10 HYDROLOGY AND WATER QUALITY

INTRODUCTION

This chapter describes the regulatory and environmental setting for hydrology, drainage, and water quality at the project site, and presents an analysis of impacts related to these resources from implementation of the proposed project. This chapter also includes an evaluation of flooding and potential adverse changes to groundwater conditions.

ENVIRONMENTAL SETTING

SURFACE WATER RESOURCES

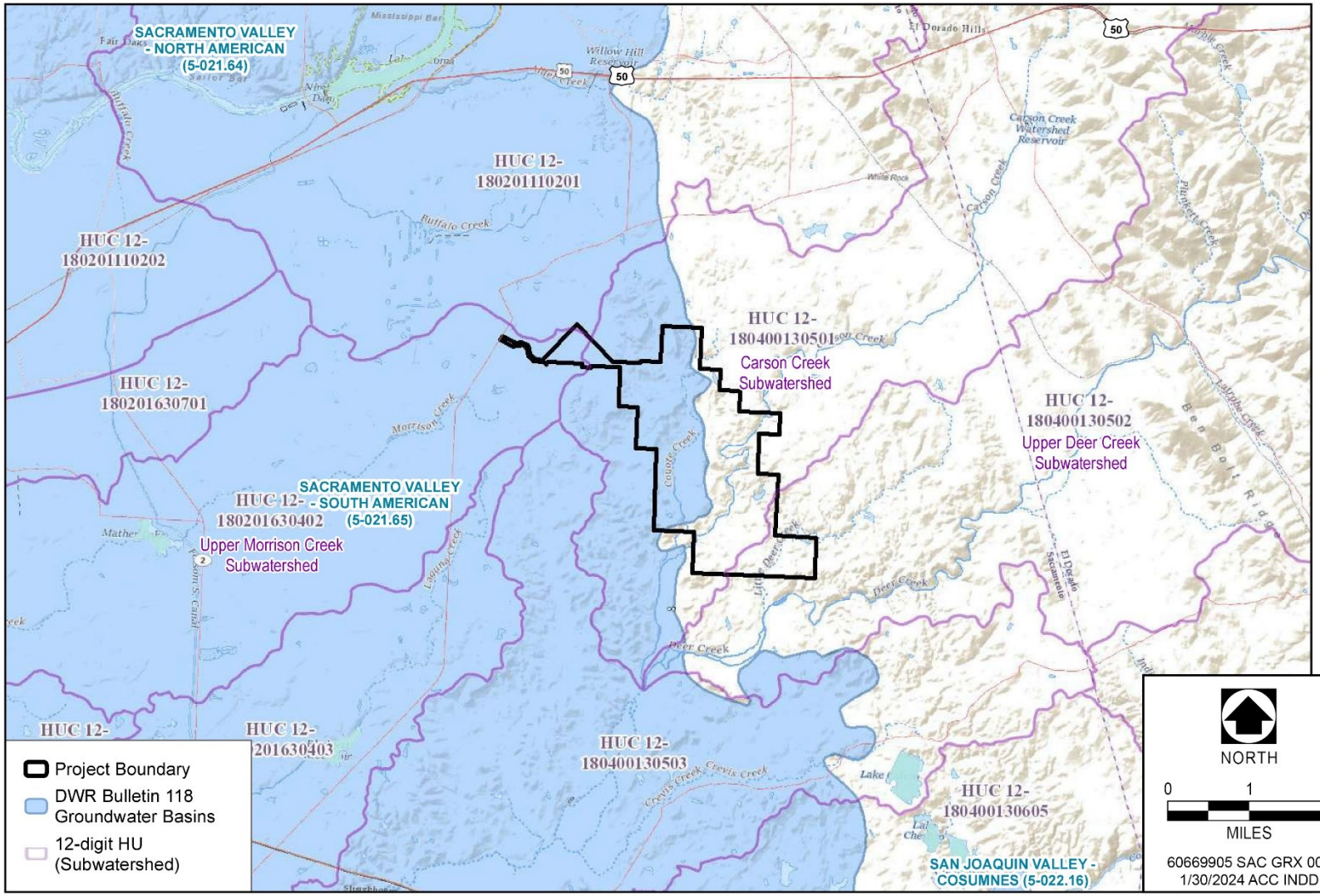
WATERSHEDS AND DRAINAGE

The project site is situated primarily within the gently rolling foothills at the western margin of the Sierra Nevada. The northwestern corner of the project site is situated at the eastern margin of the Sacramento Valley. The project site is covered with grassland and scattered oak trees. Elevations range from 170 to 275 feet above mean sea level. The climate in the project region is Mediterranean, characterized by hot, dry summers, and cool, moist winters. Most precipitation occurs from November through April.

The project site is within portions of three different surface water subwatersheds: Upper Morrison Creek (in the northwest corner), Carson Creek (most of the project site), and Upper Deer Creek (in the southeast corner) (see Plate HYD-1). Coyote Creek, Carson Creek, and Little Deer Creek, along with several tributaries thereto, all flow through the project site from north to south. Coyote Creek discharges into Carson Creek just southeast of the project site; Carson Creek and Little Deer Creek both discharge into Deer Creek at the same point approximately 1.5 miles south of the project site. Deer Creek continues to flow southwest generally parallel to and north of the Cosumnes River for several miles, eventually discharging into the Lower Cosumnes River just before the State Route 99 overcrossing.

Scott Road, which runs through the project site, has an existing bridge crossing over Carson Creek and a culvert crossing over Little Deer Creek. The bridge crossing consists of an approximately 18-inch deck with four, 15-inch piers. The culvert crossing consists of an approximately 50-foot-long, 60-inch-wide corrugated metal pipe. These are the only existing drainage facilities within the project site. Throughout the site, stormwater sheet flows via overland flow from areas that are topographically higher into the topographically lower creeks and tributaries, which flow south-southwest.

Plate HYD-1: Surface Watersheds and Groundwater Basins



Source: Dudek 2024b, adapted by AECOM in 2024

