall encourage water purveyors to design water supply and infrastructure projects in a manner that avoids or reduces significant environmental effects to the maximum extent feasible in light of the water supply objectives of a given project.

The impacts of new water supply and related infrastructure projects cannot be definitively determined, but clearly have the potential to be significant, and mitigation effectiveness cannot be tested or definitively determined at this time. Therefore, with implementation of this mitigation measure, impacts would be reduced, but not to a less-than-significant level. This impact would remain significant and unavoidable.

Mitigation Measure—Roadway Constrained 6-Lane "Plus" Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. The impacts of new water supply and related infrastructure projects cannot be definitively determined, but clearly have the potential to be significant, and mitigation effectiveness cannot be tested or definitively determined at this time. Therefore, with implementation of this mitigation measure, impacts would be reduced, but not to a less-than-significant level. This impact would remain significant and unavoidable.

Mitigation Measure—Environmentally Constrained Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. This impact would remain significant and unavoidable for the same reasons as stated above for the Roadway Constrained 6-Lane "Plus" Alternative.

Mitigation Measure—1996 General Plan Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. This impact would remain significant and unavoidable for the same reasons as stated above for the No Project Alternative.

Impact **5.5-3**

Increase in Groundwater Demand and Related Impacts. All of the equal-weight alternatives would cause a substantial increase in the demand for county groundwater. Although General Plan policies would help avoid or reduce some of the impacts, they may not reduce impacts to a less-than-significant level. There is much uncertainty surrounding the availability of groundwater in the county. This impact is considered **significant**.

The severity of this impact in 2025 would be greatest under the 1996 General Plan and Environmentally Constrained alternatives, followed by the Roadway Constrained 6-Lane "Plus" Alternative, and then by the No Project Alternative. At buildout the severity of the impact would be greatest under the 1996 General Plan Alternative, followed by the Roadway Constrained 6-Lane "Plus," No Project, and Environmentally Constrained alternatives. Impact significance before and after mitigation is shown in the table below.

Impact	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-3: Increase in Groundwater Demand and Related Impacts	S_2	S_3	S_2	S_2	S_1	S_4	S_1	S_1
Mitigation	**Significance After Mitigation***							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-3, Increase the Likelihood that Groundwater Supplies are Conserved and Physically available to Meet the Needs of Future Development	SU_2	SU_3	SU_2	SU_2	SU_1	SU_4	SU_1	SU_1

* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.

All of the equal-weight alternatives would allow additional residential, agricultural, and other types of growth to occur in areas that are dependent on groundwater and outside the service areas of the west-slope surface water purveyors. Groundwater is used in these areas via private wells or small water systems that rely on either springs or wells. This would affect the quality and availability of groundwater. This subsection addresses groundwater demand and supply impacts while Section 5.5.3 covers groundwater quality issues.

Given the geologic nature of the county, where water is typically found in rock fractures, very little data are available regarding the county's groundwater supplies. This makes it difficult to monitor trends and determine the quantity of groundwater available for future development. However, a few generalizations can be made regarding the key characteristics of county groundwater demand, recharge and supply conditions, and related programs and policies. These generalizations are provided below to help the reader understand the impact conclusions and the related mitigation. Much of this information is a synthesis of the findings of two studies conducted by DWR in 1989 and 1990 and a study by USGS in 1983. Related information also was obtained from County staff familiar with local groundwater conditions and related County programs and policies (including Morgan, pers. comm., 2003).

- The hydrologic cycle of mountainous regions is complex and difficult to quantify. Flow and storage of groundwater in hard rock has not been accurately measured or estimated. The fractured groundwater table makes it nearly impossible to draw any conclusions from monitoring wells (Morgan, pers. comm., 2003).
- The standard procedures used to measure groundwater recharge, discharge, and storage do not yield reliable results when used to measure water in the county's fractured hard rock.
- Little correlation is found between well yields and various rock types.
- Well deepenings are required to increase production of wells and are more common during and after drought periods. Therefore, it may be assumed that groundwater supplies are limited in some areas of the county. However, these conditions have occurred infrequently. To date, relatively few rural residential projects have been unable to develop a well with acceptable water production.
- Current standards require water storage on a property when new wells produce less than 5 gallons per minute. Because the typical residence only requires 250 to 300 gallons per day, it has not generally been problematic for a low-volume well to produce and store the necessary quantity of water each day.
- Recharge is dependent mostly on the ability of localized precipitation to infiltrate the fractures between rock formations.
- Groundwater in the fracture zones recovers rapidly with rainfall.
- The County has adopted a Well Standards Ordinance that requires a County well permit for all well digging, boring, drilling, deepening, modifying, repairing or destroying (County Ordinance 4110 §1 (part) 1990). Licensed professionals must perform all well drilling and other well modifications after receiving a well permit from the county and must report in a Report of Well Production on how the well produces.
- While the County requires testing of groundwater well production before well permits are issued, such testing may not be indicative of a well's long-term production potential. (The Report of Well Production documents only the results of an initial 4 hour test).
- Well yields tend to decline over time. To date, no residential projects have been abandoned because of declining well yields.
- The County has developed a groundwater database to assist in tracking well performance and identifying problem areas, and to serve as a basis for future studies as development applications are processed.

- The 1989 DWR study found no correlation between groundwater recharge and groundwater supply that can be used for long-range planning.
- Every major study of groundwater in El Dorado County's fractured rock systems has concluded that additional study is required. No study has identified a study program or methodology that would lead to a protocol for making reliable groundwater supply assessments. (See DWR 1989, 1990 and USGS 1983.) Given the other results of these studies, and the experience of local experts, the value of additional studies is in doubt.

While it is not known how much groundwater is available for future growth in the county, it is clear that the new development associated with all four of the equal-weight alternatives would lead to large increases in the demand for groundwater. Table 5.5-13 summarizes existing and projected groundwater demand in areas not served by public water purveyors. These areas, outside the service-area boundaries of surface water purveyors EID, GDPUD, and GFCSD, are where most of the new groundwater demand would be located, and is also where most of the county's existing groundwater users are located. The information included in Table 5.5-13 was prepared using the more detailed water demand estimates found in EPS 2003 and Wood Rodgers 2003 (see Appendix E).

The increase in groundwater demand shown in Table 5.5-13 has the potential to cause a number of significant impacts. As groundwater demand increases, more stress is placed on the county's groundwater supplies, groundwater levels could lower, and yields of existing wells may diminish. Less groundwater could be available in some areas for planned land uses. This in turn could:

- reduce the service levels of small, private water systems that rely on groundwater;
- place more pressure on the county's surface water purveyors to expand their service-area boundaries and thus seek new surface water supplies to augment their limited and existing surface water supplies; and
- cause existing groundwater users who experience reductions in their own well yields, or the operators of affected private systems, to seek new, more dependable groundwater or surface water supplies.

Expansion of the infrastructure of private water systems, including pumping stations, storage tanks, and conveyance facilities to obtain, convey, and store groundwater or surface water supplies, has the potential to cause significant environmental impacts. The development of new surface water supply sources by surface water purveyors to serve areas currently served by groundwater also has the potential to cause significant environmental impacts (see the related

discussion for Impact 5.5-2). Supplying new customers who are currently outside their existing service-area boundaries could also cause surface water purveyors to indirectly reduce service levels for their existing customers. Furthermore, the development of new groundwater and surface water sources and reductions in service levels could also cause a number of adverse social and economic impacts: the cost of new infrastructure could be paid for via higher water rates, more frequent water use restrictions, and perhaps lost production at affected businesses.

Any attempt to predict the precise nature and severity of these impacts would involve speculation, as it is impossible to predict the particular responses of individual groundwater users, private water systems, and public water purveyors to declines in groundwater levels. This uncertainty is compounded by that inherent in predicting the extent of declining levels of groundwater in fractured hard rock associated with a given projected increase in groundwater demand. Consequently, and as discussed further in the subsections that follow, this impact is considered significant.

No Project Alternative (Alternative #1)

Relevant Goals/Policies—No Project Alternative

The relevant goals included in the 1996 General Plan that are applicable to the No Project Alternative are Policies 5.2.1.1, 5.2.1.5, and 5.2.3.1 through 5.2.3.6.

No Project Alternative (2025)—Impact Discussion

As shown in Table 5.5-13, development under this alternative at 2025 in areas not served by water purveyors would lead to increase in total groundwater demand of about 33,775 afy. This represents a percentage change of 121%. In the predominantly rural portions of the county where groundwater is the major supply source, the owners of new households or businesses would either dig their own wells, or tie into small water systems that also rely on groundwater. The increase in population and employment associated with this alternative would thus lead to substantial increases in existing west-slope groundwater demand. This would result in the types of significant impacts described above.

Policy 5.2.3.4 would require applicants to demonstrate adequate groundwater supplies before discretionary projects are approved; however, this policy does not address ministerial projects. Applicants are also not required to demonstrate that groundwater supplies would be adequate to meet the highest demand that could be permitted on the land in question.

Policies 5.2.1.1, 5.2.3.3, 5.2.3.5, and 5.2.3.6 address the need for more water resource planning; collection, monitoring, and analysis of well data; and related coordination among agencies. Policies 5.2.3.5 and 5.2.3.6 include adaptive-management approaches that would entail review of the monitoring and related study results, and modify densities and "General Plan uses" if necessary to make such densities and uses compatible with identified supply limitations. These policies may reduce the likelihood that additional development will be approved in areas with inadequate groundwater supplies; however, more well monitoring and data collection and analysis may not improve our knowledge of fractured-rock groundwater systems. As summarized earlier in this subsection, there is much uncertainty about groundwater systems of this type. As one County official and expert explained, the fractured groundwater table makes it nearly impossible to draw any conclusions from monitoring wells (Morgan, pers. comm., 2003).

The policies associated with the No Project Alternative at 2025 would help avoid, and reduce the magnitude of, some of the adverse groundwater-related impacts discussed above. However, the policies associated with this alternative would not eliminate the very real possibility that county groundwater supplies may be insufficient to meet the large and expected increase in future groundwater demand. Therefore, this impact is considered significant.

No Project Alternative (Buildout)—Impact Discussion

As shown in Table 5.5-13, buildout of the county under this alternative is projected to cause a substantial increase in the demand for county groundwater (estimated to be an increase of about 56,595 afy). The percent change in total west-slope groundwater demand under this alternative buildout could thus be approximately 271%. This substantial increase in groundwater demand could increase the likelihood that county groundwater supplies are not sufficient to meet future groundwater demand. This could lead to the same types of adverse impacts described above. (Please refer to the general description of this impact and to No Project Alternative (2025)—Impact Discussion above.) This impact is considered significant.

Roadway Constrained 6-Lane "Plus" Alternative (Alternative #2)

Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative

The relevant goals that are applicable to the Roadway Constrained 6-Lane "Plus" Alternative are Policies PS-2b, PS-2d through PS-2f, PS-3a, and PS 3c.

Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion

As shown in Table 5.5-13, this alternative at 2025 would likely cause a substantial increase in the demand for county groundwater (estimated to be a total increase of about 34,535 afy). The percent change in groundwater demand under this alternative at 2025 would thus be approximately 126%. This substantial increase in groundwater demand would increase the likelihood that county groundwater supplies are not sufficient to meet future groundwater demand. This would likely lead to the same types of adverse impacts described above. (Please refer to the general description of this impact above.)

Policy PS-2b includes language that requires all new development in Rural Regions to demonstrate that sufficient private water service is available or to connect to an existing public water system. This requirement is not necessary because for the most part, groundwater availability has not been a major problem thus far in the county and such a measure should be saved for when and if groundwater availability becomes a problem. This requirement could also induce the expansion of public water systems that primarily depend on surface water, thus exacerbating the surface water-related impacts described in previous subsections of this section.

Policy PS-2d requires that evidence of adequate groundwater supplies be provided before discretionary projects are approved, but this policy does not apply to ministerial projects. This policy also requires the County to only approve discretionary projects that will be served by groundwater when the applicant can show, or other evidence is available, that the groundwater supply will be adequate, and drafting of groundwater will not adversely affect the operation of wells on lands in the vicinity of the proposed project. This policy could help reduce the significance of the potential groundwater impacts discussed in this subsection; however, it is highly unlikely that applicants will be able to show that other wells on lands in the vicinity of the proposed project would not be affected. As noted above, it is virtually impossible to draw conclusions from the results of monitoring wells given the nature of the county's fractured rock groundwater system. Thus, this part of Policy PS-2d may not be feasible or effective.

Policies PS-2b and PS-2d would help avoid, and reduce the magnitude of, some of the adverse groundwater-related impacts discussed above. However, these policies would not eliminate the very real possibility that county groundwater supplies may be insufficient to meet the large and expected increase in future groundwater demand. Therefore, this impact is considered significant.

Roadway Constrained 6-Lane "Plus" Alternative (Buildout)—Impact Discussion

This alternative at buildout is projected to cause a substantial increase in the demand for county groundwater (estimated to be a total increase of about 60,276 afy; see Table 5.5-13). The percent change in groundwater demand under this alternative at buildout could thus be approximately 295%. This substantial increase in groundwater demand could increase the likelihood that county groundwater supplies are not sufficient to meet future groundwater demand. This could lead to the same types of adverse impacts described above. (Please refer to the general description of this impact and to Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion above.) This impact is considered significant.

Environmentally Constrained Alternative (Alternative #3)

Relevant Goals/Policies—Environmentally Constrained Alternative

For the relevant goals of the Environmentally Constrained Alternative, please refer to the policies listed above under Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative.

Environmentally Constrained Alternative (2025)—Impact Discussion

As shown in Table 5.5-13, this alternative at 2025 would likely cause a substantial increase in the demand for county groundwater (estimated to be a total increase of about 37,367 afy). The percent change in groundwater demand under this alternative at 2025 would thus be approximately 145%. This substantial increase in groundwater demand would increase the likelihood that county groundwater supplies are not sufficient to meet future groundwater demand. This would likely lead to the same types of adverse impacts described above. (Please refer to the general description of this impact and to Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion above.) This impact is considered significant.

Environmentally Constrained Alternative (Buildout)—Impact Discussion

This alternative at buildout is projected to cause a substantial increase in the demand for county groundwater (estimated to be a total increase of about 54,674 afy; see Table 5.5-13). The percent change in groundwater demand under this alternative at buildout could thus be approximately 258%. This substantial increase in groundwater demand could increase the likelihood that county groundwater supplies are not sufficient to meet future groundwater demand. This could lead to the same types of adverse impacts described above. (Please refer

to the general description of this impact and to Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion above.) This impact is considered significant.

1996 General Plan Alternative (Alternative #4)

Relevant Goals/Policies—1996 General Plan Alternative

For the relevant policies of the 1996 General Plan Alternative, please refer to the policies listed above under the Relevant Goals/Policies—No Project Alternative.

1996 General Plan Alternative (2025)—Impact Discussion

As shown in Table 5.5-13, this alternative at 2025 would likely cause a substantial increase in the demand for county groundwater (estimated to be a total increase of about 37,390 afy). The percent change in groundwater demand under this alternative at 2025 would thus be approximately 351%. This substantial increase in groundwater demand would increase the likelihood that county groundwater supplies are not sufficient to meet future groundwater demand. This would likely lead to the same types of adverse impacts described above. (Please refer to the general description of this impact and to No Project Alternative (2025)—Impact Discussion above.) This impact is considered significant.

1996 General Plan Alternative (Buildout)—Impact Discussion

This alternative at buildout is projected to cause a substantial increase in the demand for county groundwater (estimated to be a total increase of about 60,276 afy; Table 5.5-13). The percent change in groundwater demand under this alternative at buildout could thus be approximately 126%. This substantial increase in groundwater demand could increase the likelihood that county groundwater supplies are not sufficient to meet future groundwater demand. This would likely lead to the same types of adverse impacts described above. (Please refer to the general description of this impact and to No Project Alternative (2025)—Impact Discussion above.) This impact is considered significant.

Mitigation Measure 5.5-3: Increase the Likelihood that Groundwater Supplies are Conserved and Physically Available to Meet the Needs of Future Development

Mitigation Measure—No Project Alternative

To further protect the county's valuable groundwater resources, and improve the likelihood that groundwater supplies are physically available to meet the needs of future development, the County shall revise Policy 5.2.3.4 as follows and implement the following new policy.

> **Revised Policy 5.2.3.4:** ~~Applications~~ All applications for divisions of land and other discretionary or ministerial land uses which rely on groundwater for domestic use, or any other type of use, shall demonstrate that groundwater is adequate as part of the review and approval process. The County shall not approve any discretionary or ministerial projects unless the County finds, based on evidence provided by the applicant, or other evidence that may be provided, that the groundwater demand for the project in question is adequate to meet the highest demand of the proposed development.
>
> **New Policy:** The County shall direct new development to areas where public water service already exists. In Community Regions, all new development shall connect to a public water system. In Rural Centers, all new development shall connect either to a public water system or to an approved private water system.

Given the considerable uncertainty regarding the availability of groundwater in the rural areas of the county, Impact 5.5-3 would remain significant and unavoidable with implementation of this mitigation measure, but this measure would help minimize the significance of future groundwater-related impacts.

Mitigation Measure—Roadway Constrained 6-Lane "Plus" Alternative

To further protect the county's valuable groundwater resources, and improve the likelihood that groundwater supplies are physically available to meet the needs of future development, the County shall revise Policy PS-2d as follows:

> **Revised Policy PS-2d:** The County shall not approve any discretionary or ministerial projects that will be served by groundwater unless the County finds, based on evidence provided by the applicant, ~~and~~ or other evidence that may be provided, that the water supply is adequate to meet the highest demand of the proposed development. ~~that could be permitted on the land in question, and~~
>
> ~~B. Drafting of groundwater will not adversely affect the operation of wells on lands in the vicinity of the proposed project.~~

Sub-part B. of Policy PS-2d shall be deleted because, as discussed under the Roadway Constrained 6-Lane "Plus" Alternative, it is highly unlikely that applicants will be able to demonstrate that other wells on lands in the vicinity of the proposed project would not be affected.

Given the considerable uncertainty regarding the availability of groundwater in the rural areas of the county, Impact 5.5-3 would remain significant and unavoidable with implementation of this mitigation measure, but this measure would help minimize the significance of future groundwater-related impacts.

Mitigation Measure—Environmentally Constrained Alternative

Please refer to the proposed mitigation measure for the Roadway Constrained 6-Lane "Plus" Alternative above. Given the considerable uncertainty regarding the availability of groundwater in the rural areas of the county, impacts would be reduced, but not to a less-than-significant level. This impact would remain significant and unavoidable, but this measure would help minimize the significance of future groundwater-related impacts.

Mitigation Measure—1996 General Plan Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. Given the considerable uncertainty regarding the availability of groundwater in the rural areas of the county, impacts would be reduced, but not to a less-than-significant level. This impact would remain significant and unavoidable, but this measure would help minimize the significance of future groundwater-related impacts.

5.5.2 WASTEWATER SYSTEMS

This subsection addresses potential impacts related to wastewater flows and system infrastructure that could result from the population and employment growth associated with the equal-weight alternatives. Related water quality issues are addressed in Section 5.5.3.

EXISTING CONDITIONS

Physical Environment

This subsection provides an overview of the amount of wastewater produced in the county under existing conditions, the types of facilities and systems that are used to treat the wastewater, and some of the key physical characteristics of wastewater.

Wastewater Sources and Characteristics

Domestic wastewater is generated through the use of toilets, urinals, bathroom sinks, showers and bathtubs, kitchen sinks, garbage disposals, dishwashers, and washing machines. Wastewater from toilets and urinals is often referred to as black water while the other types of wastewater from residential buildings are often called grey water. Wastewater contains dissolved organic and inorganic materials, suspended solids, and microorganisms, including bacteria and viruses. Other important characteristics to consider include the amount or flow of wastewater produced, the type of treatment provided by onsite or centralized treatment plants, and the amount and type of pollutant loadings contained in wastewater as it exits the treatment system.

As described further in the next two subsections, wastewater in the county is treated by two types of treatment systems: (1) EID WWTPs connected to EID's wastewater collection system of pipelines and lift stations, and (2) onsite wastewater treatment systems (OWTS). OWTS are either connected to individual residences and nonresidential buildings in areas not served by the EID collection system, or are small, community collection and disposal systems that also rely upon septic tanks and onsite, underground disposal using leach fields and other types of soil absorption systems.

Wastewater Treated by Wastewater Treatment Plants

EID's Wastewater Collection System and Treatment Plants

There are two WWTPs on the county's west slope, owned and operated by EID. The South Tahoe Public Utility District (STPUD) also has a treatment plant as addressed in Section 5.14, Lake Tahoe Basin. EID currently treats wastewater from approximately 11,700 parcels, including 6,008 active sewer accounts that are served by the El Dorado Hills WWTP and another 5,662 active sewer accounts served by the Deer Creek WWTP (EID 2001b). The remaining parcels on the west slope use OWTS.

Exhibit 5.5-4 shows the service area of EID's wastewater collection system and the location of its two WWTPs. Two basins, Deer Creek and Motherlode, feed the Deer Creek WWTP, and the El Dorado Hills Basin feeds the El Dorado Hills WWTP. In addition to the treatment plants described in the next two subsections, EID maintains its collection system, which consists of approximately 258 miles of pipelines and 56 lift stations used to pump and move wastewater through the pipelines and to the WWTPs.

El Dorado Hills Wastewater Treatment Plant

The El Dorado Hills WWTP service area encompasses approximately 30 square miles, from the Sacramento County line east to Bass Lake Road, north to Folsom Reservoir, and south to 3 miles beyond U.S. 50. There are approximately 110 miles of pipes within the service area.

These pipelines convey wastewater from approximately 6,000 active accounts to the El Dorado Hills WWTP. The plant is located approximately 2 miles south of U.S. 50 on Latrobe Road near the El Dorado Hills Business Park. The El Dorado Hills WWTP was expanded in 1996 to an average dry-weather flow (ADWF) capacity of 3 million gallons per day (mgd). This WWTP currently treats approximately 1.5 mgd of wastewater flows. The El Dorado Hills WWTP has primary, secondary, and tertiary treatment capabilities. (These terms refer to the level of treatment, with tertiary treatment the most advanced, or thorough level of treatment.) Treated water from the El Dorado Hills WWTP is either recycled for urban irrigation purposes at the Serrano development, golf courses, and other locations or discharged to Carson Creek. During the summer, there is sufficient demand for this recycled water that no wastewater is typically discharged to Carson Creek (EID 2001b). Sewage sludge generated by the El Dorado Hills WWTP is taken to a permitted land disposal site called Silva Farms.

Deer Creek Wastewater Treatment Plant

The Deer Creek WWTP service area encompasses 24 square miles. Wastewater generated by 5,662 active accounts is conveyed by 95 miles of pipelines to the Deer Creek WWTP, which is located 2 miles south of U.S. 50 in the Cameron Park area. The Deer Creek WWTP was expanded in 1996 to an ADWF capacity of 3.6 mgd. However, a cease-and-desist order from the Central Valley RWQCB has limited the capacity of this WWTP to 2.5 mgd. The status of RWQCB and EID efforts to resolve water-quality issues involving this plant's discharges is summarized in Section 5.5.3. Under existing conditions, this WWTP treats approximately 2.4 mgd of wastewater. The Deer Creek WWTP has primary, secondary, and tertiary treatment capabilities, and treated water is discharged to Deer Creek or used for irrigation and dust control (EID 2001b). Sewage sludge generated by the Deer Creek WWTP is taken to Silva Farms, a permitted land disposal site.

Exhibit 5.5-4, EID Wastewater Treatment and Collection System (8.5x11)

Wastewater Produced in Other Areas of the West Slope

All of the wastewater produced on the west slope of the county outside the EID collection system service area is treated by OWTS. These systems are also referred to as septic systems and typically include an underground septic tank connected to a house, business, or public facility and underground leach fields that emit a plume of wastewater.

It is estimated by the County EMD that there are approximately 25,525 parcels that currently use OWTS on the west slope (Hudgeons, pers. comm., 2002). The population projections in Table 4-5, along with related information provided by HDR, Inc. (Hammer and Kontonickas, pers. comm., 2003), was used to estimate how much of the west-slope population was assumed to be in the EID collection system service area versus the part of the population outside this service area. The wastewater flow rate used by HDR, Inc., in the EID Final Wastewater Master Plan Update (EID 2001b) and assumptions from this plan regarding EID's Equivalent Dwelling Unit (EDU) were applied to the estimate of the population outside the service area. Using this approach, it was estimated that about 4.7 mgd of wastewater flow are emitted under existing conditions in those areas of the west slope that are outside the service area for EID's collection system.

Some of the OWTS are in the GDPUD sphere of influence, which consists of approximately 75,000 acres in the north central portion of El Dorado County, as shown in Exhibit 5.5-2. Most of the wastewater generated within the GDPUD sphere of influence is treated by private septic systems. The GDPUD operates a community disposal system, consisting of individual septic tanks connected by a community collection system, wet well, pump station, and leach field, for approximately 150 dwelling units in the Auburn Lake Trails subdivision. All of the 1,100 dwelling units in the Auburn Lake Trails subdivision are within a designated Onsite Wastewater Disposal Zone, which is regulated under a program mandated by the Central Valley RWQCB and managed by GDPUD (Honeycutt, pers. comm., 2002).

The County operates the Union Mine Septage Treatment and Disposal Facility. This facility accepts septage from OWTS throughout the county, treats it, and disposes the waste byproducts. The septage is comprised of material contained within septic tanks and is a small fraction of the total wastewater treated by septic tanks and dispersed of in leach fields. Individual property owners with OWTS pay the County a fee to use the facility once a year. Within the next two years, and to accommodate growth and the acceptance of winery waste, the County plans to almost double the capacity of the treatment facility to a maximum capacity of approximately 30,000 gallons per day (gpd) (Johnston, pers. comm., 2003). After being treated at the treatment facility, sludge is disposed of at the site (a former landfill), and the remaining wastewater is disposed of via spraying at the facility's spray field. County staff plan

to expand the spray field by 2 acres to accommodate growth, but have concluded that the sludge disposal site has adequate capacity to handle future growth under the 1996 General Plan (Johnston, pers. comm., 2003). (Please see the discussion of sludge disposal capacity at Union Mine Landfill in Section 5.6.)

Regulatory/Planning Environment

EID's Wastewater Master Plan Update and Related Recycled Water Master Plan

EID issued its Final Updated Wastewater Master Plan (UWWMP) in November 2001 (EID 2001b). The UWWMP includes estimates of existing and projected wastewater flows from the area served by EID's sewer collection system. The UWWMP also projects wastewater treatment needs for the EID service area through 2025 and identifies system expansions and upgrades needed to meet projected increases in wastewater flows. The UWWMP concludes that a number of system improvements (including improvements to lift stations, and sewer pipelines) will be needed to handle future population and employment growth, and the capacity of the Deer Creek WWTP will need to be expanded to improve tertiary treatment based on future recycling demands and anticipated regulatory requirements. The UWWMP also concludes that the Deer Creek WWTP's secondary treatment system is adequate to serve projected population growth through 2025. The UWWMP study determined that the capacity of the El Dorado Hills WWTP's secondary treatment system needs to be enlarged to handle growth after 2015, and its tertiary system also needs to be enlarged to supply increasing demands for recycled water and to meet anticipated regulatory changes. Expansions in both of the WWTP capacities and other related plant improvements are described further in the impact assessment below. The work conducted for the UWWMP was coordinated with the work performed for this subsection. Important data and assumptions used in the UWWMP were used to prepare related projections in the impact assessment below, and the existing wastewater flow estimates above.

EID adopted its most recent Recycled Water Master Plan in January 2003. The approved uses of recycled water called for in this plan help reduce the amount of wastewater that needs to be discharged to Deer Creek. This plan is described in Section 5.5.1 under Related Plans and Projects.

El Dorado County Environmental Management Department

EMD is charged with managing the siting of OWTS. Specifically, EMD reviews proposals and criteria for septic system designs and inspects construction of new septic systems and repair of existing systems to determine conformance with applicable codes. EMD also manages the

proper disposal of liquid waste collected from licensed haulers through a permit issuance and inspection process.

SWRCB and the Central Valley RWQCB's Permitting Authority and Basin Planning Activities

The SWRCB and its nine RWQCBs have broad authority over water quality control and permit issues in California. The SWRCB delegates regional authority for planning, permitting, and enforcement to the RWQCBs, including the Central Valley RWQCB, which has jurisdiction on the west slope of El Dorado County. The SWRCB and RWQCBs issue and enforce permits for WWTPs, including waste discharge requirements. The Central Valley RWQCB also is responsible for implementing and updating its Basin Plan for improving and protecting water quality in the water bodies under its jurisdiction, including the streams into which the EID WWTPs discharge. The SWRCB is developing new statewide OWTS regulations, as required by Assembly Bill (AB) 885 (2001). These regulations may change the regulation of OWTS in El Dorado County.

Section 5.5.3 provides more information about SWRCB and Central Valley RWQCB regulations and activities that affect wastewater treatment and water quality in the county.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Thresholds of Significance

The General Plan would result in a significant impact if development would lead to reductions in wastewater treatment service levels, or wastewater flows requiring new or expanded treatment capacity or related infrastructure, the construction of which could cause significant environmental effects.

The significance of potential water-quality impacts related to changes in treated wastewater discharges and OWTS is addressed in Section 5.5.3.

Impact **5.5-4**

Increase in Wastewater Flows and Related Infrastructure Impacts. All of the equal-weight alternatives would cause substantial increases in wastewater flows. The construction of new wastewater treatment infrastructure to handle these flows could cause significant environmental impacts; therefore, this impact is considered **significant**. The need for wastewater treatment infrastructure improvements under all four alternatives would be very similar. Within the service area for EID's wastewater collection system, all four equal-weight alternatives would generate a similar amount of wastewater for two reasons: (1)

The collection system's service area is a relatively small part of the west-slope study area (see Exhibit 5.5-4); and (2) the boundaries of the existing commitments (applicable to all four alternatives and as shown in Exhibit 3-3) coincide for the most part with the collection system's service area. Differences in flows between alternatives would be minor and the infrastructure needs would be expected to be the same. OWTS-related wastewater flows would vary substantially by alternative and are described in the alternative-specific subsections below. Impact significance before and after mitigation is shown in the table below.

	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
Impact	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-4: Increase in Wastewater Flows and Related Infrastructure Impacts	S_1	S_1	S_1	S_1	S_1	S_1	S_1	S_1
	Significance After Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
Mitigation	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-4: Encourage Mitigation of the Environmental Impacts Related to Future Expansion of Wastewater Treatment Capacity	SU_1	SU_1	SU_1	SU_1	SU_1	SU_1	SU_1	SU_1

* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.

Impacts Common to All Four Equal-Weight Alternatives

Wastewater Treatment Plant Flows, Capacities, and Planned Improvements

New development allowed by the existing commitments would generate additional wastewater flows that would need to be treated and conveyed by EID's wastewater collection system and

treated at the El Dorado Hills and Deer Creek WWTPs. The projected amount of wastewater that would need to be treated at these WWTPs under each of the four equal-weight alternatives is shown in Table 5.5-14. Table 5.5-14 also shows the difference between projected wastewater flows and existing wastewater treatment capacities. For the reasons described in the Impact 5.5-4 summary above, all four equal-weight alternatives would generate about the same amount of wastewater. Therefore, all of these alternatives would cause wastewater flows to exceed existing WWTP capacities.

The wastewater flows and WWTP treatment capacities summarized in Table 5.5-14 are based on data from EID's UWWMP (EID 2001b) and supporting information provided by the engineers that worked on this master plan for EID (Hammer and Kontonickas, pers. comm., 2003). The projections of wastewater flows are primarily based on the population projections associated with planned development projects (residential, commercial, industrial, etc.) within EID's wastewater treatment and collection system service area (converted by EID to "equivalent dwelling units"), and EID data on customer connections and a unit of measurement EID uses for planning purposes (Equivalent Dwelling Units). The planned improvements discussed below and needed to treat the anticipated increase in wastewater flows are also defined in the UWMMP and supporting material provided by the engineers cited above.

Under 2025 conditions, all four equal-weight alternatives would lead to an increase in existing wastewater flows of approximately 2.5 mgd in the El Dorado Hills WWTP service area, and an increase of approximately 1.2 mgd in the Deer Creek WWTP service area. Existing treatment plant capacity would be reached around 2015 at the El Dorado Hills WWTP, and around 2025 at the Deer Creek WWTP (Hammer and Kontonickas, pers. comm., 2003). It is estimated that the El Dorado Hills WWTP would need to treat approximately 4.9 mgd of wastewater flows when buildout conditions are reached. These flows would exceed the WWTP's existing capacity by about 1.9 mgd. The Deer Creek WWTP is expected to need to treat about 6.8 mgd under buildout conditions. Such buildout flows would exceed this plant's capacity by approximately 3.2 mgd.

The following improvements would be needed at the El Dorado Hills WWTP to provide sufficient treatment capacity for the wastewater flow increases shown in Table 5.5-14 (EID 2001b; Hammer and Kontonickas, pers. comm., 2003):

< New primary treatment screen structure

< Expansion of grit removal

< Additional primary and secondary clarifiers

- Expansion in the primary sludge pumping station
- Expanded aeration basins and related air diffusion system, pumping system, and blowers

The following improvements would be needed at the Deer Creek WWTP to provide sufficient treatment capacity for the wastewater flow increases shown in Table 5.5-14 (EID 2001b; Hammer and Kontonickas, pers. comm., 2003).

- New primary treatment screen structure
- Expansion of grit removal

A number of other improvements are needed at each WWTP to meet existing and anticipated waste discharge requirements, as set by the Central Valley RWQCB (Hammer and Kontonickas, pers. comm., 2003). Examples of these improvements are summarized below.

- Filtration to resolve total waste-load limitations
- Filtration and chlorination to meet effluent coliform limitations
- Cooling towers (currently required, but would be eliminated under the Basin Plan amendment discussed in Section 5.5.3)
- pH adjustment (currently required, but would be eliminated under the Basin Plan amendment discussed in Section 5.5.3)
- Nutrient removal (currently under design and expected to be complete by June 2004 to meet the RWQCB compliance deadline)
- Ultraviolet light disinfection (currently required for the Deer Creek WWTP, but not for the El Dorado Hills WWTP)

As analyzed in EID's Recycled Water Master Plan (EID 2002), the use of recycled (or reclaimed) water in the county is expected to increase. As use of recycled water increases, WWTP discharges decrease because the recycled water is treated at the WWTPs before it is pumped and conveyed to golf courses, public parks, etc., or used for residential landscape watering in such places as the Serrano development. While future demand for recycled water is expected to increase, it is difficult to estimate the increased demand with much precision because EID and various real estate developers continue to explore opportunities for its use in future developments (Hammer and Kontonickas, pers. comm., 2003). However, the Recycled Water Master Plan estimated the total amount of treated water that would be available from the WWTPs if EID constructs the improvements described above. During a dry water year

and in 2025, up to 4,995 afy would be available from the El Dorado Hills WWTP and up to 4,558 afy would be available from the Deer Creek WWTP. At the other end of the range of treated water that would be available for recycled water uses, the El Dorado Hills WWTP would have 5,942 afy available in a wet water year and in 2025, while the Deer Creek WWTP would have up to 5,527 afy under such conditions. (The Recycled Water Plan does not include estimates of available recycled water supplies beyond 2025.)

As a result of the planned capacity improvements summarized above, and because the County currently requires all building permit applicants to obtain a will-serve letter from EID showing that existing wastewater service is available for proposed projects, wastewater service levels are not expected to be significantly affected by any of the four equal-weight alternatives.

The likelihood of EID receiving the funding it needs for the future treatment improvements identified in its related UWWMP is excellent because EID does not need to rely upon uncertain federal or state funding. Such improvements are fully funded by the new development they serve through connection fees and wastewater service rates. There is no reason to believe fees will not be collected in the future to make improvements as needed. As development increases, so does the revenue collected by EID to make needed improvements. Therefore, it is likely that the necessary revenue needed to pay off the financing of these treatment improvements will be sufficient and the improvements will be built.

EID's UWWMP includes a wide range of preliminary cost estimates for the WWTP improvements discussed above. The estimates range widely because different phasing strategies may be taken to spread the cost over time and because the outcomes of the related RWQCB regulatory proceedings discussed in Section 5.5.3, Water Quality, were not known when the cost estimates were made.

Potential Environmental Effects of Necessary Wastewater Infrastructure Improvements

The planned improvements in treatment capacity described above for the Deer Creek and El Dorado Hills WWTPs would not require expansions in the "footprints" of either of these plants. However, wastewater collection system infrastructure also needed to serve the new growth associated with the equal-weight alternatives (including lift stations and pipelines) could cause potentially significant environmental impacts. It is not currently known which specific collection system improvements will need to be constructed by EID; however, the types of potentially significant impacts listed below could result from the expansion of collection system infrastructure. The environmental impacts associated with future expansion of the EID wastewater system will be studied in more detail and mitigated as feasible in subsequent, project-level CEQA documents as expansions are proposed, but significant impacts could

remain. EID also plans to prepare CEQA documentation for its UWWMP and for necessary wastewater infrastructure improvements that will be needed to accommodate the growth associated with the alternatives assessed in this EIR. However, because the precise nature of the improvements and the effectiveness of future and feasible mitigation measures cannot be determined at this time, these impacts are considered potentially significant:

- Degradation of water quality in Deer and/or Carson Creek downstream of the WWTPs. Any expansion of the WWTPs would require a National Pollutant Discharge Elimination System (NPDES) permit from the RWQCB. This would substantially reduce the possibility of significant water quality impacts. However, as discussed in Section 5.5.3, the potential for significant impacts would remain, and EID and the RWQCB are actively addressing water quality issues in Deer Creek.
- Adverse impacts on riparian habitat and wildlife, and aquatic and recreation resources from water quality degradation.
- Physical disturbance of cultural resources, rare plants, vegetation and other wildlife habitat, and other natural resources from the construction and maintenance of new pipelines and lift stations.
- Adverse noise, air quality, and visual impacts during the construction of new or expanded wastewater infrastructure.
- Adverse noise and odor impacts during the operation of expanded or new lift stations.

Given the potentially significant environmental impacts listed above, Impact 5.5-4 is considered significant for all four equal-weight alternatives.

No Project Alternative (Alternative #1)

Relevant Goals/Policies—No Project Alternative

The relevant goals included in the 1996 General Plan that are applicable to the No Project Alternative are Policies 5.1.1.1 and 5.1.1.2, 5.1.2.1 through 5.1.2.4, 5.1.3.1 and 5.1.3.2, 5.3.1.1 through 5.3.1.5, 5.3.2.1 through 5.3.2.3, 7.3.1.2 and 7.3.1.3, 7.3.5.1 through 7.3.5.5, and 8.2.1.1.

No Project Alternative (2025)—Impact Discussion

As shown in Table 5.5-15, this alternative at 2025 would generate additional wastewater outside EID's wastewater collection system service area. This wastewater would need to be

treated by OWTS for individual dwellings or community disposal systems that also use septic systems and similar disposal methods. Using the methodology described above in the Existing Conditions, Physical Environment part of this section, the No Project Alternative is expected to increase existing OWTS-related wastewater flows on individual properties using these systems by 2.1 mgd countywide by 2025. This would be a 45% change in such flows. The major type of environmental impact associated with this projected increase in wastewater flows is an increase in the amount of pollutants discharged into groundwater and the potential for groundwater to be unusable in certain areas. This issue is addressed in Section 5.5.3. This impact is considered significant.

Another potential environmental impact related to projected increases in OWTS-related wastewater flows involves related increases in the amount of OWTS septage (a small fraction of total OWTS flow) that needs to be treated and disposed of annually at the Union Mine Septage Treatment and Disposal Facility. As discussed in Existing Conditions, the treatment capacity of the plant is planned to be doubled to accommodate future treatment needs of OWTS, inducing winery waste. While the facility's treatment capacity, and some of its disposal capacity, needs to expand to accommodate future growth, the environmental effects of such expansion are expected to be less than significant. This is because all planned expansions would be within the existing fenced property boundaries on land that has already been disturbed by prior landfill activities. Also, the landfill has more than sufficient sludge disposal capacity, which is addressed in Section 5.6, Utilities (Johnston, pers. comm., 2003).

No Project Alternative (Buildout)—Impact Discussion

At buildout, the No Project Alternative would generate approximately 2.9 mgd more wastewater flow than generated under existing conditions in areas where such flows are treated by OWTS. This would be a 62% change in OWTS-related flows. The major type of environmental impact that could result from the projected increase in these flows is an increase in the amount of pollutants discharged into groundwater and the potential for groundwater to be unusable in certain areas. This issue is addressed in Section 5.5.3 below. This impact is considered significant.

Roadway Constrained 6-Lane "Plus" Alternative (Alternative #2)

Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative

The relevant policies that are applicable to the Roadway Constrained 6-Lane "Plus" Alternative are Policies LU-7a, PS-1a through PS-1e, PS-2a, PS-3a through PS-3c, PS-4a through PS-4e, and PS-10a.

Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion

As shown in Table 5.5-15, this alternative at 2025 would generate additional wastewater outside the service area of EID's wastewater collection system. By 2025, the OWTS-related wastewater flows under this alternative are projected to be 2.5 mgd more than the flows generated under existing conditions. This would be a 53% change in such flows. The major type of environmental impact that would results from the projected increase in these flows is an increase in the amount of pollutants discharged into groundwater. This issue is addressed in Section 5.5.3, Water Quality. This impact is considered significant.

Roadway Constrained 6-Lane "Plus" Alternative (Buildout)—Impact Discussion

This alternative at buildout would generate additional wastewater outside the service area of EID's wastewater collection system. At buildout, the OWTS-related wastewater flows under this alternative are projected to be 4.0 mgd more than the flows generated under existing conditions (see Table 5.5-15). This would be an 85% change in such flows. As addressed in Section 5.5.3, the major environmental impact that could result from the projected increase in these flows is an increase in the amount of pollutants discharged into groundwater. This impact is considered significant.

Environmentally Constrained Alternative (Alternative #3)

Relevant Goals/Policies—Environmentally Constrained Alternative

For the relevant policies of the Environmentally Constrained Alternative, please refer to the policies listed above under Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative except that under Goal PS-4, the Roadway Constrained 6-Lane "Plus" Alternative contains one additional policy. Under the Environmentally Constrained Alternative the policies are renumbered PS-4a through PS-4d.

Environmentally Constrained Alternative (2025)—Impact Discussion

As shown in Table 5.5-15, this alternative at 2025 would generate additional wastewater outside the service area of EID's wastewater collection system. By 2025, OWTS-related wastewater flows under this alternative are projected to be 3.1 mgd more than the flows generated under existing conditions. This would be a 66% change in such flows. As addressed in Section 5.5.3, the major environmental impact that would result from the projected increase in these flows is an increase in the amount of pollutants discharged into groundwater. This impact is considered significant.

Environmentally Constrained Alternative (Buildout)—Impact Discussion

This alternative at buildout would produce additional wastewater outside EID's wastewater collection system service area. At buildout, OWTS-related wastewater flows under this alternative are projected to be 5.3 mgd more than the flows generated under existing conditions (see Table 5.5-15). This would be a 113% change in such flows. As addressed in Section 5.5.3, the major environmental impact that could result from the projected increase in these flows is an increase in the amount of pollutants discharged into groundwater. This impact is considered significant.