WATER QUALITY

Section 303(d) of the federal Clean Water Act (CWA) requires each state to periodically prepare a list of all surface waters in the state for which beneficial uses of the water (e.g., drinking, recreation, aquatic habitat, and agricultural use) are impaired by pollutants. Beneficial uses for waters in the project region are contained in the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins* (Basin Plan), updated and adopted by the Central Valley Regional Water Quality Control Board (RWQCB) in 2019.

As described previously, the creeks that flow through the project site discharge into the Lower Cosumnes River. The Basin Plan designates the following beneficial uses for the Cosumnes River: municipal and domestic supply, agricultural irrigation, stock watering, water contact and non-contact recreation, warm and cold freshwater habitat, warm and cold migration of aquatic organisms, warm and cold spawning habitat, and wildlife habitat (Central Valley RWQCB 2019). Applying the Central Valley RWQCB's "tributary rule," the beneficial uses of any specifically identified water body generally also apply to all its tributaries, including all of the waterbodies listed above.

Section 303(d) of the CWA also requires states to identify waters where the permit standards, any other enforceable limits, or adopted water quality standards are still unattained. The law requires states to develop Total Maximum Daily Loads (TMDLs) to improve the water quality of impaired water bodies. TMDLs are the quantities of pollutants that can be safely assimilated by a water body without violating water quality standards. TMDLs are developed for impaired water bodies to maintain beneficial uses, achieve water quality objectives, and reduce the potential for future water quality degradation. National Pollutant Discharge Elimination System (NPDES) permits for water discharges (for both construction and operation) must take into account the pollutants for which a water body is listed as impaired.

Table HYD-1 lists impaired water bodies in the project region included in the State Water Resources Control Board's (SWRCB) 303(d) list that could receive runoff from the proposed project, the pollutants of concern, and whether they have approved TMDLs. Even if a specific stream is not included in the SWRCB's 303(d) list, any upstream tributary to a 303(d)-listed stream could contribute pollutants to the listed segment (for example, Coyote Creek and Little Deer Creek).

Table HYD-1: Section 303(d) List of Impaired Water Bodies

Impaired Water Body	Pollutant	Pollutant Source	TMDL Status
Carson Creek (Serrano Parkway to Deer Creek)	Assessed, but not listed		
Deer Creek (El Dorado and Sacramento Counties)	Assessed, but not listed		
Cosumnes River, Lower (below Michigan Bar)	Indicator Bacteria	Unknown	Still in process (was expected in 2021)
Cosumnes River, Lower (below Michigan Bar)	Invasive Species	Unknown	Still in process (was expected in 2019)
Cosumnes River, Lower (below Michigan Bar)	Mercury	Unknown	Expected in 2033
Cosumnes River, Lower (below Michigan Bar)	Dissolved Oxygen	Unknown	Expected in 2035
Cosumnes River, Lower (below Michigan Bar)	Toxicity	Unknown	Expected in 2035

Source: SWRCB 2022

Notes: TMDL = total maximum daily load

Flooding

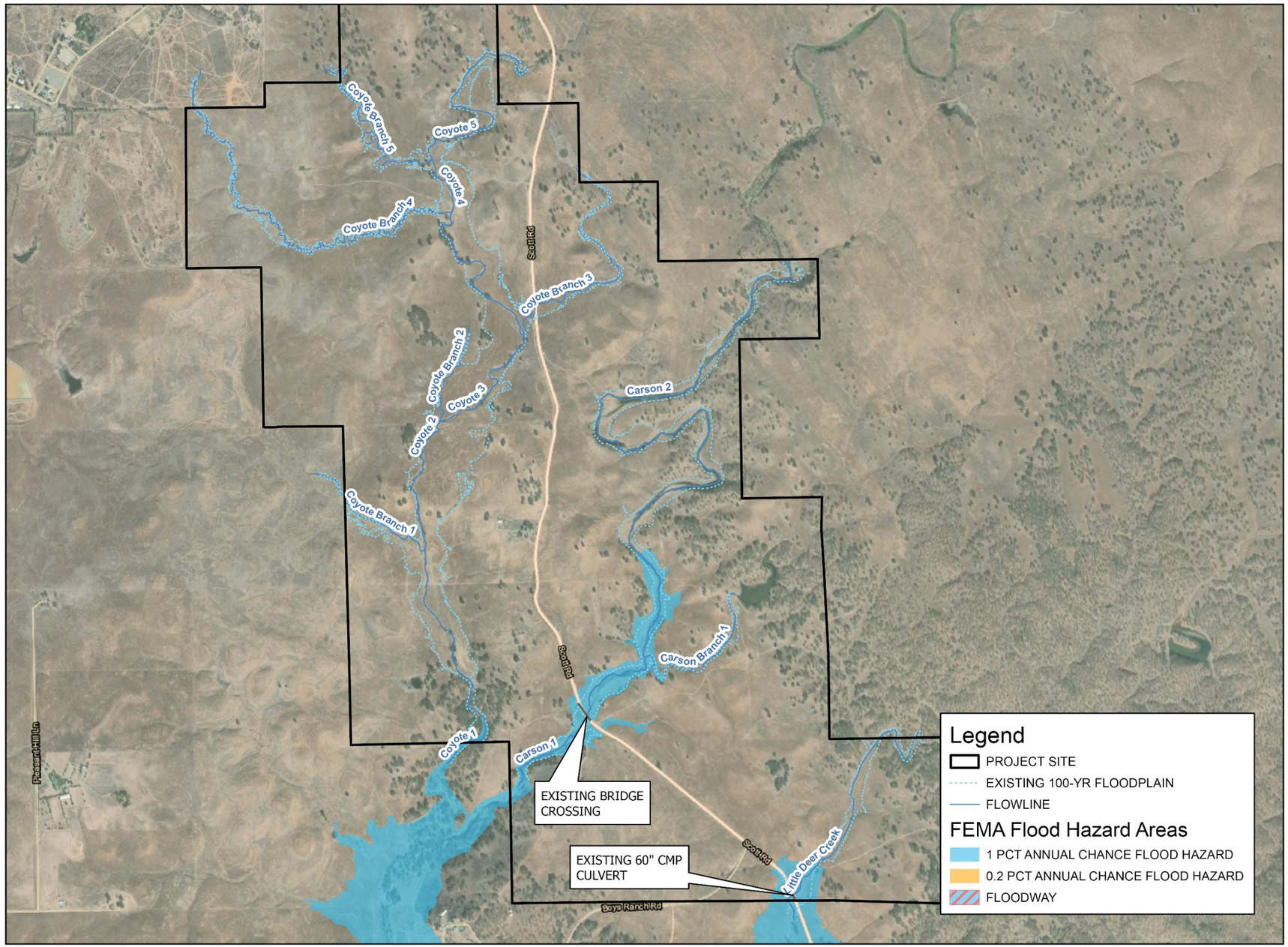
A review of Flood Insurance Rate Maps (FIRMs) created by the Federal Emergency Management Agency (FEMA) indicate that only two small areas of the project site have been mapped by FEMA: a portion of Carson Creek upstream and downstream from the Scott Road bridge overcrossing, and a portion of Little Deer Creek upstream and downstream from the Scott Road culvert crossing (FEMA 2012, 2018) (see Plate HYD-2). Because there are a variety of streams and tributaries that flow through the project site and because the project includes 28 proposed stream crossings for internal roadway access, hydraulic modeling was performed by Kimley Horn (2023a) to determine the existing 100-year flood potential for the reaches of Coyote Creek, Carson Creek, Little Deer Creek, and their tributaries that flow through the project site. The 100-year floodplains under existing conditions, based on the results of hydraulic modeling, are shown in Plate HYD-2.