1996 General Plan Alternative (Alternative #4)

Relevant Goals/Policies—1996 General Plan Alternative

For the relevant policies of the 1996 General Plan Alternative, please refer to the policies listed under Relevant Goals/Policies—No Project Alternative above.

1996 General Plan Alternative (2025)—Impact Discussion

As shown in Table 5.5-15, this alternative at 2025 would produce additional wastewater outside the service area of EID's wastewater collection system. By 2025, OWTS-related wastewater flows under this alternative are projected to be 3.1 mgd more than the flows generated under existing conditions. This would be a 66% change in such flows. As addressed in Section 5.5.3, the major environmental impact that would result from the projected increase in these flows is an increase in the amount of pollutants discharged into groundwater. This impact is considered significant.

1996 General Plan Alternative (Buildout)—Impact Discussion

This alternative at buildout would generate additional wastewater outside the service area of EID's wastewater collection system. At buildout, the OWTS-related wastewater flows associated with this alternative is the largest of all the equal-weight alternatives, approximately 7.6 mgd more than the flows generated under existing conditions (Table 5.5-15). This would be a 162% change in such flows from existing conditions. As addressed in Section 5.5.3, the major environmental impact that would result from the projected increase in these flows is an increase in the amount of pollutants discharged into groundwater. This impact is considered significant.

Mitigation Measure 5.5-4: Encourage Mitigation of the Environmental Impacts Related to Future Expansions in Wastewater Treatment Capacity

Mitigation Measure—No Project Alternative

The County shall implement the new policy below to help address the potential impacts related to new wastewater treatment capacity needed to treat the wastewater flows associated with this alternative and related increases in population and employment growth. Although the County cannot eliminate the potentially significant effects associated with the expansion of wastewater treatment capacity, it can encourage EID to minimize or avoid future adverse impacts and to mitigate them where feasible. The impacts of such infrastructure improvements and effectiveness of related mitigation cannot be definitively determined or tested at this time; therefore, with implementation of this mitigation measure, impacts would be reduced, but not to a less-than-significant level. This impact would remain significant and unavoidable.

> **New Policy:** The County shall encourage EID to design and implement future wastewater treatment capacity expansions in a manner that avoids or minimizes associated environmental impacts to the extent feasible.

Mitigation Measure—Roadway Constrained 6-Lane "Plus" Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. With implementation of this mitigation measure, impacts would be reduced, but not to a less-than-significant level. This impact would be significant and unavoidable.

Mitigation Measure—Environmentally Constrained Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. With implementation of this mitigation measure, impacts would be reduced, but not to a less-than-significant level. This impact would be significant and unavoidable.

Mitigation Measure—1996 General Plan Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. With implementation of this mitigation measure, impacts would be reduced, but not to a less-than-significant level. This impact would be significant and unavoidable.

5.5.3 WATER QUALITY

This subsection focuses on those water quality conditions and issues related to the new population and employment growth associated with the equal-weight alternatives. The primary sources of information used in this subsection include material published by EPA, the SWRCB, the Central Valley RWQCB, and the County EMD. For additional information regarding a wide range of water quality issues and regulations, the reader is encouraged to review the websites of these agencies (<http://www.epa.gov>, <http://www.swrcb.ca.gov>, <http://www.swrcb.ca.gov/rwqcb5/>, and <http://www.co.el-dorado.ca.us/emd/>, respectively).

The major effect of the equal-weight alternatives under consideration is to direct the level and location of growth in the county. With growth, temporary and routine activities that may have an effect on water quality would increase. For example, increases in construction-related erosion, runoff from impervious surfaces, and wastewater discharges could result in new water quality impacts. Accidental release and leaks from underground storage tanks may also affect water quality. These impacts are addressed in Section 5.9, Human Health and Safety.

EXISTING CONDITIONS

Physical Environment

Existing Surface Water Quality

Surface water quality on the west slope is generally very good; none of the county's water bodies is on the state's list of "impaired water bodies" under Section 303(d) of the federal Clean Water Act (Central Valley RWQCB 1998). However, as described further below, there are a number of existing water quality concerns in the county associated with different types of land uses or activities.

Grading and Other Construction Activities

Grading activities can adversely affect water quality because grading exposes bare soil. Once soil is exposed, rainfall can cause erosion and subsequent sedimentation that runs off and can make its way to water bodies. Inadequate soil stabilization before winter storms can result in large amounts of soil material entering surface water. This can negatively affect downstream beneficial uses by causing reservoir infilling and silting of spawning gravel and aquatic habitat, and by plugging drainage structures, and can increase the need and cost of water treatment for municipal uses (HSRCDC 1991). Construction activities also increase the risk that

petroleum products and other pollutants from construction equipment or workers will enter nearby drainages.

Agricultural Uses

Agricultural irrigation return water may contain fertilizers and pesticides, and related drainage may increase salts, nutrients, and trace elements of other pollutants in receiving waters. Improper use and disposal of farm chemicals and fertilizers can contaminate surface and groundwater resources. Agricultural procedures also can result in erosion from unstabilized soil. This is a particular threat during initial conversion of existing vegetation. Farm chemicals and fertilizers may bind to soil particles, distributing such substances throughout aquatic ecosystems (Central Valley RWQCB 1991).

In recent years, there has been a notable increase in the development of vineyards and wineries in the county. There are now approximately 31 wineries operating in the county; seven more had been proposed by the end of 2002 (El Dorado County Planning Department 2002). Wineries and vineyard operations increase the potential for erosion and fertilizer and pesticide runoff. Even so, the total acreage in the county in wine grape production is small, at 1,744 acres according to the County's 2001 Annual Crop Report. Wine production also requires a number of chemicals that become part of the wastewater stream, and often produces winemaking byproducts and cleaning water that must be disposed of in authorized disposal facilities.

Confined Animals

Wastes from confined animals at stockyards, ranches, or dairies can cause problems with nitrate, ammonia, bacteria, and total dissolved solids (TDS) in nearby surface and groundwater. Such wastes generally reach surface water or groundwater from one of the following sources:

- stormwater runoff carrying animal waste material,
- runoff or leaching through the soil to groundwater of products from manure and liquid wastes applied to cropland, or
- direct deposit in receiving water where animals have access to surface waters.

According to the County's 2001 Annual Crop Report, El Dorado County had 4,530 head of cattle, 510 sheep, and 730 hogs. This suggests a very modest amount of livestock in the county.

Urban Runoff

Urban activities have an effect on water quality when household chemicals (e.g., pesticides, herbicides, paints) and wastes are improperly disposed. Salting of roads to melt snow is also potentially harmful to water quality if salts run off or are leached into waterways. In addition, heavy metals and hydrocarbons can be detected in water as a result of auto emissions and car crank case oil. Other municipal sources of pollution include government yards that include transportation, fueling, and maintenance activities.

Sewage and Other Wastewater from Treatment Plants

Municipal and industrial contributions to poor water quality are a function of the type and degree of waste treatment and disposal. Discharge from municipal treatment plants may result in high coliform counts, elevated temperature, pH levels in discharge that differ from the levels in receiving waters, increased turbidity, and low dissolved oxygen in water bodies. These changes could adversely affect aquatic habitat. According to the Federal Water Pollution Control Act Amendments of 1972, all publicly owned WWTPs must achieve required treatment levels through the "Best Practicable Waste Treatment Technology." Each treatment plant is subject to review and establishment of water quality discharge standards by the RWQCB, and plants that discharge to water bodies are required to comply with an NPDES discharge permit. Permitted discharge water quality can vary from plant to plant, so long as standards in the receiving waters' Basin Plan are met. The NPDES program is discussed further under Regulatory/Planning Environment below.

Water quality issues have been the focus of much resource agency attention at EID's Deer Creek WWTP. As noted in Section 5.5.2, Wastewater Systems, this treatment plant is one of two west-slope treatment plants. EID has been operating this WWTP under a cease-and-desist order that was issued by the Central Valley RWQCB in September 1999, in response to violations of the discharge permit for the plant. EID has been working closely with Central Valley RWQCB staff members to resolve these issues. The cease-and-desist order addresses violations of pH, temperature, and turbidity standards as applied to Deer Creek, the stream that receives the treatment plant's discharge. These violations all have occurred as a result of seasonal issues. Turbidity and pH violations have occurred during the summer and fall months when flow is low in Deer Creek. The turbidity issues arise from the relatively higher flow from the plant with low flow in the creek. The pH violations have occurred because high rates of photosynthesis have raised the pH levels relative to the discharge, while the plant's permit and the Basin Plan require that the difference in plant discharge and pH be no greater than 0.5. Temperature violations have occurred because effluent from the plant has raised Deer Creek water temperatures at the point of discharge by up to 11EC (primarily in late fall

and early winter), while the Basin Plan and permit standard allow a maximum difference of 5EC (Bryan, pers. comm., 2003).

The cease-and-desist order reduces the allowable capacity at the plant to 2.5 mgd (compared to the plant's 3.6-mgd maximum capacity) pending resolution of the compliance issues. The cease-and-desist order's terms focus primarily on providing feedback on the nature of the problem and resolving compliance issues. A number of studies were conducted between 1993 and 2002 to determine whether these and prior discharge issues at the treatment plant have adversely affected aquatic life. During this period, the plant capacity was expanded and its treatment reliability was improved substantially. For instance, one of the plant reliability concerns was elevated discharge of chlorine, which elevated the pH level in Deer Creek. New facilities were installed to control chlorine discharges, among other fixes. The studies included 4 years of hourly temperature monitoring, eight fish surveys above and below the point of discharge, and three macroinvertebrate surveys. These studies concluded there was no significant impact on aquatic resources, or any other significant effects, associated with these permit violations (Bryan, pers. comm., 2003).

As a result of these studies and based on their independent review, Central Valley RWQCB staff members concluded that the permit for the Deer Creek WWTP could be modified to reflect the way in which the plant operates, and at the same time modified the Basin Plan, with amendments site specific to Deer Creek. The RWQCB initiated the first of two amendments in 2002. The first Basin Plan amendment was adopted by the RWQCB on July 19, 2002, and sent in December 2002 to the SWRCB where it was approved in January 2003. This amendment is now before the California Office of Administrative Law (OAL) for approval before it is sent to EPA for approval. This amendment replaces the pH and turbidity objectives for Deer Creek only. The amendment would establish the Deer Creek pH objective to be between 6.5 and 8.5, with the intent of eliminating restrictions on pH changes where creek pH already falls within the 6.5 to 8.5 range. The turbidity objective is amended with a provision that allows an increase of 2 Nephelometric Turbidity Units (NTU), with a daily maximum of 5 NTU, where natural turbidity is between 0 and 5 NTU and the dilution ratio for discharges from Deer Creek WWTP is less than 20:1. The general turbidity objectives will remain applicable to Deer Creek where the natural turbidity is between 0 and 5 and the discharge dilution ratio is 20:1 or greater. In adopting the amendment, a CEQA-functional-equivalent document that reviews the environmental impacts of the amendment is included in the staff report. Included are a checklist of environmental impacts, a brief description of the proposed amendment, and reasonable alternatives to the amendment. The report determined that the amendment would have no significant environmental impacts. Specifically, the amendment was found to protect resident aquatic life and recreational/aesthetic uses (CVRWQCB 2002).

The second Basin Plan Amendment was adopted by the Central Valley RWQCB on January 31, 2003, and is now before the SWRCB for approval before it moves to the OAL and EPA for approval. This amendment replaces the temperature objective for Deer Creek only. The flow within Deer Creek is seasonal, with discharge of tertiary-treated effluent from Deer Creek WWTP constituting the majority of the flow below the point of discharge during summer and fall. As described above, the previous temperature objective, which prohibited a relative increase in temperature more than 5 C above natural levels, could not be achieved consistently. The amendment replaces the temperature objective with specific temperature criteria. The amendment specifies daily maximum and monthly average discharge temperatures in effluent from the plant, rather than a differential between plant discharge temperature and the temperature of Deer Creek. The switch from relative to absolute temperature objectives is consistent with the current EPA approach and is supported by CDFG. The new temperature objectives are set at values that would maintain Deer Creek's temperatures at levels equivalent to those that have historically occurred. In adopting the amendment, the CEQA-functional-equivalent document determined that the amendment would have no significant environmental impacts (CVRWQCB 2003).

Industrial Sources

Industrial contributions to degraded water quality are also a function of the type and degree of waste treatment and disposal. Industrial land uses such as sand and gravel operations and lumber mills can result in stream turbidity and toxic substances. All industries are required to conform to federally specified treatment levels via the NPDES process described in the next subsection.

Recreational Activities

As a highly desirable recreation destination, El Dorado County experiences generally localized water-quality problems from campgrounds, recreational vehicles, backcountry use, winter sports, boating, and second-home developments. Although annual waste loads from recreation areas are small compared with those from other activities, and although such loads are generated seasonally, they constitute a significant, local problem. The Rubicon Trail is a high-use off-road vehicle trail in both the El Dorado County and Placer County backcountry that has been a focus of concern. According to Friends of the Rubicon, an estimated 35,000 people used the trail in the summer of 2001. The trail has no sanitation facilities and has a history of people disposing of human sanitary waste inappropriately or ineffectively. This has raised water-quality concerns, and an active public education for trail users has been initiated by a number of trail clubs and other entities (Friends of the Rubicon 2003).

Existing Groundwater Quality

In general, El Dorado County groundwater quality is considered good to excellent, but there is no reliable database. Additionally, the geologic material the water is drawn from can greatly influence its quality.

As the county's population increases and more people rely upon local groundwater for their water supply, groundwater quality becomes a more prominent concern. Major sources of potential groundwater pollution include OWTS or septic leach fields (please refer to Section 5.5.2, Wastewater Systems), underground storage tanks, spillage of hazardous materials or commercial waste, and infiltration of agricultural byproducts, including fertilizer and livestock waste. Groundwater quality is also affected by the types of surface water pollution described in Section 5.5.1 for surface water. Of particular concern are the following sources of potential groundwater pollution:

< improperly located and designed septic systems,
< improperly located and constructed water wells, and
< industrial uses in close proximity to residential development served by wells.

More information regarding these concerns is provided below.

The geology of El Dorado County complicates the identification of groundwater recharge areas. Because groundwater is found mostly in fractured rock rather than alluvial aquifers, it is stored in highly localized pockets. Therefore, it is difficult to target these areas for protection from inappropriate uses, including the discharge of pollutants. Faulting and fractures may provide a means for direct infiltration of harmful substances into a fractured-rock aquifer. Therefore, geologic considerations are critical in the siting of septic systems and of agricultural and industrial facilities to prevent contamination of groundwater.

Onsite Wastewater Treatment Systems

Individual OWTS in El Dorado County typically serve rural outlying or low-population-density areas. Onsite sewage systems are used for single-family residences, multifamily residences, trailer parks, public facilities, campgrounds, and commercial or industrial establishments, including wineries. Septic suitability is dependent on the underlying soils of a site; for the most part these systems work well if properly sited and maintained. Proper siting helps ensure that soils below leach fields have time to properly treat and assimilate septic effluent before it has a chance to reach underlying groundwater. Certain areas of the county have known septic system limitations. The Latrobe area generally has

shallow soils, and the Pleasant Valley area has groundwater close to the soil surface. The lava cap soils around Pollock Pines are nonabsorptive but are porous enough to carry water. The granitic soils in the higher elevations are shallow and subject to sheeting of runoff. Small lots that would not currently meet County requirements for septic systems can be found in Outingdale, Lake Hills, and the Echo Summit area.

The county has experienced periodic failure of individual OWTS, particularly older systems, including leach field failure and accidental breaching of leach fields by construction activities. Older systems were designed under a different set of criteria than systems designed since 1999. These failures are not known to have significantly contaminated any water sources in the past (Morgan, pers. comm., 2003). A discussion of current programs intended to avoid future failures is included under Regulatory/Planning Environment below.

Underground Storage Tanks

Underground storage tanks generally contain hazardous materials, such as petroleum products, that may pollute groundwater through accidental releases and leaks. Leaking storage tanks at gasoline stations in the Lake Tahoe Basin have resulted in release of MTBE, a toxic gasoline additive that is now banned in this country, into groundwater. This issue is discussed in Section 5.14, Lake Tahoe Basin.

Residential Wells and Quality of Groundwater Used for Drinking Water

As described further under Regulatory/Planning Environment below, County agencies work with the Central Valley RWQCB and SWRCB to help protect the drinking-water quality of county groundwater. The Basin Plan (Central Valley RWQCB 1998) contains a number of maximum-contaminant-level (MCL) standards that cover chemical constituents and other pollutants. The presence of nitrates in groundwater drinking supplies is a major concern throughout the state; nitrates enter groundwater most often from OWTS and agricultural land uses that involve the application of fertilizer or raising of livestock (Central Valley RWQCB 1998).

The County does not require testing or tracking of the quality of water from private single-family or agricultural wells. However, a bacteriological and/or chemical analysis may be required by EMD's Division of Environmental Health (DEH) on any proposed water supply before a building permit is issued (Policy 800.02 DEH Policies and Procedures Manual). For a fee, DEH staff members will test for bacteria and compliance with the County's well-construction-standard ordinance upon request by lending agencies or concerned property owners.

Many property owners contract with private firms to conduct water-quality testing, most typically for iron, manganese, magnesium, hardness, or other contaminants that affect the palatability of the water (these contaminants are regulated by Secondary Drinking Water Standards and are not health related). These test results are not generally available to County staff and are therefore not part of a usable County database.

A local water treatment system purveyor indicates that it performs more than 300 water tests each year with 90% of the tests exceeding secondary water quality standards for contaminants. The incidence of water quality problems does not seem to follow any geographical or geological pattern.

Wells Serving Small Water Systems

Purveyors of small water systems are required to provide DEH with information regarding the source of their water supply, the level of water treatment used (if any), and the distribution system served. Water quality testing requirements vary depending upon the size of the system. Typically, systems serving 5–15 connections are subject to initial bacteriological and chemical analysis with monthly or quarterly bacteriological results submitted thereafter. Larger systems serving 15–199 connections are required to submit triannual chemical water quality test results. In general, water quality problems for small systems on wells are related to improper sealing and/or allowing surface water or septic leachate to contaminate the wells. According to the County, cases of contamination are few and isolated (Mearse, pers. comm., 2003).

Regulatory/Planning Environment

Federal Setting

Federal Clean Water Act of 1972

The federal Clean Water Act establishes the basic structure for regulating discharges of pollutants into waters of the United States and setting water quality standards for all contaminants in surface waters. The Clean Water Act defines water quality standards as "provisions of state or federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act." Thus, water quality standards must contain:

- designation of beneficial uses of water and
- establishment of water quality criteria to protect those designated uses.

EPA's Office of Water is responsible for implementing the Clean Water Act and Safe Drinking Water Act (described below). The Office of Water provides guidance, specifies scientific methods and data collection requirements, performs oversight, and facilitates communication among the federal, state, and local agencies that manage water quality.

National Pollutant Discharge Elimination System

In 1972, the Clean Water Act was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. In California, the SWRCB and RWQCBs are authorized to implement this program. The NPDES permits cover industrial and municipal discharges, discharges from storm sewer systems in larger cities, storm water associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than 1 acre of soil, mining operations, and animal feedlots and agricultural facilities above certain thresholds.

Stormwater discharges from both large and small construction sites are now subject to NPDES requirements. "Large" construction sites are those that involve 5 or more acres of soil disturbance. The SWRCB has issued an NPDES General Permit for Discharges of Storm Water Discharges Associated with Construction Activity (General Construction Permit) under the Clean Water Act. The permit requires the preparation of a Storm Water Pollution Prevention Plan (SWPPP) for proposed construction activities of greater than 5 acres in size. A SWPPP is an operational plan that identifies and describes the BMPs to be implemented at the construction site to control pollution of stormwater runoff. Since March 10, 2003, "small" construction sites (those involving disturbance of 1-5 acres of soil) have also required an NPDES permit as part of Phase II of EPA's NPDES Storm Water Program. Phase II is intended to further reduce adverse impacts on water quality and aquatic habitat by instituting the use of BMPs on previously unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation (EPA 2000).

The Phase II requirements also impose new obligations on municipal separate stormwater systems (MS4). Small MS4s (i.e., those located in an incorporated city or county of less than 100,000 people) that are located within "urbanized areas" as defined by the U.S. Census must now be covered by a NPDES permits. The county released its Tentative Storm Water Management Plan (SWMP) for the west slope to the Central Valley RWQCB on March 10, 2003, to comply with the requirements set forth in the Proposed Small Municipal Separate Storm Sewer System (MS4) General Permit issued the SWRCB on January 9, 2003. The final

SWMP is scheduled for release on October 31, 2003, following a public review process. A separate SWMP is being prepared for the Lake Tahoe Basin. The SWMP is comprehensive and includes provisions to reduce discharge of pollutants in storm water on the west slope. Major components of the plan include a training, public education, and outreach program; design and construction stormwater management program; maintenance stormwater management program; and monitoring, program evaluation, and reporting. As described above, construction activities associated with projects 1 acre or larger are regulated by the SWRCB under Construction Activities Storm Water General Permit Order No. 99-08-DWQ (General Construction Permit). The SWMP sets forth a program that the County will implement to ensure compliance with the General Construction Permit for construction activities carried out by the County, and for construction activities carried out by private interests seeking grading, building, or other development permits from the County. The SWMP is intended to minimize impacts related to construction activities.