The project site is not located within the 200-year floodplain and therefore is not subject the Urban Level of Flood Protection requirements contained in the Central Valley Flood Protection Plan (California Department of Water Resources [DWR] 2024).

Erosion and Runoff Potential

Most soils can be categorized into hydrologic soil groups (which apply only to surface soil layers) based on runoff-producing characteristics. Hydrologic soil groups are factored into calculations of erosion potential when drainage plans are prepared. Based on a review of U.S. Natural Resources Conservation Service (NRCS) soil data, all of the project site soils are classified as either hydrologic Group D or C, which consist of soils with a very high and high stormwater runoff potential, respectively (NRCS 2023, Kimley Horn 2023a).

Plate HYD-2: Existing Conditions 100-Year Floodplain



Source: Kimley Horn 2023a, adapted by AECOM in 2024

Groundwater Resources

The project site includes an existing, operational shallow groundwater well (with a depth of 35 feet) in the Coyote Creek floodplain that provides water for the on-site ranch house; this well has been known to go dry in the past during periods of drought. There are two other non-operational groundwater wells near the ranch house. There are additional exploratory boreholes located within the solar development area that were associated with past exploratory mine activities. These boreholes provide another potential source of on-site groundwater east of Scott Road in older Mesozoic Bedrock (Dudek 2024a). An additional (non-operational) groundwater well associated with a former homestead is present across Scott Road from the ranch house. Finally, the operational groundwater supply well for the Prairie City State Vehicular Recreation Area (SVRA) is immediately adjacent to and north of the solar development area, on the north side of the existing paved Prairie City SVRA access road. There are also numerous Aerojet groundwater extraction and treatment wells and groundwater monitoring wells within and near the project site (Dudek 2021).

As shown in Plate HYD-1, the project site is situated in two different groundwater resource areas. The eastern boundary of the South American Groundwater Subbasin shown on Plate HYD-1 was delineated based on the underlying geology; it represents the eastern edge of the aquifer within this portion of the Sacramento Valley. East of this boundary, the underlying geology transitions from primarily (younger) alluvial deposits in a sedimentary basin, too much older bedrock units within the western foothills of the Sierra Nevada. This boundary, or contact zone, runs through the project site from north to south. Therefore, groundwater on the project site occurs under two different hydrogeologic conditions: in younger Cenozoic units in the western and northern portions of the project site, and in older Mesozoic bedrock within fractures or poorly permeable units in the eastern and southern portions of the project site.