The SWMP also sets forth a process to be applied to the review of development site plans to address long-term water quality issues and impacts associated with the proposed land use after completion of construction. The SWMP identifies BMPs that are required of all development projects in the Prescribed Base Program of the Design/Construction Storm Water Management Program.

In addition to the Prescribed Base Program, the SWMP sets forth a Supplemental Prescribed Program that is to be applied to the review of all development projects within the county to be implemented through revisions to the County of El Dorado Drainage Manual. This includes the application of the Standard Storm Water Mitigation Plan as set forth in the SWMP, and the requirement that all discretionary projects submit a report evaluating the potential water quality effects of the proposed project and identifying, as appropriate, mitigation measures above and beyond those contained in the Standard Storm Water Mitigation Plan.

Wastewater discharges from WWTPs are also required to have a NPDES permit. WWTPs are typically required to obtain individual permits from the RWQCB. The permits include findings, discharge prohibitions, effluent limitations, provisions and self-monitoring requirements. The findings of the NPDES permit process provide information about the treatment plant design and operations, the beneficial uses to be protected, and applicable standards.

Safe Drinking Water Act of 1974

The Safe Drinking Water Act was originally passed by Congress in 1974 to protect public health by regulating the quality of public drinking water. The law was amended in 1986 and

1996 and requires many actions to protect drinking water and its sources, which are rivers, lakes, reservoirs, springs, and groundwater wells. The Safe Drinking Water Act authorizes EPA to set national health-based standards for drinking water to protect against pollutants that may be found in drinking water. EPA, states, and local agencies then work together to make sure that these standards are met (EPA 1999).

Section 303(d) of the Clean Water Act

Section 303(d) of the Clean Water Act requires states to develop lists of water bodies (or segments of water bodies) that will not attain water quality standards after implementation of minimum required levels of treatment by point-source dischargers (e.g., municipalities and industries). Section 303(d) requires states to develop a total maximum daily load (TMDL) for each of the listed pollutants and water bodies. A TMDL is the amount of loading that the water body can receive and still meet water quality standards. The TMDL must include an allocation of allowable loadings to point and nonpoint sources, with consideration of background loadings and a margin of safety. NPDES permit limitations for listed pollutants must be consistent with the load allocation prescribed in the TMDL.

The most recently approved (1998) Clean Water Act Section 303(d) list for California identifies the various waterways throughout the state that are water quality impaired for a number of constituents. None of the waterways listed are in El Dorado County. The state is currently undergoing a public process to update the 303(d) list. The SWRCB has submitted suggested revisions to EPA for approval. The recommended changes include the addition of 53 new water bodies and pollutants to the list, removal of three water bodies and pollutants from the list, refinement of identified impaired reaches, and changes in TMDL development priorities. None of the water bodies on the SWRCB's list are in El Dorado County. No changes to the water bodies and constituents listed in Table 4.4-2 were proposed.

Section 404 of the Clean Water Act

Section 404 of the Clean Water Act establishes a requirement to obtain a permit before conducting any activity that involves any discharge of dredged or fill material into waters of the United States, including wetlands. This permit is issued by the USACE.

Section 401 Water Quality Certification

Section 401 of the Clean Water Act states that any person applying for a federal permit or license that may result in the discharge of pollutants into waters of the United States must obtain a state certification that the activity complies with all applicable water quality standards,

limitations, and restrictions. This certification is administered in California by the SWRCB, via the RWQCBs. No license or permit may be granted by a federal agency until certification required by Section 401 has been granted. Further, no license or permit may be issued if certification has been denied. Section 401 water quality certifications are typically required in order to obtain a Clean Water Section Act 404 permit from USACE.

National Toxics Rule and California Toxics Rule

In 1992, EPA promulgated the National Toxics Rule under the Clean Water Act to establish numeric criteria for priority toxic pollutants for California. The National Toxics Rule established water quality standards for 42 pollutants not covered under California's statewide water quality regulations at that time. As a result of the court-ordered revocation of California's statewide Basin Plans in September 1994, EPA initiated efforts to promulgate additional federal water quality standards for California. In May 2000, EPA issued the California Toxics Rule, which includes all the priority pollutants for which EPA has issued numeric criteria not included in the National Toxics Rule.

State Setting

This subsection provides information regarding state water quality laws, regulations, and planning activities in addition to those described above.

Porter-Cologne Water Quality Control Act of 1969

The Porter-Cologne Water Quality Control Act, otherwise known as the California Water Code, is California's statutory authority for the protection of water quality. Under the Porter-Cologne Act, the state must adopt water quality policies, plans, and objectives that protect the state's waters for the use and enjoyment of the people. The Porter-Cologne Act sets forth the obligations of the SWRCB and RWQCBs pertaining to the adoption of Basin Plans and establishment of water quality objectives. It also authorizes the SWRCB and RWQCBs to issue and enforce permits containing waste discharge requirements. Basin Plans, which are the regional water-quality control plans required by both the federal Clean Water Act described above and the Porter-Cologne Act, establish beneficial uses, water quality objectives, and implementation programs for each of the nine regions in California. Unlike the federal Clean Water Act, which regulates only surface water, the Porter-Cologne Act regulates both surface water and groundwater.

Central Valley RWQCB Basin Plan and Related Beneficial Uses

The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Central Valley RWQCB 1998) provides water quality objectives and standards for waters of the Sacramento River and San Joaquin River Basins. This Basin Plan contains specific numeric water quality objectives for bacteria, dissolved oxygen, pH, pesticides, electrical conductivity, TDS, temperature, turbidity, and trace elements, as well as numerous narrative water quality objectives, that are applicable to certain water bodies or portions of water bodies. It also includes objectives for groundwater quality that pertain to bacteria, chemical constituents, radioactivity, taste and odors, and toxicity. With regard to El Dorado County, certain water quality objectives apply to specific waters within the county while only general objectives apply to other surface waters and their tributaries in the county. As described above in the discussion of Clean Water Act Section 303(d), none of these water bodies are listed as impaired.

Beneficial uses are critical to water quality management in California and are designated in Basin Plans. The protection and enhancement of water quality for these beneficial uses are the primary objectives of water quality planning efforts. Section 13050(f) of the Porter-Cologne Act defines beneficial uses as follows: "Beneficial uses of waters of the state that may be protected against quality degradation include, but are not necessarily limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves." The Basin Plans list the specific beneficial uses established for each of California's surface water and groundwater bodies. The beneficial uses of the surface water bodies in and downstream of El Dorado County are listed in Table 5.5-16.

State Antidegradation Policy

In 1968, the SWRCB adopted the State Antidegradation Policy, a policy aimed at maintaining high-quality waters in California. The antidegradation policy states that the disposal of wastes into state waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state.

In 1992, the SWRCB adopted a resolution that made this policy, applicable to the cleanup of contaminated sites. The SWRCB sets cleanup levels that must, at a minimum, restore and protect all applicable beneficial uses of waters of the state, as measured by the water quality objectives, and must not present significant health or environmental risks (RWQCB 2000).

State Sources of Drinking-Water Policy

In 1988, the SWRCB adopted Resolution No. 88-63, the "Sources of Drinking Water" policy. This policy specifies that, except under specifically defined circumstances, all surface water and groundwater of the state are to be protected as existing or potential sources of municipal and domestic supply, unless this beneficial use is explicitly de-designated in the applicable Basin Plan. The policy lists specific and limited circumstances under which waters may be excluded from this policy (RWQCB 2000).

AB 885 and Statewide Regulation of Onsite Wastewater Treatment Systems

AB 885 was adopted by the California legislature in September 2000. It requires the SWRCB to develop new statewide standards for the regulation of OWTS by 2004. The draft standards are currently being developed by the SWRCB with the assistance of the RWQCBs, representatives of county health departments, and various other stakeholders. The new regulations will likely include vertical and horizontal separation guidelines, percolation testing, and system siting guidelines, and are expected to facilitate the use of alternative technologies believed to be less polluting than standard septic systems. The regulations will apply statewide, but will likely allow counties to implement more protective regulations at the local level if they wish. It is too soon to know how regulations emanating from this process will compare with existing County regulations.

California Health and Safety Code Title 22

Wastewater recycling in California is regulated under Title 22 of the California Code of Regulations. The intent of these regulations is to ensure protection of public health associated with the use of recycled water. The regulations establish acceptable levels of constituents in recycled water for a range of uses, and prescribe means for ensuring system reliability in the production and use of recycled water. The California Department of Health Services (DHS) has jurisdiction over the distribution of recycled wastewater and the enforcement of Title 22 regulations.

Central Valley RWQCB Conditional Waiver for Agricultural Discharges

Agricultural discharges have been exempt from Clean Water Act requirements to obtain NPDES permits or waste discharge requirements. That exemption ended on January 1, 2003. The Central Valley RWQCB adopted a 2-year conditional waiver that applies to irrigation return flows and storm runoff from agricultural fields. The conditional waiver requires agricultural interests to form watershed groups and conduct monitoring, with implementation

of BMPs to follow. If they do not participate in watershed groups, individual agricultural dischargers are required to file a Notice of Intent with the RWQCB that provides details of a pollution management plan.

In addition, the conditional waiver requires:

- Demonstration that discharges of waste from irrigated lands shall not cause or contribute to conditions of pollution of nuisance, as defined.
- Demonstration that discharges of waste from irrigated lands shall not cause or contribute to exceedances of any regional, state, or federal numeric or narrative water quality standard.

The RWQCB also decided to develop a 10-year implementation program to ensure that water quality standards are met, and it will undertake an EIR process over the next 2 years.

Central Valley RWQCB General Waste Discharge Requirements for Small Wineries

The Central Valley RWQCB issued a CEQA Initial Study and Negative Declaration in January 2003 for its "General Waste Discharge Requirements for On-site Storage and Off-site Disposal of Wastewater Generated by Small Wineries" (Central Valley RWQCB 2003). In some areas of the state, low pH levels in the waste discharge stream from wineries have caused nitrogen levels in groundwater to increase. If groundwater with high levels of nitrogen is consumed, it can affect the ability of infants to uptake oxygen in their bloodstream. There have been no reported cases of elevated nitrogen in El Dorado County, including from winery waste discharge (Morgan, pers. comm., 2003). The new discharge requirements are expected to reduce water pollution from certain types of wineries. The requirements would fall under a General Order for Waste Discharge Requirements and would apply to the storage of winery wastewater/residual solids, the offsite disposal of winery wastewater/residual solids in septage receiving stations or WWTPs, and land application of winery residual solids on land controlled by the producing winery (CVRWQCB 2003). They do not apply to domestic wastewater generated at wineries or to waste produced by agricultural operations associated with the growing of grapes.

Currently, the permitting of these waste discharges is done at the local level, with the County DEH as the permitting agency in the county. A hearing was held on March 13, 2003, to consider whether all future permits for onsite and offsite disposal of wastewater generated by wineries (except domestic wastewater) should be subject to the permitting authority of the RWQCB. According to the Mitigated Negative Declaration prepared by the RWQCB, the

General Order would mitigate any impacts associated with the storage, disposal, and land application of winery wastewater/residual solids (CVRWQCB 2003).

County Setting

At the local level, EMD is charged with the management of toxic and hazardous materials, underground storage tanks, the siting of septic systems, and the regulation of small water systems. Grading permits may be granted by the County Building Department or the Department of Transportation if the proposed activities would implement measures required by the County Grading, Erosion, and Sediment Control Ordinance described below.

County Grading, Erosion, and Sediment Control Ordinance

The County Grading, Erosion, and Sediment Control Ordinance (Grading Ordinance) (Chapter 15.14 of the County Code) establishes provisions for public safety and environmental protection associated with grading activities on private property. This ordinance requires grading permits for any grading activity that has the potential to:

- involve more than 250 cubic yards of grading material, or cuts and fills greater than 5 feet in vertical depth;
- create unstable or erodible slopes;
- denude more than 10,000 square feet of surface on a 10% or steeper grade;
- encroach into a perennial or seasonal watercourse that either has a watershed larger than 50 acres or is designated by a solid or dashed blue line on a USGS 7.5-minute
- quadrangle map; or
- occur within the Lake Tahoe Basin Special Restrictions and Exemptions area.

The grading permit applies to all projects with certain exemptions. The most significant exemption is for grading pursuant to a subdivision map and an approved subdivision improvement plan. Specific conditions and General Plan policies are applied to subdivisions. The list of criteria for which a grading permit is required ensures that all projects not in a subdivision with the potential to generate erosion and sedimentation are subject to a variety of pollution control measures.

The ordinance contains all of the following:

< BMP provisions and conditions that result in erosion control from grading, including vegetation retention;

< rainy season (October 15 to May 15) requirements such as:

  - the use of silt fencing, straw bale dikes, and detention ponds;
  - coverage of slopes with straw blankets; and
  - design of slopes to avoid runoff over the face of slopes;

< non-rainy season measures such as:

  - the above sediment control measures, whenever there is a 3-day forecast of rain;
  - revegetation of engineered slopes;
  - use of protective measures on ditches or swales steeper than 10%;
  - use of rice straw as needed for slope protection; and
  - completion of drainage systems.

A grading plan, which must include an erosion and sediment control plan that complies with the provisions of the Grading Ordinance, is required as a part of the grading permit. The ordinance requires that sedimentation be contained on the construction site.

Sewer, Septic Tank, and Drain Standards

Design and installation of onsite sewage systems must be in accordance with applicable federal, state, or county guidelines and codes. Federal guidelines for proper design and installation fall under the jurisdiction of EPA. State guidelines are developed by the RWQCB throughout the Basin Plan process. County regulations for the proper design and installation of onsite systems have been adopted by the County Board of Supervisors and have been reviewed and accepted by the RWQCB.

Chapter 13.12 of the County Code addresses sewer systems. The County's Septic Tank and Drain Standards (County Code §13.12.070) state that septic systems shall not be offensive, injurious, or dangerous to health, and the County health officer shall make and establish rules and regulations that may from time to time be altered.

The following setbacks apply to onsite septic systems. These setback requirements may be revised based on the forthcoming SWRCB Onsite Wastewater Treatment System Standards.

Leach lines shall:

< be set back by the following amounts:
  - 5 feet from trees;
  - 10 feet from lot lines, roads, driveways, and buildings;
  - 50 feet from ephemeral (seasonal) streams/swales;
  - 100 feet from flowing streams or wells, springs, lakes, or ponds; and
  - 200 feet from lakes or reservoirs used for drinking water;
< not be placed under asphalt, concrete, or under areas subject to vehicular traffic;
< not be placed in fill material; and
< be placed back from a cut or fill, with setback to be four times the cut or fill height.

Septic tanks shall:

< be set back by the following amounts:
  - 5 feet from houses and other buildings, trees, and lot lines, roads, and driveways;
  - 50 feet from streams, springs, lakes, and reservoirs; and
  - 100 feet from wells; and
< shall not be installed in areas subject to high groundwater tables.

Standards for Private Sewage Disposal Systems

Ordinance 4542 was adopted in 1999 and implemented new permit processes for private onsite septic systems. This was the first revision to OWTS siting processes in the county since 1981. The revisions were established through a working group of professionals with experience siting OWTS, including EMD staff members, members of the Association of Surveyors, Architects, Geologists and Engineers, and other design professionals. It was also reviewed against OWTS siting procedures in Placer and Nevada counties, and it rectified prior shortcomings of the 1981 ordinance (Morgan, pers. comm., 1999).

Chapter 15.32 of the County Code further addresses private onsite septic systems. Specifically it states that "sewage or sewage effluent shall not be disposed of in any manner that will cause pollution of the ground surface, ground water, bathing area, lake, pond, watercourse or

tidewater, or create a nuisance. It shall not be discharged into any abandoned or unused well."

One of the problems with septic systems is leach field failures. As a result, the ordinance requires a replacement field area equal to the current leach field area for residential uses and three times the size of the leach field area for commercial/industrial uses. Geotechnical design and testing is required to ensure adequate separation (a minimum of 5 feet) of groundwater from all new septic systems, including digging a backhoe trench as deep as possible and at least 5 feet below the leach line locations to ensure adequate soil depth and the separation of groundwater. All new septic systems are required to install a riser pipe with a porthole in the leach field to allow for visual inspection of leach-field performance. Three inspections by EMD are required before the operation of each septic system: when a test trench is excavated, during construction when open trenches are excavated, and following construction. As-built plans are required so that any future construction activities, such as pool installation, will avoid contact with the leach field. Where a lot has insufficient lot area or improper soil conditions for adequate sewage disposal, EMD is authorized to prohibit development; it has done so on a number of occasions. Finally, if a lot is smaller than 5 acres, it is considered too small to provide adequate separation between domestic wells and septic systems and a domestic well is not allowed on such a site. Further, when older systems fail, they are required to come into conformance with Ordinance 4542.

EMD has indicated that the new ordinance has been successful in managing new private septic systems and that there are no known water quality problems in the county as a result of the use of newer private septic systems. EMD has also indicated that it does not currently regularly inspect septic systems, and that the overall assurance that the systems are operating as they should would be improved through an inspection program (Morgan, pers. comm., 2003).

Well Ordinance

In May 1990, the County implemented a Well Ordinance (County Code §8.39). One goal of the ordinance is to assist in protecting groundwater from surface contamination. The Well Ordinance establishes minimum requirements for construction, reconstruction, repair and destruction of water wells, and cathodic protection of wells and monitoring wells. The County has also established the following requirements for wells:

< setback of 100 feet from standard leach fields and
< setback of 150 feet if pits are used for leach fields.

Design and Improvement Standards Manual

The County's *Design and Improvement Standards Manual* was adopted in 1986. The manual requires a Land Capability Report for tentative maps that "shall define the suitability for a tract with regard to waste discharge building foundation, grading and drainage…" The manual provides required erosion and sediment control measures that are also applicable to roadways and other types of developments.

County of El Dorado Drainage Manual

The *County of El Dorado Drainage Manual* provides standard procedures for future designs of drainage improvements. The Drainage Manual supercedes the stormwater drainage system design standards in the County's *Design Improvements Standards Manual*. The Drainage Manual requires that a hydrologic and hydraulic analysis be submitted for all proposed drainage facilities. The analysis must include an introduction/background, location map/description, catchment description/delineation, hydrologic analysis, hydraulic and structural analysis, risk assessment/impacts discussion, unusual or special conditions, conclusions, and technical appendices. This analysis is usually required on projects undergoing discretionary review. However, under the Building Code and Grading Ordinance, the County also reviews ministerial development, including required drainage plans, to ensure that appropriate runoff design and controls are in place.

El Dorado County Resource Conservation District

The El Dorado County Resource Conservation District, in collaboration with the U.S. Soil Conservation Service, provides technical, project-level, and general input regarding soil-specific erosion control prescriptions.

High Sierra Resource Conservation and Development Council

The High Sierra Resource Conservation and Development Council is part of the National Association of Resource Conservation and Development Councils, which was created by Congress to provide a public/private partnership that encourages the wise use of natural resources. The council has compiled a BMP guidelines handbook tailored to the development areas of the Sierra foothills and mountains. The standards from this handbook have been incorporated into the County Grading and Sediment Control Ordinance.

South Fork of the American River Watershed Group

The mission of the South Fork of the American River Watershed Group is to protect and improve the health and condition of the watershed of the South Fork American River to a measurable extent through stewardship and education. It is a fiscal nonentity that operates under a Memorandum of Understanding with voluntary signatories. With assistance from the County and Georgetown Divide Resource Conservation District, the watershed group coordinates with federal, state, and local government agencies, neighboring watershed groups, local community organizations, and private individuals to develop a Watershed Management Plan and Stewardship Strategy for the watershed (SFARWG 2002).

Cosumnes River Task Force

The primary purpose of the Cosumnes River Task Force is to develop a Coordinated Resource Management Plan that stakeholders can use as a guide to identify resource concerns, plan and implement improvements, and collaborate on common goals to improve watershed health and flood management. It is funded by grants, the California Department of Conservation, and local conservation districts (CRTF 2002).

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Thresholds of Significance

The General Plan would result in a significant impact if development would:

- lead to violations of any surface water or groundwater quality standards, including the applicable water quality objectives of the Central Valley RWQCB;
- lead to alterations in existing drainage patterns in a manner that would result in substantial erosion or siltation, including alterations of the course of a stream or river;
- 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; or
- otherwise substantially degrade water quality.

Impact **5.5-5**

Increase in Water Pollutants from Construction-Related Activities. All of the equal-weight alternatives would lead to an increase in construction activities associated with new population and employment growth. These activities have

the potential to cause significant erosion, siltation, and turbidity impacts on nearby drainages and groundwater. The No Project and 1996 General Plan alternatives would have the potential to increase erosion, primarily as a result of development on steep sites. The Roadway Constrained 6-Lane "Plus" and Environmentally Constrained alternatives each have policies that better protect against development steep slopes. However, the General Plan policies combined with the related County and state regulatory and permit programs would prevent the impacts of these alternatives from being significant. This impact is considered **less than significant**. Impact significance is shown in the table below.

	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
Impact	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-5: Increase in Water Pollutants from Construction-Related Activities	LS	LS	LS	LS	LS	LS	LS	LS
	Significance After Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
Mitigation	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
N/A	LS	LS	LS	LS	LS	LS	LS	LS

* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.

Impacts Common to All Four Equal-Weight Alternatives

All alternatives would lead to a major increase in a variety of construction activities associated with new population and employment growth. Such activities as grading have the potential to cause significant erosion, siltation, and turbidity impacts in nearby drainages. Construction activities often result in petroleum products and debris entering nearby drainages, along with accidental spills of material used during construction. Some of these pollutants can enter groundwater. However, the policies listed for each alternative, combined with the related County and state regulatory and permit programs described below, would prevent the impacts of each of the alternatives from being significant. Hazardous waste and emergency

management policies and programs described in Section 5.8, Human Health and Safety, also would help minimize the significance of construction-related water quality impacts.