Groundwater in the younger Cenozoic units in the western and northern portions of the project site is held with deposits that comprise the Ione Formation, portions of the Mehrten Formation, and Quaternary undivided alluvial deposits (Dudek 2024b). Because these younger Cenozoic units are situated within the boundary of the Sacramento Valley Groundwater Basin, South American Subbasin as delineated by DWR (Basin ID 5-021.65), groundwater in this area is subject to the requirements of the Sustainable Groundwater Management Act (SGMA), and is therefore managed by several local Groundwater Sustainability Agencies under the adopted *South American Groundwater Subbasin Groundwater Sustainability Plan* (GSP) (Sacramento Central Groundwater Authority et al. 2022).

The DWR determined that the South American Subbasin is a high priority basin, but is not in a condition of critical overdraft (DWR 2019). On July 27, 2023, DWR approved the South American Subbasin GSP under the Sustainable Groundwater Management Act (DWR 2023). As described in the South American Subbasin GSP, groundwater management in the South American Subbasin has been occurring for decades. Stable groundwater conditions in terms of groundwater levels, storage volume, and interconnected surface waters have been achieved due to a variety of historically

implemented projects and management actions. The GSP determined, based on thorough analysis of the best available information, that the South American Subbasin will be sustainable over the next 20 years as long as planned recycled water, recharge, and other projects are implemented. These projects will raise groundwater levels above current levels, maintain storage volumes, and protect ecosystems, interconnected surface water, and shallow well users. The South American Subbasin GSP includes the following goals:

- Maintain the long-term average groundwater extraction rate at or below 273,000 acre-feet/year (equivalent to the sustainable yield set by the Water Forum Agreement);
- Maintain specific groundwater elevations within all areas of the basin consistent with the Water Forum Agreement;
- Protect against any potential inelastic land surface subsidence by limiting subsidence to no more than 0.007 feet per 1 foot of drawdown in the groundwater basin; and
- Protect against any adverse impacts to surface water flows in the American, Cosumnes, and Sacramento rivers.

Groundwater Quality

As described in the South American Subbasin GSP, groundwater quality in the South American Subbasin is generally of good quality and meets local needs for municipal, domestic, and agricultural uses (Sacramento Central Groundwater Authority et al. 2022). Notable exceptions include the Aerojet contaminated groundwater plume, a portion of which underlies the northwestern portion of the project site. Another smaller contaminated groundwater plume associated with the former White Rock Dump is immediately adjacent to the northwest corner of the project site at Grant Line Road. Groundwater quality issues associated with these contaminant plumes are addressed in Chapter 9, “Hazards and Hazardous Materials,” of this EIR.

Regulatory Setting

Federal

Clean Water Act

The CWA (33 U.S.C. Section 1251 et seq.) is the primary federal law that governs and authorizes water quality control activities by the U.S. Environmental Protection Agency (EPA), the lead federal agency responsible for water quality management. By employing a variety of regulatory and non-regulatory tools, including establishing water quality standards, issuing permits, monitoring discharges, and managing polluted runoff, the CWA seeks to restore and maintain the chemical, physical, and biological integrity of surface waters to support the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water.

EPA is the federal agency with primary authority for implementing regulations adopted pursuant to the CWA, and has delegated the State of California as the authority to implement and oversee most of the programs authorized or adopted for CWA compliance through the Porter-Cologne Water Quality Control Act of 1969, described below.

WATER QUALITY CRITERIA AND STANDARDS

Pursuant to federal law, EPA published water quality regulations under Volume 40 of the Code of Federal Regulations (CFR). Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the CWA, water quality standards consist of two elements: (1) designated beneficial uses of the water body in question, and (2) criteria that protect the designated uses. Section 304(a) requires EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. Section 303(d) requires states to develop lists of the water bodies and associated pollutants that exceed water quality criteria.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT PROGRAM, SECTION 402

The NPDES permit program was established as part of the CWA to regulate municipal and industrial discharges to surface waters of the U.S. Federal NPDES permit regulations have been established for broad categories of discharges, including point source municipal waste discharges and nonpoint source stormwater runoff. NPDES permits generally identify limits on the concentrations and/or mass emissions of pollutants in effluent discharged into receiving waters; prohibitions on discharges not specifically allowed under the permit; and provisions that describe required actions by the discharger, including industrial pretreatment, pollution prevention, self-monitoring, and other activities.