The County Grading Ordinance and the Drainage Manual would apply to all projects not within a subdivision map, including ministerial development, with a reasonable potential to cause erosion and sedimentation. Subdivisions would be subject to the General Plan policy provisions, as discussed under each alternative. The Grading Ordinance requires development and adherence to BMPs that would restrict sediment runoff from graded sites. Projects 5 acres or greater must prepare a SWPPP to be approved by the Central Valley RWQCB. Construction activities that encompass more than 1 acre of soil disturbance and mineral extractive activities are subject to the new Phase II of the NPDES Permit Program (effective in March 2003) and would be required, as part of the grading permit, to implement BMPs to minimize the amount of pollution- and/or sediment-laden runoff reaching receiving water bodies and minimize the infiltration of pollutants into the groundwater.

No Project Alternative (Alternative #1)

Relevant Goals/Policies—No Project Alternative

The relevant policies included in the 1996 General Plan that are applicable to the No Project Alternative are Policies 5.4.1.2, 7.1.2.1 through 7.1.2.3, 7.2.3.7, 7.2.3.10 and 7.3.1.1, and 7.3.2.1 and 7.3.2.2.

No Project Alternative (2025)—Impact Discussion

This alternative at 2025 would result in development of 14,565 residential units in subdivisions and in Market Areas 1 (El Dorado Hills) and 2 (Cameron Park/Shingle Springs/Rescue) and 6,869 residential units on legal parcels spread throughout the county. Development of commercial/industrial projects to support an estimated 36,188 jobs would also occur with the majority of development in Market Areas 1 (25,255 jobs), 2 (3,861 jobs), 3 (Diamond Springs, 2,880 jobs), and 4 (Placerville, 2,991 jobs) and the rest spread throughout the county.

As stated in Policy 5.4.1.2, discretionary projects would be required to minimize their negative effects on natural drainage patterns. Policy 7.1.2.2 further requires discretionary projects to minimize erosion and sedimentation, conform to natural contours, and maintain natural drainage patterns. Other policies require grading permits and encourage the use of water quality–related BMPs to prevent erosion and siltation. While Policy 7.1.2.1 discourages development on slopes exceeding 40% unless necessary for access, it nevertheless allows for such development. Policy 7.1.2.3 requires that the provisions of the Grading Ordinance be

enforced on all development projects (including subdivisions). Policy 7.2.3.7 requires a special-use permit for all substantial mining operations; these projects would also be subject to the state Surface Mining and Reclamation Act (SMARA), which requires substantial programs for erosion control in mining and reclamation projects (see SMARA §§3704 and 3706), including compliance with RWQCB and SWRCB standards, restrictions on runoff, etc. Policy 7.2.3.10 requires an erosion control plan for smaller mining projects not subject to SMARA.

Given the General Plan policies, the NPDES Permit Program, existing state regulations, and the County's Grading, Erosion, and Sediment Control Ordinance, any developments with the potential to cause erosion would be required to implement BMPs or other sediment control measures, and these measures contain sufficient controls to minimize erosion and sedimentation. This impact is considered less than significant.

No Project Alternative (Buildout)—Impact Discussion

Please refer to No Project Alternative (2025)—Impact Discussion above. While there would be additional construction after 2025 (a projected 8,086 dwellings and development to support 48,172 jobs spread throughout the county), the same measures to control erosion and sedimentation would apply. This impact is considered less than significant.

Roadway Constrained 6-Lane "Plus" Alternative (Alternative #2)

Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative

The relevant policies that are applicable to the Roadway Constrained 6-Lane "Plus" Alternative are Policies CO-1b through CO-1d, CO-3c, and CO-4b.

Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion

The Roadway Constrained 6-Lane "Plus" Alternative at 2025 would result in development of 14,565 units in subdivisions and in Market Areas 1 and 2 and 11,274 units on legal parcels spread throughout the county. Development of commercial/industrial projects to support an estimated 34,455 jobs would also occur with the majority of development in Market Areas 1 (23,789 jobs), 2 (4,085 jobs), 3 (1,143 jobs), and 4 (3,871 jobs) and the rest spread throughout the county.

Policy CO-1b would help minimize erosion and sediment-related impacts by encouraging design and construction that avoids erosion; Policy CO-1c discourages grading activities during the rainy season unless sedimentation impacts are avoided; Policy CO-1d prohibits

grading on slopes exceeding 30% unless it can be demonstrated that erosion and sediment hazards are appropriately minimized; Policy CO-3c buffers around water courses; and Policy CO-4b requires protection of water quality during and following construction.

The existing County and state regulatory and permit programs described above would also help minimize the significance of construction-related impacts and apply to almost all projects requiring ministerial approvals. With implementation of these County and state programs, combined with the policies listed, this impact is considered less than significant.

Roadway Constrained 6-Lane "Plus" Alternative (Buildout)—Impact Discussion

Please refer to Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion above. While there would be additional construction after 2025 (a projected 15,813 dwellings and development to support 52,233 jobs spread throughout the county), the same measures to control erosion and sedimentation would apply. This impact is considered less than significant.

Environmentally Constrained Alternative (Alternative #3)

Relevant Goals/Policies—Environmentally Constrained Alternative

The relevant policies that are applicable to the Environmentally Constrained Alternative are Policies CO-1b, CO-1d, CO-3c, and CO-4b (please refer to the Roadway Constrained 6-Lane "Plus" Alternative above). In addition, Policy CO-1c is applicable to this alternative, but the language is different under this alternative. Whereas Policy CO-1c under the Roadway Constrained 6-Lane "Plus" Alternative discourages grading in the rainy season without appropriate erosion control measures, it is prohibited in the Environmentally Constrained Alternative without implementation of appropriate erosion control measures.

Environmentally Constrained Alternative (2025)—Impact Discussion

The Environmentally Constrained Alternative at 2025 would result in development of 16,737 units in Market Area 1, 5,996 units in Market Area 2 (14,565 of which are existing commitments in Market Areas 1 and 2), 2,326 units in Market Area 3, and 2,317 units in Market Area 4. It is expected that most of this development would occur on subdivided land, including existing commitments. An estimated 4,914 units would be developed in other areas of the county. Development of commercial/industrial projects to support an estimated 34,455 jobs would also occur with the majority of development in Market Areas 1 (26,851 jobs), 2 (6,211 jobs), 3 (3,043 jobs), and 4 (4,665 jobs) and the rest spread throughout the county.

Even though the development under this alternative would be more dense and focused in subdivisions, the impact discussion for the Roadway Constrained 6-Lane "Plus" Alternative also applies to this alternative. The language of the policy pertaining to discouraging versus prohibiting construction during the rainy season is more restrictive and therefore potentially more protective of water quality than the Roadway Constrained 6-Lane "Plus" Alternative. However, all development would still be required to follow the Grading Ordinance, which already requires development of rainy-season mitigation. This impact is considered less than significant.

Environmentally Constrained Alternative (Buildout)—Impact Discussion

Please refer to Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion above. While there would be additional construction after 2025 (a projected 22,788 dwellings and development to support 24,998 jobs spread throughout the county), the same measures to control erosion and sedimentation would apply. This impact is considered less than significant.

1996 General Plan Alternative (Alternative #4)

Relevant Goals/Policies—1996 General Plan Alternative

For the relevant policies of the 1996 General Plan Alternative, please refer to the policies listed above under Relevant Goals/Policies—No Project Alternative.

1996 General Plan Alternative (2025)—Impact Discussion

The 1996 General Plan Alternative at 2025 would result in development of 16,263 units in Market Area 1, 5,776 units in Market Area 2, 3,206 units in Market Area 3, and 1,888 units in Market Area 4. An estimated 5,358 units would be developed in other areas of the county. It is expected that most of this development would occur on subdivided land, including existing commitments. Development of commercial/industrial projects to support an estimated 34,455 jobs would also occur with the majority of development in Market Areas 1 (26,851 jobs), 2 (6,211 jobs), 3 (3,043 jobs), and 4 (4,665 jobs) and the rest spread throughout the county.

Even though the development under this alternative would be more dense and focused in subdivisions, the impact discussion for the No Project Alternative also applies to this alternative. This impact is considered less than significant.

1996 General Plan Alternative (Buildout)—Impact Discussion

Please refer to 1996 General Plan Alternative (2025)—Impact Discussion above. While there would be additional substantial construction after 2025 (a projected 33,984 dwellings and development to support 44,492 jobs spread throughout the county), the same measures to control erosion and sedimentation would apply. This impact is considered less than significant.

Impact **5.5-6**

Increase in Water Pollutants from New Impervious Surfaces and New Urban and Agricultural Uses. All of the equal-weight alternatives would result in additional impervious surfaces and increased runoff from development that is discharged to surface water or infiltrates into groundwater. Certain types of agriculture (particularly wine grapes) may increase, resulting in additional long-term soil exposure and pesticide and fertilizer use. Development under all alternatives would potentially lead to pollutant- and sediment-laden runoff to offsite locations. However, General Plan policies, the SWMP, and applicable regulations require compliance with NPDES requirements, prohibit development adjacent to certain water bodies, and require erosion and sediment control BMPs or other water-quality protection measures. These policies and programs would apply to all nonagricultural development (including ministerial) that disturbs more than an acre. Development on less than an acre is subject to the General Plan policies as well as the SWMP (which also applies to ministerial development). Agricultural runoff is subject to the RWQCB Conditional Waiver of Agricultural Discharges, which precludes discharge from agricultural land of pollutants that could cause adverse environmental effects. As a result, this impact is considered **less than significant** for all alternatives. Impact significance before and after mitigation is presented in the table below.

	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
Impact	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-6: Increase in Water Pollutants from New Impervious Surfaces and New Urban and Agricultural Uses	LS	LS	LS	LS	LS	LS	LS	LS

Mitigation	Significance After Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
N/A	LS	LS	LS	LS	LS	LS	LS	LS

* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.

Impacts Common to All Four Equal-Weight Alternatives

NPDES requirements apply to all projects of a certain size, whether discretionary or ministerial, and include the preparation of SWPPPs that help minimize stormwater runoff and pollution from projects that disturb 5 acres or more. Under the new Phase II NPDES permit program, pollution from smaller projects (disturbing more than 1 acre) would also be subject to stormwater runoff and pollution prevention programs. Further, all alternatives include policies prohibiting development adjacent to certain water bodies. These policies, along with the County's Design and Improvement Standards Manual and Drainage Manual, which require erosion and sediment control measures that are applicable to subdivisions, roadways, and other types of developments, would ensure that projects requiring any applicable permit (building, grading, etc.) would implement BMPs or other water quality protection measures.

The potential BMPs that could be applied are listed in the tentative SWMP, the Grading Ordinance, and the Drainage Manual, and include such features as construction siltation and erosion prevention, use of detention basins and natural filtration systems to capture "first flush" storms, roof runoff controls on buildings, and public education (including storm drain stenciling such as "Flows to Rivers"). For example, at the project design stage, each project is reviewed, under the SWMP, on a site-by-site basis for application of BMPs ranging from slope revegetation to stormwater detention to design of stormwater conveyance facilities. Outdoor storage programs are provided. Provisions are included for stormwater pollution solids removal facilities, etc. The BMPs are specified by project size and type, and are intended to reduce pollutant loading in runoff from all development.

Agricultural land uses that do not require discretionary approval, including raising of livestock at facilities not requiring a NPDES permit, would generally be conditionally exempted from the waste discharge requirements imposed by the Porter-Cologne Act (CVRWQCB 2002, 2003). However, the new conditions for this waiver, adopted in November 2002 by the Central Valley RWQCB, apply to all irrigation return flows and storm runoff from agricultural

fields, require the preparation of an operating/maintenance plan, and are required to result in the implementation of water quality BMPs at such facilities after related monitoring is completed. The specific BMPs still need to be developed and will require that any discharges from agricultural areas will neither cause nor contribute to conditions of pollution or nuisance, or to any exceedances of regional, state, or federal numeric or narrative water quality standards. While this does not guarantee that there will not be water quality impacts from agricultural runoff, it provides an enforcement mechanism to require compliance.

New winery and vineyard operations could cause nonpoint source pollution concerns related to fertilizer and herbicide runoff; however, the new Central Valley RWQCB conditions described above for agricultural operations would help minimize such impacts. Further, it is speculative to assume that pesticide/herbicide use would increase in the future and if so, by what amount. The Central Valley RWQCB also is in the process of adopting new waste discharge requirements (WDRs) that apply to winery storage and disposal of winery wastewater/residual solids; WDRs were adopted March 13, 2003. The RWQCB has indicated that operations in compliance with the new regulations would not have an adverse impact on water quality. Therefore, runoff-related pollution from agricultural land uses is not expected to cause significant water quality impacts because related water quality standards would likely not be violated and water quality would not otherwise be substantially degraded.

No Project Alternative (Alternative #1)

Relevant Goals/Policies—No Project Alternative

The relevant policies included in the 1996 General Plan that are applicable to the No Project Alternative are Policies 2.2.5.14, 2.2.6.5, 3.4.1.1, 5.4.1.1 and 5.4.1.2, 7.3.2.3 and 7.3.2.4, and 7.3.4.1 and 7.3.4.2.

No Project Alternative (2025)—Impact Discussion

The No Project Alternative at 2025 would result in development of 14,565 units in subdivisions and in Market Areas 1 (El Dorado Hills) and 2 (Cameron Park/Shingle Springs/Rescue) and 6,869 units on legal parcels spread throughout the county and subject to ministerial approval. Development of commercial/industrial projects to support an estimated 36,188 jobs would also occur with the majority of development in Market Areas 1 (25,255 jobs), 2 (3,861 jobs), 3 (Diamond Springs, 2,880 jobs), and 4 (Placerville, 2,991 jobs) and the rest spread throughout the county. It would be speculative to determine the amount of impervious land coverage at this level of planning. However, it can be reasonably concluded that subdivisions, which would be developed at higher densities, and employment development, which generally involves

construction of larger facilities and parking lots, would have the most impervious surface and development spread on legal lots would be at lower densities and would have less relative impervious surface.

New impervious surfaces would increase the amount of runoff that flows to offsite locations and is eventually discharged to a surface water body or infiltrated into groundwater. New roadways in areas subject to freezing may indirectly increase the use of salts for ice control. Additional land used for agricultural production would result in additional areas of soil disturbance and pesticide and fertilizer use, potentially leading to pollutant- and sediment-laden runoff flowing to offsite locations. Waste materials accumulated in new animal confinement areas may also be carried by runoff to offsite locations or infiltrated into the groundwater.

Policies 5.4.1.1 and 5.4.1.2 require discretionary projects to minimize erosion and comply with NPDES requirements. Other policies (2.2.5.14, 2.2.6.5, and 7.3.4.1 and 7.3.4.2) discourage development adjacent to certain water bodies, or at least encourage development that would not affect water bodies. These policies, along with the SWMP, the County's Design and Improvement Standards Manual, the Grading Ordinance, and the Drainage Manual, all of which require erosion, sediment, and pollution control measures, are applicable to subdivisions, roadways, and other types of developments. This would ensure that all projects (discretionary or ministerial) would implement BMPs or other water quality protection measures.

Agricultural land uses that do not require discretionary approval, including raising of livestock at facilities not requiring a NPDES permit, would generally be conditionally exempted from the waste discharge requirements imposed by the Porter-Cologne Act (CVRWQCB 2002, 2003). However, the new conditions for this waiver, adopted in November 2002 by the Central Valley RWQCB, apply to all irrigation return flows and storm runoff from agricultural fields, require the preparation of a operations/maintenance plan, and are expected to result in the implementation of water-quality BMPs at such facilities after related monitoring is completed.

New winery and vineyard operations could cause nonpoint-source pollution concerns related to fertilizer and herbicide runoff; however, the new Central Valley RWQCB conditions described above for agricultural operations would help minimize such impacts. New regulations requiring WDRs for winery storage and disposal of winery wastewater/residual solids would reduce potential impacts from these facilities. Therefore, runoff-related pollution from agricultural land uses is expected to cause less-than-significant water quality impacts

because related water quality standards would likely not be violated and water quality would not otherwise be substantially degraded.

No Project Alternative (Buildout)—Impact Discussion

Please refer to No Project Alternative (2025)—Impact Discussion above. There would be additional construction after 2025 (a projected 8,086 dwellings and development to support 48,172 jobs spread throughout the county), but all would be required to comply with regulatory programs aimed at controlling urban runoff pollution. This impact is considered less than significant.

Roadway Constrained 6-Lane "Plus" Alternative (Alternative #2)

Relevant Goals/Policies—Roadway Constrained Alternative

The relevant policies that are applicable to the Roadway Constrained 6-Lane "Plus" Alternative are Policies CO-1b, CO-1d, CO-3a, CO-3c and CO-3d, and CO-4a through CO-4c.

Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion

The Roadway Constrained 6-Lane "Plus" Alternative at 2025 would result in development of 14,565 units in subdivisions and in Market Areas 1 and 2 and 11,274 units on legal parcels spread throughout the county. Legal parcels can be split one time into up to four parcels (if supported by the underlying land use designation), so development would be at a higher density than under the No Project Alternative. Development of commercial/industrial projects to support an estimated 34,455 jobs would also occur with the majority of development in Market Areas 1 (23,789 jobs), 2 (4,085 jobs), 3 (1,143 jobs), and 4 (3,871 jobs) and the rest spread throughout the county.

The policies for this alternative provide for a higher level of water quality protection than those under the No Project Alternative. Policy CO-1b encourages design techniques that would minimize soil erosion during and after construction; Policy CO-1d prohibits development on slopes steeper than 30% unless it can be demonstrated that erosion and sedimentation can be reduced to acceptable levels. Policies CO-3a through CO-3d all require protection and mitigation of impacts of watercourses; and Policies CO-4a through CO-4c all require elimination of reduction of discharges into surface waters. The combination of these policies, NPDES requirements, the SWMP, and the applicable County ordinances (see No Project discussion) would ensure that both discretionary and ministerial development, as well

as agricultural runoff, would not result in significant surface or groundwater quality impacts under this alternative. This impact is considered less than significant.

Roadway Constrained 6-Lane "Plus" Alternative (Buildout)—Impact Discussion

An additional 15,813 residential units and development to support 52,233 new jobs are projected to be developed after 2025. For the same reasons as described above, adequate BMPs and other programs, as well as General Plan policies, would adequately control surface water and groundwater pollution. This impact is considered less than significant.

Environmentally Constrained Alternative (Alternative #3)

Relevant Goals/Policies—Environmentally Constrained Alternative

The relevant policies that are applicable to the Environmentally Constrained Alternative are Policies CO-1b, CO-1d, CO-3a, CO-3c through CO-3d, and CO-4a through CO-4c (please refer to the Roadway Constrained 6-Lane "Plus" Alternative above). In addition, Policy CO-1e applies to this alternative.

Environmentally Constrained Alternative (2025)—Impact Discussion

Please refer to Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion above regarding applicable plans and programs. In addition, Policy CO-1e provides stronger protections for potential runoff from steep slopes by prohibiting discretionary development on slopes 30% or greater in areas having the Important Biological Corridor overlay designation, unless necessary to provide reasonable use of the property or if necessary for the protection of public health and safety. A total of 32,291 dwelling units and development supporting 42,711 jobs are expected. Development would be more concentrated in subdivisions in areas where development in the county has already been focused in Market Areas 1, 2, 3 and 4, and larger areas of the county would be undeveloped. This alternative would cause less-than-significant water quality impacts in both development areas and in areas with agriculture, for the reasons described above under both the general discussion and the Roadway Constrained 6-Lane "Plus" Alternative. This impact is considered less than significant.

Environmentally Constrained Alternative (Buildout)—Impact Discussion

At buildout, an additional 22,788 dwelling units and development to support an additional 25,000 jobs above the 2025 total are forecasted. Please see Roadway Constrained 6-Lane "Plus" (Buildout)—Impact Discussion. This impact is considered less than significant.

1996 General Plan Alternative (Alternative #4)

Relevant Goals/Policies—1996 General Plan Alternative

For the relevant policies of the 1996 General Plan Alternative, please refer to the policies listed above under Relevant Goals/Policies—No Project Alternative.

1996 General Plan Alternative (2025)—Impact Discussion

It is expected that the 1996 General Plan Alternative at 2025 would result in substantial subdivision development and some ministerial development. Development would be concentrated in Market Areas 1, 2, 3, and 4, where 27,133 of the total 32,491 units forecasted by 2025 would be developed, but policies would not discourage development outside of developed areas to the same degree as under the Environmentally Constrained Alternative. Policies included in this alternative, while not as protective as those for either the Roadway Constrained 6-Lane "Plus" or Environmentally Constrained alternatives, would, in combination with the SWMP, NPDES requirements, and relevant County ordinances, be expected to result in less-than-significant water quality impacts. Agricultural development would also be expected to produce less-than-significant water quality impacts for the reasons described in the general discussion above. Overall, this impact is considered less than significant.

1996 General Plan Alternative (Buildout)—Impact Discussion

Please refer to 1996 General Plan Alternative (2025)—Impact Discussion above. This alternative is expected to result in substantially higher densities at buildout than under any other equal-weight alternative, and it generally assumes buildout of all land at maximum designated densities. A total of 78,692 units are projected to be constructed (46,201 after 2025) and 86,688 jobs (44,492 after 2025) could be provided throughout the county. For the reasons described above, this impact is considered less than significant.