More specifically, the discharge prohibitions and limitations in an NPDES permit for wastewater treatment plants are designed to ensure the maintenance of public health and safety, protection of receiving water resources, and safeguarding of the water's designated beneficial uses. Discharge limitations typically define allowable effluent quantities for flow, biochemical oxygen demand, total suspended matter, residual chlorine, settleable matter, total coliform, oil and grease, pH, and toxic pollutants. Limitations also typically encompass narrative requirements regarding mineralization and toxicity to aquatic life.

In November 1990, EPA published regulations establishing NPDES permit requirements for municipal and industrial stormwater discharges. Phase I of the permitting program applied to municipal discharges of stormwater in urban areas where the population exceeded 100,000 persons.[1] Phase II of the NPDES stormwater permit regulations became effective in March 2003 and required NPDES permits be issued for construction

[1] Phase I also applies to storm water discharges from a large variety of industrial activities, including general construction activity if the project would disturb more than 5 acres.

activity for projects that disturb between one and five acres. Phase II of the municipal permit system (i.e., known as the NPDES General Permit for Small Municipal Separate Storm Sewer Systems [Small MS4s], Order No. 2003-0005-DWQ as amended by 2013-0001-DWQ) required small municipality areas of less than 100,000 persons (hereinafter called Phase II communities) to develop stormwater management programs.

California's RWQCBs are responsible for implementing the NPDES permit system (refer to additional details in the subsection "State Regulations," below).

SECTION 401 WATER QUALITY CERTIFICATION OR WAIVER

Under Section 401 of the CWA, an applicant for a Section 404 permit (to discharge dredged or fill material into waters of the U.S.) must first obtain a certificate from the appropriate agency stating that the fill is consistent with the State's water quality standards and criteria. In California, the authority to either grant water quality certification or waive the requirements is delegated by the SWRCB to the nine regional boards. Water quality in Sacramento County, including the project site, is under the jurisdiction of the Central Valley RWQCB.

SECTION 303(D) IMPAIRED WATERS LIST

Under Section 303(d) of the CWA, states are required to develop lists of water bodies that would not attain water quality objectives after implementation of required levels of treatment by point source dischargers (municipalities and industries). Section 303(d) requires that the state develop a TMDL for each of the listed pollutants. The TMDL is the amount of loading that the water body can receive and still be in compliance with water quality objectives. The TMDL is also a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. EPA must either approve a TMDL prepared by the state or disapprove the State's TMDL and issue its own. NPDES permit limits for listed pollutants must be consistent with the waste load allocation prescribed in the TMDL. The goal of the TMDL program is that, after implementation of a TMDL for a given pollutant on the 303(d) list, the causes that led to the pollutant's placement on the list would be remediated.

FEDERAL ANTIDEGRADATION POLICY

The Federal Antidegradation Policy (40 CFR 131.12) is designed to protect existing water uses, water quality, and national water resources. The federal policy directs states to adopt a statewide policy to protect and maintain water quality for existing in-stream uses and waters of exceptional recreational or ecological significance.

FEDERAL EMERGENCY MANAGEMENT AGENCY NATIONAL FLOOD INSURANCE PROGRAM

The FEMA administers the National Flood Insurance Program (NFIP, 42 U.S.C. 4016[a]) to provide flood insurance to individuals within communities that adopt and enforce NFIP regulations that limit development in floodplains; federally-backed flood insurance is only available within NFIP communities. FEMA also develops and issues FIRMs that identify which land areas are subject to flooding. Flood hazard zones in the community are identified within the FIRMs, at the minimum, for the 1-in-100 annual exceedance