Impact **5.5-7**

Increase in Surface Water Pollutants from Additional Wastewater Treatment Plant Discharges. All of the equal-weight alternatives have the potential to cause significant water quality impacts related to the discharge of treated wastewater from EID's WWTPs. The EID Wastewater Collection System Service Area boundary is small relative to the study area and coincides with where "existing commitments" would be developed under each alternative (see Impact 5.5-4). Consequently, flows for each alternative would be somewhat similar. Discharge of treated effluent is highly regulated by the state through

the Central Valley RWQCB. While recent studies have concluded that discharge from these plants does not adversely affect water quality, it is possible that an increase in wastewater flows to the WWTPs could result in significant water quality impacts. The County does not have jurisdiction over EID WWTP expansion. Future expansion of these plants and any mitigation measures needed to reduce those impacts are the responsibility of EID. Therefore, this impact is considered **significant**. Impact significance before and after mitigation is shown in the table below.

	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
Impact	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-7: Increase in Surface Water Pollutants from Additional Wastewater Treatment Plant Discharges	S_1	S_1	S_1	S_1	S_1	S_1	S_1	S_1
	Significance After Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
Mitigation	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-7: Encourage Use of Recycled Water in New Development Served by Public Wastewater Systems	SU_1	SU_1	SU_1	SU_1	SU_1	SU_1	SU_1	SU_1

* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.

Impacts Common to All Four Equal-Weight Alternatives

Section 5.5.2, Wastewater Systems, discussed the general impacts associated with the construction of expanded wastewater treatment facilities. The analysis below focuses on the potential impacts of discharge of treated wastewater to receiving water bodies.

As defined in Table 5.5-14 of Section 5.5.2, all equal-weight alternatives and their associated population and employment growth are expected to lead to a substantial increase in wastewater flows. Such flows within EID's wastewater collection system service area would

need to be treated at EID's El Dorado Hills and Deer Creek WWTPs before they are discharged into Deer Creek and Carson Creek. As discussed in EID's WWMP (EID 2001b), these additional treatment needs along with potential regulatory changes would require capacity expansions and the use of new treatment technologies at both of EID's treatment plants (see Section 5.5.2). EID plans to prepare a related Wastewater Master Plan EIR to address these issues.

As shown in Table 5.5-14 in Section 5.5.2, the El Dorado Hills WWTP has current treatment capacity of 3.0 mgd, treats 1.5 mgd, and is expected to reach its capacity by 2015. Projected flows in 2025 are 4.0 mgd and at buildout are 4.9 mgd. The Deer Creek WWTP has current treatment capacity of 3.6 mgd and flows of 2.4 mgd. Existing capacity is forecasted to be reached by 2025 when flows are expected to be 3.6 mgd. At buildout, flows are projected to be 6.8 mgd. These totals are forecasted to be very similar for each alternative because the service area for the plants generally coincides with the location of existing commitments. There may be minor variations in the total flows between alternatives, particularly at buildout. Both plants treat wastewater to tertiary levels, which is the highest level of treatment afforded and meets state (Title 22) requirements for unrestricted recycled water use.

Flows from the El Dorado Hills WWTP are currently recycled in the summer and released to Carson Creek during the wet season. Flows from the Deer Creek WWTP are mostly discharged to Deer Creek, but some is also used for irrigation and dust control. Given the demand for water in the EID service area and the challenges faced in meeting that demand, and given the overall success of the recycled-water-use program, the demand for use of recycled water in the EID service area is forecasted to grow with the development that generates the flows into the plants. Because recycled water is used almost exclusively for irrigation, demand for recycled water would be highest in the irrigation season and lowest during the rainy season. Flows in the creeks are highest in the rainy season when discharge is also highest.

As discussed above under Regulatory/Planning Environment, discharges of treated wastewater into Deer Creek from the Deer Creek WWTP have resulted in exceedances of the plant's NPDES permit requirements for temperature, pH, and turbidity and the objectives in the Basin Plan. EID and the Central Valley RWQCB have been working together to determine whether new standards for temperature, pH, and turbidity should be applied to Deer Creek. This process has resulted in extensive environmental studies performed to date. As described above under Existing Conditions, these studies have concluded that the current operations at the Deer Creek WWTP are not adversely affecting any beneficial uses of Deer Creek, and two amendments to the Basin Plan and the NPDES permit have been approved by the RWQCB to reflect the specific operations of the Deer Creek WWTP. The SWRCB has approved one of

the amendments and is in the process of considering the other. The El Dorado Hills WWTP has not been subject to any water quality orders and is therefore presumed to be operating within its permit limits and not adversely affecting beneficial uses of Carson Creek.

Because development within the service areas of these two plants cannot proceed under any of the alternatives without capacity to serve it, it is assumed in this analysis that planned and projected improvements to the plants, as described in Section 5.5.2, would be implemented. Tertiary treatment capacity at both plants would be expanded to continue to meet RWQCB requirements, and additional water quality enhancement programs are proposed. Further, the RWQCB is required to protect beneficial uses of water in its consideration of permit conditions when permit renewal is considered and particularly when capacity expansion is proposed. The quantity of treated wastewater that is discharged into Deer Creek and Carson Creek may or may not increase, depending on the future use of recycled water. However, given the current performance of both plants and the NPDES permitting process, it would not be unreasonable to conclude that both plants could be expanded to accommodate forecasted growth and discharge treated wastewater without significantly affecting water quality. Issues that will require close attention are pH, temperature, and turbidity.

EID will be required to conduct full environmental studies under CEQA before expanding either WWTP. At that time the potential impacts of increased flow would be determined and mitigation would be considered, if needed. Mitigation measures are available to address the current permit issues at the Deer Creek WWTP if the Basin Plan amendment issues described above become environmental issues in the future. For instance, cooling towers can address temperature issues, ultraviolet light can address pH issues, and diffusers can address turbidity issues. It is unknown at this time whether expansion of the plants would result in environmental impacts that would need these or any other mitigation measures. Even though there are substantial assurances through the NPDES permit process and CEQA that impacts of future expansion will be fully mitigated, the County is not the lead agency for this expansion and therefore cannot guarantee that future impacts will be avoided or mitigated. For this reason, potential increased flows in Carson Creek and Deer Creek are considered potentially significant both in 2025 and at buildout for all alternatives.

No Project Alternative (Alternative #1)

Relevant Goals/Policies—No Project Alternative

The relevant policies included in the 1996 General Plan that are applicable to the No Project Alternative are Policies 2.2.5.14 and 5.3.1.1.

Additional wastewater-related policies associated with this alternative are listed in the related subsection of Section 5.5.2.

No Project Alternative (2025)—Impact Discussion

Policies 2.2.5.14 and 5.3.1.1 are intended to avoid incompatibility between land uses and encourage connection to wastewater collection facilities in certain areas. Neither address the potential water quality impacts described above. This impact is considered potentially significant.

No Project Alternative (Buildout)—Impact Discussion

Please refer to No Project Alternative (2025)—Impact Discussion above. This impact is considered potentially significant.

Roadway Constrained 6-Lane "Plus" Alternative (Alternative #2)

Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative

The relevant policies that are applicable to the Roadway Constrained 6-Lane "Plus" Alternative are Policies CO-3a, CO-4a, and PS-3b.

Additional wastewater-related policies associated with this alternative are listed in the related subsection of Section 5.5.2.

Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion

The General Plan policies for this alternative provide for protection of water bodies but do not directly address the potential water quality impacts described above, except that they direct the County to identify projects that must use reclaimed water. This policy would help reduce the potential quantity of wastewater discharged to Deer and Carson creeks, but the policy would not eliminate future discharges, nor is that the intent of the policy. The policy is intended to conserve water supply. For the same reasons as described above, this impact is considered potentially significant.

Roadway Constrained 6-Lane "Plus" Alternative (Buildout)—Impact Discussion

Please refer to Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion above. This impact is considered potentially significant.

Environmentally Constrained Alternative (Alternative #3)

Relevant Goals/Policies—Environmentally Constrained Alternative

For the relevant policies of the Environmentally Constrained Alternative, please refer to the policies listed above under Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative.

Environmentally Constrained Alternative (2025)—Impact Discussion

Please refer to Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion above. This impact is considered potentially significant.

Environmentally Constrained Alternative (Buildout)—Impact Discussion

Please refer to Environmentally Constrained Alternative (2025)—Impact Discussion above. This impact is considered potentially significant.

1996 General Plan Alternative (Alternative #4)

Relevant Goals/Policies—1996 General Plan Alternative

For the relevant policies of the 1996 General Plan Alternative, please refer to the policies listed above under Relevant Goals/Policies—No Project Alternative.

1996 General Plan Alternative (2025)—Impact Discussion

Please refer to No Project Alternative (2025)—Impact Discussion above. This impact is considered potentially significant.

1996 General Plan Alternative (Buildout)—Impact Discussion

Please refer to 1996 General Plan Alternative (2025)—Impact Discussion above. This impact is considered potentially significant.

Mitigation Measure 5.5-7: Encourage Use of Recycled Water in New Development Served by Public Wastewater Systems

Mitigation Measure 5.5-7—No Project Alternative

While the Roadway Constrained 6-Lane "Plus" and Environmentally Constrained alternatives both include a policy (Policy PS-3b) aimed at directing the use of reclaimed water for certain projects, this policy is intended to conserve water supply. Currently, reclaimed water is used in the irrigation season. During the wet season, water that could be used for reclaimed water use is discharged to Carson Creek and Deer Creek because there is little to no demand for reclaimed water use (for irrigation) at this time of year and it would need to be stored if it were to be used when demand returns. As described in Section 5.5.1, the potential demand for recycled water exceeds the dry-season demand. The following policy would address this issue, which would reduce the amount of wastewater discharged into Carson Creek and Deer Creek.

The County shall implement the following new policy:

> **New Policy:** The County shall work with EID to support the continued and expanded use of recycled water, including wet-season use and storage, in new subdivisions served by the Deer Creek and El Dorado Hills Wastewater Treatment Plants. To avoid construction impacts of installing recycled water facilities, the County shall encourage the construction of distribution lines at the same time as other utilities are installed. Facilities to consider are recycled water lines for all front yards, parks, schools, and other irrigation needs, and if feasible, wet-irrigation-season storage facilities.

This policy could substantially reduce the quantity of treated wastewater discharged into both Deer Creek and Carson Creek. It could cause secondary environmental impacts such as those related to construction of pipelines, although these impacts would be minimal because facilities would be expected to be constructed in existing rights-of-way or along with other new subdivision construction. There could also be impacts on visual, cultural, biological, and other resources if wet-season storage of recycled water is provided. Typical storage facilities would be steel tanks or reservoirs. It should be noted that reservoirs would need to be sizeable. For instance, if 75% of 2025 wet-season flow from the El Dorado Hills WWTP were to be stored, a reservoir capable of storing in excess of 11,000 af would be required. At a depth of 10 feet, the reservoir would need to be over 1,100 acres (nearly 2 square miles). This would assume extensive future recycled water use, beyond EID projections (see Section 5.5.1). However, the larger the storage facility (or facilities), the greater the potential to avoid water quality impacts. This mitigation may be infeasible because of its probable cost and the need to use the amount of recycled water, and demand may not be sufficient.

Future wastewater discharge-related impacts associated with this alternative have the potential to be significant, and the effectiveness of related mitigation cannot be assured at this time nor

is it entirely within the control of El Dorado County. Therefore, with implementation of this mitigation measure, impacts would be reduced, but not to a less-than-significant level. This impact would remain significant and unavoidable.

Mitigation Measure 5.5-7—Roadway Constrained 6-Lane "Plus" Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. With implementation of this mitigation measure, impacts would be reduced, but not to a less-than-significant level.

Mitigation Measure 5.5-7—Environmentally Constrained Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. With implementation of this mitigation measure, impacts would be reduced, but not to a less-than-significant level.

Mitigation Measure 5.5-7—1996 General Plan Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. With implementation of this mitigation measure, impacts would be reduced, but not to a less-than-significant level.

Impact **5.5-8**

Increase in Groundwater Pollutants from Onsite Wastewater Treatment Systems (OWTS) (Septic Systems). All of the equal-weight alternatives have the potential to cause significant water quality impacts because of the increased use of OWTS. The County's current regulatory program is effective in providing for adequate design and construction of OWTS. There is no program to monitor performance of OWTS, so systems that do not operate adequately could be undetected and produce significant impacts on groundwater quality and, potentially, on surface water features that could be affected by inadequately treated wastewater runoff. Based on estimates of OWTS flows at 2025 and buildout, it is expected that the 1996 General Plan Alternative would produce the greatest amount of flows (at both 2025 and buildout), followed by the Environmentally Constrained, Roadway Constrained 6-Lane "Plus," and No Project alternatives. The more systems there are in operation, the greater the opportunity for a system to fail and go undetected. This impact is considered **significant**. Impact significance before and after mitigation is shown in the table below.

Impact	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-8: Increase in Groundwater Pollutants from Onsite Wastewater Treatment Systems (OWTS) (Septic Systems)	S_4	S_4	S_3	S_3	S_2	S_2	S_1	S_1
Mitigation	**Significance After Mitigation***							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-8: Monitor Performance of Septic Systems Annually	LS	LS	LS	LS	LS	LS	LS	LS

* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.

Impacts Common to All Four Equal-Weight Alternatives

New or expanded onsite septic systems and private community disposal systems would be required to serve the development that would occur outside the service area of EID's wastewater collection system. As shown in Table 5.5-15 of Section 5.5.2, the increase in wastewater flows outside this service area would be substantial under all alternatives. Such flows would need to be treated by OWTS typically installed by individual home or business owners at the time of new construction.

OWTS and private community disposal systems generally do a good job in treating wastewater flows, if properly maintained and sited. However, as shown in Table 5.5-17 below, OWTS do not remove all pollutants from the wastewater stream before they are discharged into soil (the case study results in the table below are only representative of the soil and OWTS treatment conditions where measured). Nitrates, phosphorus, bacteria, viruses, toxic organic compounds, and certain metals are still a concern after OWTS treatment (EPA 2002); thus they have a potential in certain circumstances to reach underlying groundwater, and they could cause public health and environmental risks if they enter groundwater that is pumped in drinking wells, or make their way to surface waters.

As summarized by EPA in its OWTS Manual (EPA 2002): "Public health and environmental risks from properly sited, designed, constructed, and operated septic tank systems appear to be low. However, soils with excessive permeability (coarse-texture soil or soil with large and continuous pores), low organic matter, low pH, low cation exchange capacities, low oxygen-reduction potential, high moisture content, and low temperatures can increase health and environmental risks under certain circumstances." Thus, the amount of pollutants emitted into groundwater from OWTS can vary based upon complex and site-specific soil and temperature characteristics.

While county soils tend to be relatively shallow compared to clay soils found in lower elevations of California, they also tend to be rich in organic matter, and EMD has reported that the county's OWTS are "usually an effective means of treating domestic effluent generally in all situations where parcels are two acres or larger in size." Little scientific evidence exists on the minimum development density needed to minimize health and environmental risks, but it is generally regarded that such risks increase as densities increase (i.e., lot sizes decrease). Nevertheless, as reported in Existing Conditions above, the County adopted a new ordinance in 1999 that is intended to address many, if not all, of these issues.

Methods of developing and applying site-specific OWTS performance requirements to minimize public health and environmental risks are a very complicated topic currently being addressed by the SWRCB as it develops new statewide OWTS regulations. It is not known at this time whether the new regulations will be more restrictive than the County's existing regulations. The new regulations are expected to be more restrictive than those found in most of the state's counties; however, they are expected to facilitate the installation of alternative treatment systems, usually connected to several properties, which discharge much lower levels of pollutants than standard OWTS. In the meantime, the County's existing OWTS guidelines summarized in Regulatory/Planning Environment above will continue to help protect groundwater quality, and there are no reports or other information available to suggest that the County's current ordinance has not been fully protective of groundwater and surface water (Morgan, pers. comm., 2003).

The following County policies, standards, and requirements would apply to OWTS under all alternatives: minimum separation of wells from OWTS facilities, and extensive review and monitoring of OWTS construction to ensure sufficient soil depth and separation of groundwater; the installation of monitoring ports and requirement for between 100% (for residential) and 300% (for commercial/industrial) leach-field replacement areas; minimum lot sizes when both OWTS and private wells will be used; and the testing of water quality in drinking wells when they are first drilled. These policies, standards, and requirements would

all help minimize the potential for future OWTS-related groundwater pollution, especially in the short term.

In the long term, however, as the substantial increase in wastewater discharges from OWTS is realized, the related water quality impacts on groundwater and related public health and sensitive environmental "receptors" could become significant. The reasons for this conclusion are that there is no inspection or monitoring process after installation to ensure that the systems are working as they are designed. Monitoring is then left to individual homeowners/business operators, who may not be as diligent in monitoring and fixing their own systems as would be the case under a formal monitoring program. This could lead to insufficient treatment, inoperable leach fields (even though adequate replacement area is required), contamination of drinking wells and groundwater, and discharge to surface waters. Other uncertainties exist, such as the effect of "endocrine disruptors" that come from the use of pharmaceuticals; however, these issues are speculative at this time, and would only represent an impact if OWTS treatment systems were not designed/operated properly and contact with groundwater or surface water occurred. Because there is no monitoring system in place, the expanded use of OWTS under all alternatives is considered a potentially significant impact.

No Project Alternative (Alternative #1)

Relevant Goals/Policies—No Project Alternative

The relevant policies included in the 1996 General Plan that are applicable to the No Project Alternative are Policies 5.2.3.2, 5.3.1.1 and 5.3.1.2, 5.3.1.4 and 5.3.1.5, and 5.3.2.1 and 5.3.2.2.

No Project Alternative (2025)—Impact Discussion

New or expanded onsite septic systems and private community disposal systems would be required to serve the development that would occur outside the service area of EID's wastewater collection system. As shown in Table 5.5-15 of Section 5.5.2, the increase in wastewater flows outside this service area would be substantial. It is estimated that 4.7 mgd of wastewater are currently treated in the county by OWTS. It is projected that this would grow by 2.1 mgd under the No Project Alternative at 2025 to a total of 6.8 mgd. Such flows would need to be treated by OWTS typically installed by individual home or business owners at the time of new construction, but could also include small community systems in accordance with Policy 5.3.2.3.

As described above, the primary concern of OWTS is the potential for inadequate separation of wastewater and groundwater, and this could occur through poor design, too-close proximity between domestic wells and leach fields or septic tanks, or leach field failure. Based on the data in Table 5.5-17 and other data available from EPA, contact between OWTS wastewater and groundwater could introduce elevated levels of total organic carbon, nitrogen, TDS, or fecal coliform, each of which could cause health or taste concerns in drinking water. The County's Sewage Disposal Ordinance provides for separation of leach-field waste and groundwater, and OWTS facilities and domestic wells, and provides for adequate design monitoring. It does not provide for ongoing monitoring of performance, although design criteria providing for risers with ports in leach fields allow for easy visual inspection (Morgan, pers. comm., 2003). The policies under the No Project Alternative do not address this issue, although Policy 5.3.1.2 ensures that sites smaller than 5 acres with OWTS are required to be served by a public water system. Because there is no program for regular inspection of systems, even though Policy 5.3.2.1 suggests a homeowner education program, it cannot be assured that system failures will be rectified in time to avoid contamination. Therefore, this impact is considered potentially significant.

No Project Alternative (Buildout)—Impact Discussion

Please refer to No Project Alternative (2025)—Impact Discussion above. OWTS wastewater flows are expected to increase by another 0.8 mgd after 2025 to a total OWTS flow of 7.6 mgd. This alternative would cause potentially significant groundwater or surface water quality impacts, as described above, and because there would be more systems in place, the likelihood of failure is greater than in 2025. This impact is considered potentially significant.

Roadway Constrained 6-Lane "Plus" Alternative (Alternative #2)

Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative

The relevant policies that are applicable to the Roadway Constrained 6-Lane "Plus" Alternative are Policies PS-4a through PS-4e.

Roadway Constrained 6–Lane "Plus" Alternative (2025)—Impact Discussion

As shown in Table 5.5-15, the increase in wastewater flows outside the EID service area would be substantial. It is projected that OWTS flow would increase from 4.7 mgd under baseline conditions to 7.2 mgd under this alternative at 2025, an increase of 2.5 mgd. Such flows would need to be treated by OWTS typically installed by individual home or business owners at the time of new construction, but could also include small community systems in accordance with

Policies PS-4b, PS-4d, and PS-4e. There are no policies that would avoid the potential impact associated with not providing for regular monitoring of OWTS performance, as discussed in the general impact discussion. Therefore, this impact is considered potentially significant.

Roadway Constrained 6-Lane "Plus" Alternative (Buildout)—Impact Discussion

For the relevant policies of the Environmentally Constrained Alternative, please refer to the policies listed above under Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative. OWTS wastewater flows could increase by another 1.5 mgd after 2025 to a total OWTS flow of 8.7 mgd. This alternative would cause potentially significant groundwater or surface water quality impacts, as described above, and because there would be more systems in place, the likelihood of failure is greater than in 2025. This impact is considered potentially significant.

Environmentally Constrained Alternative (Alternative #3)

Relevant Goals/Policies—Environmentally Constrained Alternative

For the relevant policies of the Environmentally Constrained Alternative, please refer to the policies listed above under Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative.

Environmentally Constrained Alternative (2025)—Impact Discussion

It is projected that OWTS flow would increase from 4.7 mgd under baseline conditions to 7.8 mgd under this alternative at 2025, an increase of 3.1 mgd. Please refer to No Project Alternative (2025)—Impact Discussion above. This impact is considered potentially significant.

Environmentally Constrained Alternative (Buildout)—Impact Discussion

Please refer to Environmentally Constrained Alternative (2025)—Impact Discussion above. OWTS wastewater flows could increase by another 2.2 mgd after 2025 to a total OWTS flow of 10.0 mgd. This alternative would cause potentially significant groundwater or surface water quality impacts, as described above, and because there would be more systems in place, the likelihood of failure is greater than in 2025. This impact is considered potentially significant.

1996 General Plan Alternative (Alternative #4)

Relevant Goals/Policies—1996 General Plan Alternative

For the relevant policies of the 1996 General Plan Alternative, please refer to the policies listed above under Relevant Goals/Policies–No Project Alternative.

1996 General Plan Alternative (2025)—Impact Discussion

It is projected that OWTS flow would increase from 4.7 mgd under baseline conditions to 7.8 mgd under this alternative at 2025, an increase of 3.1 mgd. Please refer to No Project Alternative (2025)—Impact Discussion above. This impact is considered potentially significant.

No Project Alternative (Buildout)—Impact Discussion

Please refer to 1996 General Plan Alternative (2025)—Impact Discussion above. OWTS wastewater flows could increase by another 4.4 mgd after 2025 to a total OWTS flow of 12.3 mgd a substantial increase over existing flows. This alternative would cause potentially significant groundwater or surface water quality impacts, as described above, and because there would be more systems in place, the likelihood of failure is greater than in 2025. This impact is considered potentially significant.

Mitigation Measure 5.5-8—Monitor Performance of Septic Systems Annually

Mitigation Measure 5.5-8(a)—No Project Alternative

The County shall implement the following policy to ensure that individual OWTS are functioning as designed.

> **New Policy:** EMD shall conduct an annual monitoring program of all septic systems installed since implementation of Ordinance 4542, Chapter 15.32. The program shall include visual inspection of the port/riser facility on each leach field. If the inspection program detects operational problems, an order shall be issued to the system owner to fix the problem within a reasonable time to protect ground and surface water resources, as determined by the Director of EMD.

With implementation of this mitigation measure, coupled with the design requirements for OWTS as imposed by the County, impacts would be reduced to a less-than-significant level

because the standards are protective of water quality and the annual inspection program would ensure that OWTS are operating as they are supposed to operate.

Mitigation Measure 5.5-8—Roadway Constrained 6-Lane "Plus" Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. With implementation of this mitigation measure, impacts would be reduced to a less-than-significant level.

Mitigation Measure 5.5-8—Environmentally Constrained Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. With implementation of this mitigation measure, impacts would be reduced to a less-than-significant level.

Mitigation Measure 5.5-8—1996 General Plan Alternative

Please refer to the proposed mitigation measure for the No Project Alternative above. With implementation of this mitigation measure, impacts would be reduced to a less-than-significant level.

Impact **5.5-9**

Increase in Surface Water Pollutants from Additional Recreational Activities. As a result of increased population under each equal-weight alternative, there is the potential for increased use of recreational facilities such as the backcountry, campgrounds, off-road vehicle trails, and boating. Most of these activities are located on nonjurisdictional lands, such as in Lake Tahoe and on National Forest land. It is not apparent from existing information that significant water quality problems have been created on the west slope by recreational use. Use of the Rubicon Trail has lead to a cease-and-desist order by the RWQCB in Placer County, but this has been rescinded. There are no data to suggest that population increases in El Dorado County would lead to water quality problems associated with use of recreation facilities. This impact is considered **less than significant**. Impact significance is presented in the table below.

Impact	Significance Before Mitigation*							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
5.5-9: Increase in Surface Water Pollutants from Additional Recreational Activities	LS	LS	LS	LS	LS	LS	LS	LS
Mitigation	**Significance After Mitigation***							
	Alt. #1 (No Project)		Alt. #2 (Roadway Constrained 6-Lane "Plus")		Alt. #3 (Environmentally Constrained)		Alt. #4 (1996 General Plan)	
	2025	Buildout	2025	Buildout	2025	Buildout	2025	Buildout
N/A	LS	LS	LS	LS	LS	LS	LS	LS

* Notes: LS = Less than Significant; N/A= Not Applicable; S = Significant; SU = Significant and Unavoidable. Significant impacts are ranked against each other by alternative for the 2025 scenario and the buildout scenario, from 1 (Worst Impact) to 4 (Least Impact). Where the impact under two different alternatives during the same time frame would be roughly equal in severity, the numerical ranking is the same.

Impacts Common to All Four Equal-Weight Alternatives

Recreational activities, such as camping, boating, and off-road vehicle use, can create localized water quality problems if water-quality protection measures are not implemented. Particular problems can occur in water bodies if human waste is not properly disposed.

Use of the Rubicon Trail, which crosses through both El Dorado and Placer counties, has been the subject of considerable concern and was under a cease-and-desist order through Placer County from 1994 to 2002 (rescinded January 9, 2002) because of excess erosion that was discharging to Lake Tahoe. The order was rescinded based on a repair, reconstruction, and water quality improvement program prepared by Placer County with assistance of the Lake Tahoe Hi-Lo's 4-Wheel Drive Club and the "Friends of the Rubicon" (RWQCB Lahontan Region 2002). The trail is nationally known to off-road vehicle enthusiasts. It is also estimated that as much as 75,000 pounds per year of human waste are produced by off-road users, and because of the terrain and remoteness of the area, sanitation facilities are not available leaving waste removal to the trail users (Friends of the Rubicon 2003). This has been a substantial nuisance but has not been known to result in any significant water quality problems. Many of the volunteer organizations that promote off-road use of the Rubicon Trail have embarked on an education program to promote "pack it out" programs.

There are little to no data on whether water quality problems are being created at other recreational water bodies, except Lake Tahoe (see Section 5.14, Lake Tahoe Basin). While often an annoyance, pollution associated with recreational activities has not been reported to violate water quality standards on the west slope, based on review of RWQCB orders and 303(d) lists.

No Project Alternative (Alternative #1)

Relevant Goals/Policies—No Project Alternative

The relevant policies included in the 1996 General Plan that are applicable to the No Project Alternative are Policies 7.3.2.5, and 9.1.3.1 through 9.1.3.3.

No Project Alternative (2025)—Impact Discussion

Under this alternative at 2025, the county's population would increase by 53,610 people. This would result in increased camping, boating, and use of off-road vehicles.

Policy 7.3.2.5 encourages the study and monitoring of water quality and the identification of sources of pollution, potentially including existing recreational activities, as well as proposing means to prevent, control, and treat such pollutants. Implementation of Policy 7.3.2.5 would further reduce the potential for violations of water-quality standards caused by recreational activities and would provide a mechanism for resolution of water-quality problems. While the increased population growth could result in an increase in use of the Rubicon Trail, this is a nationally known and used trail, and population growth in El Dorado County would not necessarily translate to a proportionate increase in use of this trail. The trail has experienced annoyance problems and has been subject to a cease-and-desist order that has been resolved, but it is difficult to tie the increase in population to this nuisance. Therefore, this impact is considered less than significant.

No Project Alternative (Buildout)—Impact Discussion

Please refer to No Project Alternative (2025)—Impact Discussion above. The county's population by buildout is projected to increase by 73,829 people over current levels. For the same reasons as described above, this impact is considered less than significant.

Roadway Constrained Alternative (Alternative #2)

Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative

The relevant policy that is applicable to the Roadway Constrained 6-Lane "Plus" Alternative is Policy CO-3d.

Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion

This alternative includes Policy CO-3c and CO-3d, which provides exceptions to buffer and setback requirements that help reduce water quality impacts. However, this policy also requires the incorporation of water quality–related BMPs into the design of related projects. Therefore, this policy would not lead to significant water quality impacts.

Under this alternative, population would increase by 64,601 by 2025. Please refer to No Project Alternative (2025)—Impact Discussion above. This impact is considered less than significant.

Roadway Constrained 6-Lane "Plus" Alternative (Buildout)—Impact Discussion

Under this alternative, the county's population is projected to increase by 104,137 people by buildout. Please refer to Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion above. This impact is considered less than significant.

Environmentally Constrained Alternative (Alternative #3)

Relevant Goals/Policies—Environmentally Constrained Alternative

For the relevant policy of the Environmentally Constrained Alternative, please refer to the policy listed above under Relevant Goals/Policies—Roadway Constrained 6-Lane "Plus" Alternative.

Environmentally Constrained Alternative (2025)—Impact Discussion

Under the Environmentally Constrained Alternative, the county's 2025 population would increase by 80,730 people over current levels. Please refer to Roadway Constrained 6-Lane "Plus" Alternative (2025)—Impact Discussion above. This impact is considered less than significant.

Environmentally Constrained Alternative (Buildout)—Impact Discussion

Under this alternative, the county's population is projected to increase by 137,688 people over current levels by buildout. Please refer to Environmentally Constrained Alternative (2025)—Impact Discussion above. This impact is considered less than significant.

1996 General Plan Alternative (Alternative #4)

Relevant Goals/Policies—1996 General Plan Alternative

For the relevant policies of the 1996 General Plan Alternative, please refer to the policies listed above under Relevant Goals/Policies—No Project Alternative.

1996 General Plan Alternative (2025)—Impact Discussion

Under this alternative, the county's 2025 population would increase by 81,241. Please refer to No Project Alternative (2025)—Impact Discussion above. This impact is considered less than significant.

1996 General Plan Alternative (Buildout)—Impact Discussion

Under this alternative, the county's population is projected to increase by 196,692 people over current levels by buildout. Please refer to 1996 General Plan Alternative (2025)—Impact Discussion above. This impact is considered less than significant.

TABLES

Table 5.5-1
West Slope Water Demand and Supply Conditions (acre-feet per year)

		EID			GDPUD			GFCSD			Other County Areas [1] —West Slope	Total West Slope:	
		Water Demand [2]	Available Firm Supply [3]	Related Surplus (& Shortages) [4]	Water Demand	Available Firm Supply	Related Surplus (& Shortages)	Water Demand	Available Firm Supply	(Related Shortages)	Water Demand	Water Demand	Surplus (& Shortages)[5]
Baseline/Existing Conditions (1999/2000)		37,095 to 37,806	43,280	6,185 to 5,474	10,956 to 11,068	12,200	1,244 to 1,132	157	144	(13)	7,406	55,614 to 56,437	7,416 to 6,593
No Project Alternative	2025	56,543 to 65,049	43,280	(13,263 to 21,769)	12,030 to 15,277	12,200	170 to (3,077)	197	144	(53)	13,498 to 16,358	82,268 to 96,881	(13,146 to 24,899)
	Buildout	61,645 to 70,151	43,280	(18,365 to 26,871)	13,619 to 18,270	12,200	(1,419 to 6,070)	499	144	(355)	17,263 to 26,948	93,026 to 115,868	(20,139 to 33,296)
Roadway Constrained Alternative	2025	58,682 to 67,188	43,280	(15,402 to 23,908)	12,115 to 15,362	12,200	85 to (3,162)	204	144	(60)	14,326 to 17,186	85,327 to 99,940	(15,377 to 27,130)
	Buildout	66,442 to 74,948	43,280	(23,162 to 31,668)	14,736 to 19,387	12,200	(2,536 to 7,187)	848	144	(704)	19,739 to 29,424	101,765 to 124,607	(26,402 to 39,559
Environmentally Constrained Alternative	2025	62,131 to 70,637	43,280	(18,851 to 27,357)	12,540 to 15,787	12,200	(340 to 3,587)	241	144	(97)	14,913 to 17,773	89,825 to 104,438	(19,288 to 31,041)
	Buildout	69,652 to 78,158	43,280	(26,372 to 34,878)	15,764 to 20,415	12,200	(3,564 to 8,215)	800	144	(656)	18,730 to 28,415	104,946 to 127,788	(30,592 to 43,749)
1996 General Plan Alternative	2025	62,331 to 70,837	43,280	(19,051 to 27,557)	12,496 to 15,743	12,200	(296 to 3,543)	205	144	(61)	15,386 to 18,246	90,418 to 105,031	(19,408 to 31,161)
	Buildout	80,262 to 88,768	43,280	(36,982 to 45,488)	17,418 to 22,069	12,200	(5,218 to 9,869)	1,066	144	(922)	25,053 to 34,738	123,799 to 146,641	(43,122 to 56,279)

[1] "Other County Areas - West Slope" are the portions of the west slope outside the service areas of the three water purveyors. These areas are served by smaller water companies (that depend upon springs and wells) and by private wells. Only water demand is shown because total groundwater supply available for new development is not known due to a lack of available groundwater data (see Sec. 5.5.1). The range in water demand is explained in the next note.

[2] All water demand estimates are from the related and more detailed material provided in Appendix E (EPS 2003 and Wood Rodgers 2003). The Wood Rodgers estimates were conducted for agricultural water demands only and are included in the upper end of the demand estimate ranges shown above. The initial EPS agricultural demand estimates are included in Fig. 21 of EPS 2003 in Appendix E and are included in the lower end of the water demand ranges above. The Wood Rodgers agricultural water demands are based on a land suitability and slope constraints analysis that does not take into account potential financial, institutional and environmental constraints that could limit the expansion of the EID and GDPUD surface water facilities. Such facilities may be needed to serve much of the EID and GDPUD agricultural water demand estimated by Wood Rodgers.

[3] Available supply assumes no new additions to water purveyor systems as they exist under existing/baseline conditions. The available supply estimates for EID and GDPUD are their total system firm yields, and the GFCSD available supply is its total system safe yield. How these purveyors define their firm and safe yields is defined in Sec. 5.5.1.

[4] Shortages and surpluses are the differences between estimated water demands and available supply. The range in estimated shortages is due to the range in estimated water demands discussed in note 2. Some of the shortages may be met with groundwater but most of the shortages will need to be met with surface water delivered by the three west slope water purveyors.

[5] Total west slope surplus and shortages are derived by adding the EID, GDPUD, and GFSCD surplus and shortages together.

Source: EDCWA 2003a, EPS 2003, Wood Rodgers 2003, and EDAW, 2003

Table 5.5-2
Existing EID Water Supply Sources and System Firm Yield (in acre-feet per year)[1]

Source	Firm Yield
Jenkinson Lake	20,450
El Dorado Forebay Reservoir	15,080
Folsom Reservoir	7,550
Crawford Ditch	200
Total System Firm Yield	43,280

[1] Firm yield is defined by EID as the amount of water that is available for use from a source in 95 out of 100 years with existing facilities, while incurring shortages of no more than 20% annually in 5 out of 100 years. The firm yield numbers in this table are derived from modeling.

Sources: EDCWA 2003a

Table 5.5-3
GDPUD Existing Water Demand Characteristics in 2001

Type of Use	Number of Accounts	Total Water Use (acre-feet)
Residential	3,091	1,578
Commercial	124	163
Property Owner Association	--	129
Irrigation	377	4,504
Operational Loss	--	3,257
Authorized Water Sales	--	1,283
Total	--	10,914

Source: GDPUD 2002

Table 5.5-4
El Dorado County Groundwater Water Use in 1995 [1]

Water User Type	Groundwater Withdrawal (million gallons per day)
Public Water Purveyors	7.47
Commercial	0.01
Self-Supplied Residential	1.51
Industrial	0.39
Agriculture	3.16
Total	12.54 (equal to approximately 14,000 afy)

[1] Includes both west slope and Lake Tahoe areas.
Source: USGS 1995

Table 5.5-5
Agricultural Land and Water Use in 2000

Agricultural Land Use	Area (acres)	Water Use (acre-feet)
Vineyard, Christmas trees, olive/citrus, berries, etc.	2,846	—
Pasture, deciduous (fruit trees), other	6,625	—
Total	9,471	11,939

Source: Wood Rodgers 2003 from total of Tables 5.2-6, 5.2-7, 5.2-8

Table 5.5-6
Irrigable Agricultural Land and Water Use for El Dorado Irrigation District

Agricultural Land Use	2000		2010		2025		2050	
	Area (acres)	Water Use (acre-feet)	Area (acres)	Water Use (acre-feet)	Area (acres)	Water Use (acre-feet)	Area (acres)	Water Use (acre-feet)
Vineyard, Christmas trees, olive/citrus, berries, etc.	1,665	2,165	4,300 [1]	5,590	7,650 [2]	9,945	7,650 [2]	9,945
Pasture, deciduous, other	3,626	3,785	3,650	3,800	3,650	3,800	3,650	3,800
Total	5,291	5,950	7,950	9,390	11,300	13,745	11,300	13,745

[1] Assumes approximately 10%-per-year growth for period 2000-2010. The increase in irrigated agriculture is assumed to occur entirely within the agricultural districts.
[2] Assumes all potential irrigable land in agricultural districts is developed.
Notes:
Boundaries of the agricultural districts obtained from County Planning Department in April 2002.
Vineyard unit water use value of 1.3 is assumed to be applied to vineyards, Christmas trees, olive/citrus, berries, etc.

Source: Wood Rodgers 2003

Table 5.5-7
Irrigable Agricultural Land and Water Use for Georgetown Divide Public Utility District

Agricultural Land Use	2000		2010		2025		2050	
	Area (acres)	Water Use (acre-feet)	Area (acres)	Water Use (acre-feet)	Area (acres)	Water Use (acre-feet)	Area (acres)	Water Use (acre-feet)
Vineyard, Christmas trees, olive/citrus, berries, etc.	159 [1]	207	650 [2]	845	2,700 [3]	3,510	3,780 [4]	4,914
Pasture, deciduous, other	2,761	4,144	2,800	4,200	2,800	4,200	2,800	4,200
Total	2,920	4,351	3,450	5,045	5,500	7,710	6,580	9,114

[1] Acreage is derived from county data on acreage with restricted materials permits within GDPUD and based on the assumption that total vineyards would have a similar proportion of restricted materials permits to those in the EID service area.

[2] Assumes approximately 15%-per-year growth for period 2000–2010. The increase in irrigated agriculture is assumed to occur entirely within the agricultural districts.

[3] Assumes approximately 10%-per-year growth for period 2010–2025. The increase in irrigated agriculture is assumes to occur entirely within the agricultural districts.

[4] Assumes all potential irrigable land in agricultural districts is developed.

Notes:
Boundaries of the agricultural districts obtained from County Planning Department in April 2002. Vineyard unit water use value of 1.3 is assumed to be applied to vineyards, Christmas trees, olive/citrus, berries, etc.

Source: Wood Rodgers 2003

Table 5.5-8
Irrigable Agricultural Land and Water Use Outside Purveyors' Boundaries

Agricultural Land Use	2000 [1]		2010		2025		2050	
	Area (acres)	Water Use (acre-feet)	Area (acres)	Water Use (acre-feet)	Area (acres)	Water Use (acre-feet)	Area (acres)	Water Use (acre-feet)
Vineyard, Christmas trees, olive/citrus, berries, etc.	1,022	—	1,400 [2]	1,820	2,200 [2]	2,860	7,450 [3]	9,685
Pasture, deciduous, other	238	—	250	—	250	—	250	—
Total	1,260	1,638 [4]	1,650	1,820	2,450	2,860	7,700	9,685

[1] Acreage is from restricted materials permits.

[2] Assumes approximately 3%-per-year growth for periods 2000-2010 and 2010-2025. The increase in irrigated agriculture is assumed to occur entirely within the agricultural districts.

[3] Assumes approximately 5%-per-year growth for period 2025-2050. The increase in irrigated agriculture is assumed to occur entirely within the agricultural districts.

[4] Estimate. No published records available.

Notes: Boundaries of the agricultural districts obtained from County Planning Department in April 2002. Vineyard unit water use value of 1.3 is assumed to be applied to vineyards, Christmas trees, olive/citrus, berries, etc.

Source: Wood Rodgers 2003

Table 5.5-9
Examples of Impacts that Could Be Caused by EID's Project 184 as Identified in FERC's Related Draft EIS

Types of Potentially Affected Resources	Related and Potential Impacts
Surface Water Hydrology *Lake Operations and Levels*	Three primary operating scenarios were assessed and are the basis of the Draft EIS's hydrology-related impact assessment (these primarily cover recommendations by EID, Alpine County, CDFG, and the USFS). Potential lake levels associated with these scenarios were assessed for Caples, Silver, and Echo Lakes and Lake Aloha. For example, lake levels in Caples Lake would be lower than full pool at the end of June in about 40% to 45% of the years modeled under one scenario, and lower than full pool at the end of June in about 70% of the years modeled under a different scenario. FERC's recommended alternative concludes that the project could continue to be operated in accordance with the existing end-of-the-month lake level targets and limits as they are in Decision 1635, with the following exceptions: (A) Echo Lake would be maintained at a level that provides passage for watercraft between the lakes through Labor Day; and (B) the USFS and CDFG recommendations for maintaining 10,000 af target, and 8,000 af minimum, levels at Caples Lake to ensure it reaches full pool during the recreation season. Potential project effects include continued channel erosion below the Caples Lake spillway and associated sedimentation in Caples Creek, interruption of bedload transport past the El Dorado diversion dam, water quality degradation in the South Fork American River from erosion of slopes down gradient of the El Dorado Canal, and continued degradation of the Oyster Creek channel. Implementation of environmental measures could result in improved sediment transport in Caples Creek, restoration of Caples spill channel and Oyster Creek, and improved water quality and bed transport in the South Fork American River.
Channel Maintenance, Erosion, and Sediment Transport	
Aquatic Resources	Potential project effects include reduction and degradation of fishery and macroinvertebrate habitat in project lakes and affected streams, resulting from reduced streamflows, unseasonably high streamflows, sedimentation, and entrainment. Fish species that could be affected include rainbow trout and brown trout. Implementation of recommended minimum instream flows in project-affected streams would improve habitat for rainbow trout and brown trout; implementation of recommended ramping rates would likely improve aquatic habitat; limitation of unseasonable high flows could reduce displacement of macroinvertebrates and juvenile fish; and screening of intake structures would reduce entrainment of rainbow trout at diversions to the El Dorado canal.
Terrestrial Resources	Potential project effects include the spread of noxious weeds, degradation of riparian habitat, and impacts on sensitive plant and wildlife species. Sensitive plants occur along the penstock and the El

Table 5.5-9
Examples of Impacts that Could Be Caused by EID's Project 184
as Identified in FERC's Related Draft EIS

Types of Potentially Affected Resources	Related and Potential Impacts
	Dorado Canal, including Red Hills soaproot, yellow-bur navarretia, and Pacific yew, and could be affected by maintenance activities. Mountain yellow-legged frog could be affected by fluctuating water levels and presence of brown trout in project lakes; foothill yellow-legged frogs could be affected by reduced and fluctuating stream flows; California spotted owl and northern goshawk could be affected by project maintenance; and mule deer mortality is known to occur in the El Dorado Canal. Implementation of minimum streamflows could increase riparian vegetation and foothill yellow-legged frog habitat. Implementation of other environmental measures would avoid and/or minimize project-related effects on other sensitive species.
Threatened and Endangered Species	No potential effects on threatened and endangered species are identified.
Recreational Resources	Project effects include changes in the quantity or quality of recreation opportunities, primarily fishing and boating in project lakes and project-affected streams. Reduction of lake levels could affect recreational facilities associated with the lakes, such as boat ramps and docks, swimming access, angler locations, recreational residences, resorts, marinas, picnic areas, and campgrounds. Implementation of minimum streamflows and ramping rates would enhance recreational opportunities by providing aesthetic benefits and potential fishery benefits. The recommendation to maintain Echo Lake levels to provide boatable passage through the isthmus connecting the upper and lower lakes between July 1 and Labor Day would enhance recreational opportunities at the lake. Establishment of a public information system for real-time flow information and provision of early information regarding reservoir levels to businesses would also enhance recreational opportunities. A number of additional recommendations would enhance existing recreational facilities and result in development of new facilities.
Land Use	Current land use practices within the project boundary could conflict with USFS Land and Habitat Management Plans (LHMPs). Implementation of the recommendation to develop several resource plans to be consolidated into an overall LHMP would facilitate implementation of the plans and help ensure coordination of resource management.
Aesthetic Resources	Project facilities are visible and can be dominant within the landscape. Implementation of recommendations to address visual effects and consider visual screening would help protect aesthetic resources. Implementation of minimum stream flows would enhance some of the characteristics of project-affected stream reaches that are eligible for Wild and Scenic Rivers designation. Development of proposed recreational enhancements could affect aesthetics of the project area.

Table 5.5-9
Examples of Impacts that Could Be Caused by EID's Project 184 as Identified in FERC's Related Draft EIS

Types of Potentially Affected Resources	Related and Potential Impacts
Cultural Resources	Cultural sites could be affected by fluctuating lake levels, vandalism, recreational activity, artifact collecting, and development of new recreational facilities. Implementation of the recommendation to develop a Historic Properties Management Plan would avoid and/or minimize project-related effects on cultural resources.

Source: FERC 2003 (Draft Environmental Impact Statement for Hydropower License: El Dorado Project No. 184-065, California. Federal Energy Regulatory Commission Office of Energy Products, March 2003.)

Table 5.5-10 Examples of Types of Environmental Impacts That Could Be Caused by the Public Law 101-514 Project	
Surface Water Hydrology	A new GDPUD diversion in the Middle Fork American River would affect the magnitude and timing of flows in this stream. Additional diversions from EID at Folsom Reservoir could affect the lake. Because Folsom Reservoir and the American River are affected by other CVP- and EID-related operations and projects, as well as SWP operations, the project could contribute to cumulative hydrology impacts in a wide range of locations.
Geology and Soils	Construction of a new pumping station and pipeline by GDPUD up the side of the American River canyon would increase erosion and sedimentation from construction activities, and could change sediment transport in streams. Geologic hazards, including the fault line near the Auburn Dam site, could pose a hazard for new facilities and their operators.
Water Quality	The hydrology changes summarized above, or new construction activities, could affect water quality in the Middle Fork American River and Folsom Reservoir, including turbidity, total suspended solids, and other water quality parameters of concern.
Fishery Resources including Special-Status Species	Changes in the amount and quality of fishery habitat in Folsom Reservoir and the Middle Fork American River could occur; potential fish entrainment at the potential river diversion sites and in Folsom Reservoir also is an issue.
Wetlands	A new GDPUD diversion facility, pumping station, and pipeline could affect the function and values of wetlands and other riparian areas.
Botanical Resources including Special-Status Species	Potential effects include loss of sensitive plants, or their potential habitat, that could occur in the vicinity of the pipeline corridor. Sensitive plants, such as Brandegee's clarkia, Layne's butterweed, and Nissenan manzanita could occur in habitats that would be removed or disturbed during pipeline construction or maintenance activities.
Wildlife Resources including Special-Status Species	Sensitive wildlife, such as bald eagle, could be disturbed by construction activities. Valley elderberry longhorn beetle could also be affected if elderberry shrubs are present along the pipeline corridor.
Recreation and Visual Resources	Recreationists along the Middle Fork American River, including fishermen, hikers, and whitewater rafters, would be adversely affected during construction of new facilities, and by noise impacts during the operation of pumping facilities. A new pipeline also would be an adverse visual effect.

Table 5.5-10 Examples of Types of Environmental Impacts That Could Be Caused by the Public Law 101-514 Project	
Agriculture	Some irrigated land or grazing land could be taken out of production where the new GDPUD pipeline is constructed.
Cultural Resources	Historic, prehistoric, and ethnographic resources could all be affected along the Middle Fork American River and where new pipeline and pumping station facilities are constructed and maintained.
Compatibility with Existing Land Uses and Other Policies and Plans	Some new project facilities may not be compatible with surrounding land uses, or may be inconsistent with related federal, state, tribal and local plans and policies.
Power and Energy Resources	Changes in hydrology caused by the project could have an effect on the generation of hydroelectricity at the Folsom Power Plant.
Public Utilities	The routing and siting of a new pipeline could interfere with the operation or maintenance of existing or planned utilities.
Socioeconomic Resources	Water customers of EID and GDPUD would enjoy the socioeconomic benefits associated with a more reliable water supply and related economic growth; however, water rates may need to increase to help pay for new facilities. New diversions by EID and GDPUD could have a negative impact on other water diverters with less senior water rights if they experience supply reductions. Reductions in hydroelectric generation would cause negative socioeconomic impacts, while the construction of new facilities would cause positive impacts.
Air Quality and Noise	Air emissions from construction equipment and maintenance equipment and traffic would occur, and pumping station operation and construction noise would have a negative impact on recreationists and nearby residents.
Transportation	Local roads would experience traffic increases during construction.
Public Health and Safety	Construction activities and siting a new pipeline in the American River canyon could create some safety hazards. Diversion facilities, if not carefully designed, could pose a hazard to rafters and other recreationists.
Growth-Inducing Effects	The project would likely cause growth-inducing impacts, similar to those described in this EIR, for both EID and GDPUD.
Source: EDAW 2003	

Table 5.5-11
Examples of Types of Environmental Impacts That Could Be Caused by Other New Water Supply Projects, Water Rights Transfers, and Related Infrastructure

Types of Potentially Affected Resources	Related and Potential Impacts
Surface Water Hydrology	Changes in the magnitude and timing of flows in affected streams; changes in the level of affected reservoirs and lakes. Potential cumulative effects on the hydrology of Folsom Reservoir, South Fork American River, Middle Fork American River, and possibly other locations including the North Fork Cosumnes River, and Alder and Weber Creeks.
Geology and Soils	Increase in erosion and sedimentation from construction activities; change in sediment transport in streams; geologic hazards could cause problems for new facilities and their operators if they are not sited carefully.
Water Quality	Changes in stream and reservoir/lake temperature, dissolved oxygen, turbidity, total suspended solids, and other water quality parameters of concern during construction and operation of new facilities.
Fishery Resources including Special-Status Species	Change in the amount and quality of fishery habitat in affected streams and reservoirs/lakes, and potential fish entrainment at possible diversion sites in lakes and streams. Related effects on the number and distribution of both game species (primarily trout in upper elevations and both bass and trout in lower elevations) and non-game species, including suckers, dace, and hardhead.
Wetlands and Riparian Habitat	Changes in the amount or functions and values of various types of wetlands from the construction of new facilities, or in riparian areas from changes in the operation of reservoirs/lakes and changes in streamflows. Riparian habitat could be affected by hydrology changes or new construction and is especially important habitat for wildlife and botanical species.
Botanical Resources including Special-Status Species	Disturbance to rare plants and their habitat and other types of vegetation from construction activities or changes in hydrology along streams and at reservoirs and lakes; species of concern include a wide variety of special status flora including Pleasant Valley mariposa lily and Oregon fireweed and others associated with the gabbro soil type (see text and exhibits of Section 5.12, Biological Resources for an overview of the botanical species found in the county).
Wildlife Resources including Special-Status Species	Changes in the amount and quality of affected wildlife habitat near affected reservoirs/lakes, and streams and where appurtenant facilities would be located. Potentially affected species include bald eagles, red-legged frogs, mule deer, yellow-legged frogs, northern goshawk, and various species of bats (see

Table 5.5-11
Examples of Types of Environmental Impacts That Could Be Caused by Other New Water Supply Projects, Water Rights Transfers, and Related Infrastructure

Types of Potentially Affected Resources	Related and Potential Impacts
	text and exhibits of Section 5.12, Biological Resources for an overview of the wildlife species found in the county).
Recreation	Changes in the quantity or quality of recreation opportunities, including fishing, boating, hiking, and whitewater rafting at affected reservoirs/lakes and in affected streams; some impacts could also occur during construction and operation of new conveyance, treatment, storage, and pumping facilities.
Visual Resources	Changes in reservoir/lake levels, and streamflows and the addition of new project facilities could affect the visual environment. New pipelines, pumping stations, or transmission lines near or in residential areas or highly visited areas would cause negative impacts.
Agriculture	Some irrigated land or grazing land could be taken out of production at new or enlarged reservoir sites or where project conveyance facilities need to be located. The availability of surface water supplies for agricultural uses could increase.
Cultural Resources	Historic, prehistoric, and ethnographic resources could be affected by hydrology changes or the construction and maintenance of new facilities.
Compatibility with Existing Land Uses and Other Policies and Plans	Some new project facilities may not be compatible with surrounding land uses, or may be inconsistent with related federal, state, tribal and local plans and policies (including those of the USFS, USFWS, and CDFG).
Power and Energy Resources	Changes in hydrology caused by new projects could increase or decrease the generation of hydroelectricity, and affect available hydropower capacities. New pumping stations and project construction, operation, and maintenance would increase energy use.
Mineral Resources	New or enlarged reservoirs or other project facilities could interfere with the extraction of minerals at known or yet-to-be-discovered mineral sites.
Public Utilities	The routing and siting of new project facilities could interfere with the operation or maintenance of existing or planned public utilities, including communication and energy infrastructure.
Socioeconomic Resources	Customers of the water purveyors and others would enjoy the socioeconomic benefits associated with a more reliable water supply and related economic growth. Water rates would likely increase to help pay for new facilities. New diversions by west-slope purveyors could have a negative impact on other water diverters with less senior water rights if they experience supply

Table 5.5-11
Examples of Types of Environmental Impacts That Could Be Caused by Other New Water Supply Projects, Water Rights Transfers, and Related Infrastructure

Types of Potentially Affected Resources	Related and Potential Impacts
	reductions. Facility construction would cause short-term and beneficial employment and income impacts. Energy or mineral impacts would also cause related socioeconomic effects.
Air Quality and Noise	Air emissions from construction equipment and traffic and loud noises could occur during the construction phase of new projects. New pumping stations would likely cause adverse noise impacts for nearby residents and recreationists.
Transportation	Local roads would experience traffic increases during construction and possibly from increases in recreation traffic that could be associated with new recreation facilities constructed as mitigation or part of a project.
Public Health and Safety	Construction activities could create some safety hazards and the construction of new or enlarged reservoirs would change flood inundation zones and risks, especially for residents living in the floodplains of new or enlarged dams.
Growth-Inducing Effects	New system infrastructure and water supply projects would likely cause growth-inducing impacts, such as the growth-related impacts described throughout this EIR.

Source: EDAW 2003

Table 5.5-12 Examples of the Types of Impacts That Could Be Caused by Lining or Piping Canals, Ditches or Streams	
Hydrology and Water Supply	Water supplies for water purveyors and their customers would increase and the flows in hydrologically connected canals/ditches/streams could be affected; groundwater recharge would be reduced.
Wetlands and Riparian Areas	As water losses are reduced, wetlands and riparian habitat that depend on these sources would be adversely impacted. Wetland functions and values would change and diminish.
Botanical Resources	Sensitive plants, such as Layne's butterweed, Pleasant Valley mariposa lily, Nissenan manzanita, and Parry's horkelia, could occur along the canals and would be adversely affected.
Wildlife Resources	Sensitive birds, such as California spotted owl and Northern goshawk, could nest in the vicinity of the ditches, and active nests could be disturbed by construction activity. Lining of the ditches with concrete would make them more difficult for animals to escape from and could increase mule deer mortality.
Visual and Recreation	The trees, wetlands, and other riparian habitat along the canals serve as important visual and, in some cases, recreation resources for local residents. A loss of trees, wetlands, and other habitat would be an adverse visual and recreation impact.
Socioeconomics	Property values along and near the canals could decline from adverse visual impacts and a loss of "greenery."
Public Health and Safety	Public health and safety would likely improve near the canals as hazards to children and others would diminish, and mosquitoes that carry diseases would have less breeding habitat.
Source: EDAW 2003	

Table 5.5-13
Potential Groundwater Demand Increases in West Slope Areas Not Served by Public Water Purveyors

	Existing Conditions (1999 Baseline)	2025 Conditions	Difference Between 2025 and Existing Conditions	Buildout Conditions	Difference Between Buildout and Existing Conditions
No Project Alternative					
Total Residential Groundwater Demand (afy)	10,218	16,352	6,134	19,486	9,268
Total Employment Groundwater Demand (afy)	5,043	14,563	9,520	27,424	22,381
Total Agricultural Water Demand (afy)	—	2,860	2,860	9,685	9,685
Total Groundwater Demand (afy)	15,261	33,775	18,514	56,595	41,334
Roadway Constrained 6-Lane "Plus" Alternative					
Total Residential Groundwater Demand (afy)	10,218	17,639	7,421	23,042	12,824
Total Employment Groundwater Demand (afy)	5,043	14,036	8,993	27,549	22,506
Total Agricultural Water Demand (afy)	—	2,860	2,860	9,685	9,685
Total Groundwater Demand (afy)	15,261	34,535	19,274	60,276	45,015
Environmentally Constrained Alternative					
Total Residential Groundwater Demand (afy)	10,218	18,199	7,981	23,194	12,976
Total Employment Groundwater Demand (afy)	5,043	16,308	11,265	21,795	16,752
Total Agricultural Water Demand (afy)	—	2,860	2,860	9,685	9,685
Total Groundwater Demand (afy)	15,261	37,367	22,106	54,674	39,413
1996 General Plan Alternative					
Total Residential Groundwater Demand (afy)	10,218	19,103	8,885	31,650	21,432
Total Employment Groundwater Demand (afy)	5,043	15,427	10,384	27,549	22,506
Total Agricultural Water Demand (afy)	—	2,860	2,860	9,685	9,685
Total Groundwater Demand (afy)	15,261	37,390	22,129	68,884	53,623

Note: The data provided above are for residential, employee, and agricultural water demand outside the service areas of EID, GDPUD, and GFCSD and on the county's west slope. It is assumed that major additions to the service-area boundaries of these purveyors would not occur during the General Plan's planning horizon; therefore, the water demand estimates presented above would need to be served by groundwater. The agricultural water demands, summarized above and estimated by Wood Rodgers (see Wood Rodgers 2003 in Appendix E), represent the maximum amount of agricultural water demand that may need to be met by groundwater. As explained in Section 5.5.1, the Wood Rodgers estimates are based on the suitability of available land to be used for agricultural purposes and it is not known how much groundwater is available to meet related agricultural water demand.

Sources: EPS 2003, Wood Rodgers 2003

Table 5.5-14
Wastewater Flows and Treatment Capacity in the EID Wastewater Collection System Service Area
(average dry-weather flows in millions of gallons per day) [1]

	2000	2010	2020	2025	Buildout
El Dorado Hills Wastewater Treatment Plant Service Area					
Existing Treatment Plant Capacity	3.0	3.0	3.0	3.0	3.0
Existing and Projected Wastewater Flows	1.5	2.5	3.5	4.0	4.9
Difference Between Treatment Capacity and Flows [2]	1.5	0.5	(0.5)	(1.0)	(1.9)
Deer Creek Wastewater Treatment Plant Service Area					
Existing Treatment Plant Capacity	3.6	3.6	3.6	3.6	3.6
Existing and Projected Wastewater Flows	2.4	2.9	3.4	3.6	6.8
Difference Between Treatment Capacity and Flows [2]	1.2	0.7	0.2	0	(3.2)

[1] The projections summarized in this table are based on existing and projected development projects within the EID wastewater collection system service area shown in Exhibit 5.5-4.

[2] The El Dorado Hills WWTP is expected to reach its full capacity around 2015, while the Deer Creek WWTP is expected to reach its full capacity around 2025.

Sources: EID 2001b; Hammer and Kontonickas, pers. comm., 2003.

Table 5.5-15
Existing and Projected Wastewater Flows Outside the EID Collection System Service Area
(Total OWTS flows in millions of gallons per day)

	Existing Conditions (1999 Baseline)	2025 Conditions	Difference Between 2025 and Existing Conditions	Buildout Conditions	Difference Between Buildout and Existing Conditions
No Project Alternative	4.7	6.8	2.1	7.6	2.9
Roadway Constrained 6-Lane "Plus" Alternative	4.7	7.2	2.5	8.7	4.0
Environmentally Constrained Alternative	4.7	7.8	3.1	10.0	5.3
1996 General Plan Alternative	4.7	7.8	3.1	12.3	7.6

The estimates above are rough approximations of wastewater flows for comparative purposes only. These estimates are based on data in Table 4-5 and data from EID 2001b. The estimates were made assuming there will not be any major expansions in EID's collection system service area (Eden-Bishop, pers. comm., 2003). A wastewater flow factor of 240 gallons per day per "Equivalent Dwelling Unit" (EDU) is used. EDUs and fractions/multiples of EDUs are applied to all land use types, including residential and non-residential uses.

Table 5.5-16
Beneficial Uses of Water Bodies in and Downstream of El Dorado County

Surface Water Bodies[1]	Agriculture			Industry			Recreation			Freshwater[3] Habitat		Migration		Spawning			
	MUN	AGR		PROC	IND	POW	REC 1		REC 2	WARM	COLD	MIGR		SPWN		WILD	NAV
	Municipal and Domestic Supply	Irrigation	Stock Watering	Process	Service Supply	Power	Contact	Canoeing[3] and Rafting	Other Noncontact	Warm	Cold	Warm[4]	Cold[3]	Warm[4]	Cold[3]	Wildlife Habitat	Navigation
Central Basin Plan Sub-Area 5-A																	
American River																	
Middle Fork, source to Folsom Lake	●	●	●			●	●	●	●	□	●				●	●	
Desolation Valley Lakes							●		●		●				●	●	
Auburn Reservoir (proposed)	□	□				□	□		□		□				□	□	
South Fork																	
Source to Placerville	●					●	●	●	●	□	●				●	●	
Placerville to Folsom Lake	●	●				●	●	●	●	●	●					●	
Folsom Lake	●	●			□	●	●		●	●	●			●		●	
Central Basin Plan Sub-Area 5-B																	
Cosumnes River																	
Sources to Nashville Reservoir (Proposed)	●	●				●	●		●		●				●	●	
Nashville Reservoir (proposed)	□					□	□		□	□	□	□		□	□	□	

● = Existing Beneficial Uses
□ = Proposed Beneficial Uses

[1] Those streams not listed have the same beneficial uses as the streams, lakes, or reservoirs to which they are tributary.
[2] Shown for streams and rivers only, with the implication that certain flows are required for this beneficial use.
[3] Resident does not include anadromous. Any segments with both COLD and WARM beneficial use designations will be considered COLD water bodies for the application of water quality objectives.
[4] Striped bass, sturgeon, and shad.
[5] Salmon and steelhead.

Note: Surface waters with the beneficial uses of Groundwater Recharge (GWR), Freshwater Replenishment (FRSH), and Preservation of Rare and Endangered Species (RARE) have not been identified in this plan. Surface waters of Basins 5A, 5B, and 5C falling within these beneficial use categories will be identified in the future as part of the continuous planning process to be conducted by the State Water Resources Control Board.

Source: Regional Water Quality Control Board, Central Valley Region Basin Plan, 1990 (Updated June 2, 1993, Planning Department).

Table 5.5-17
Examples of OWTS Effluent and Soil Water Quality

Parameter/Pollutant and Measurement Unit	Mean	Range
Total Organic Carbon (mg/L)		
Septic Tank Effluent:	47.4	31–68
In Soil 4 Feet Below Drain Field Infiltration Point	8.0	3.1–25.0
Total Kjeldahl Nitrogen (mg/L)		
Septic Tank Effluent:	44.2	19–53
In Soil 4 Feet Below Drain Field Infiltration Point	0.77	0.25–2.10
Total Dissolved Solids (mg/L)		
Septic Tank Effluent:	497	354–610
In Soil 4 Feet Below Drain Field Infiltration Point	355	200–592
Fecal Coliforms (log # per 100 mL)		
Septic Tank Effluent:	4.57	3.6–5.4
In Soil 4 Feet Below Drain Field Infiltration Point	nd	<1

Notes: mg/L = milligrams per liter; mL = milliliters; nd = none detected

Source: EPA 2002