probability flood event and sometimes other flood events. The design standard for flood protection covered by the FIRMs is established by FEMA with the minimum level of flood protection for new development determined to be the 1-in-100 AEP (i.e., the 100-year flood event). As developments are proposed and constructed, FEMA is also responsible for issuing revisions to FIRMs, such as Conditional Letters of Map Revision (CLOMR) and Letters of Map Revision (LOMR) through the local agencies that work with the National Flood Insurance Program.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) of 1969 is California's statutory authority for the protection of water quality. Under the 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. Regional authority for planning, permitting, and enforcement is delegated to the nine RWQCBs. The RWQCBs are required to formulate and adopt water quality control plans for all areas in the region and establish water quality objectives in the plans. The Porter-Cologne Act sets forth the obligations of the SWRCB and RWQCBs to adopt and periodically update the basin plans. The Central Valley RWQCB regulates water quality in Sacramento County, including the project site.

Basin plans are the regional water quality control plans required by both the CWA and Porter-Cologne Act in which beneficial uses, water quality objectives, and implementation programs are established for each of the nine regions in California. The act also requires waste dischargers to notify the RWQCBs of such activities through the filing of Reports of Waste Discharge (RWD) and authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements (WDRs), NPDES permits, CWA Section 401 water quality certifications, or other approvals. The RWQCBs also have authority to issue waivers to RWD requirements and WDRs for broad categories of "low threat" discharge activities that have minimal potential for adverse water quality effects when implemented according to prescribed terms and conditions.

State Water Resources Control Board

SWRCB and its nine RWQCBs administer water rights and enforce pollution control standards throughout the state. SWRCB is responsible for granting of water right permits and licenses through an appropriation process following public hearings and appropriate environmental review by applicants and responsible agencies. In granting water right permits and licenses, SWRCB must consider all beneficial uses, including water for downstream human and environmental needs. In addition to granting the water right permits needed to operate new water supply projects, SWRCB also issues water quality-related certifications to developers of water projects under Section 401 of the CWA.

WATER QUALITY CONTROL PLAN FOR THE SACRAMENTO AND SAN JOAQUIN RIVER BASINS (BASIN PLAN)

The *Water Quality Control Plan (Basin Plan) for the Sacramento and San Joaquin River Basins* (Central Valley RWQCB 2019) identifies the beneficial uses of water bodies and provides water quality objectives and standards for waters of the Sacramento and San Joaquin hydrologic regions. State and federal laws mandate protecting designated "beneficial uses" of water bodies. State law defines beneficial uses as "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" (Water Code Section 13050[f]).

The beneficial uses of any specifically identified water body generally apply to all tributary streams to that water body. Those water bodies not specifically designated for beneficial uses in the Basin Plan are assigned the Municipal and Domestic Supply (MUN) use, in accordance with the State Water Board Resolution No. 88-63. Although specific surface waters have not been identified for groundwater recharge or freshwater replenishment in the Basin Plan, these additional protected beneficial uses are designated in the Basin Plan. Unless otherwise designated by the Central Valley RWQCB, all groundwater is considered suitable or potentially suitable for municipal or domestic water supply (MUN).

The Basin Plan describes a set of designated beneficial uses for each water body. Beneficial uses help to define the resources, services, and qualities of the aquatic systems. Beneficial uses also serve as a basis for establishing water quality objectives and discharge prohibitions. The Basin Plan contains specific numeric water quality objectives that are applicable to each water body or portions of water bodies. Objectives have been established for bacteria, dissolved oxygen, pH, pesticides, electrical conductivity, total dissolved solids, temperature, turbidity, and trace elements. Numerous narrative water quality objectives have also been established. Finally, the Basin Plan contains a set of implementation plans, which represent the Central Valley RWQCB's programs and specific plans of action for meeting water quality objectives and protecting beneficial uses.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT SYSTEM

WASTE DISCHARGE REQUIREMENTS FOR CONSTRUCTION

The SWRCB's statewide stormwater general permit for construction activity (Order WQ 2022-0057-DWQ, NPDES Permit No. CAS000002) is applicable to all construction activities that would disturb one acre of land or more (SWRCB 2022). Construction activities subject to the general construction activity permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce non-stormwater discharges to storm sewer systems and other waters.

Through the NPDES and WDR process, SWRCB seeks to ensure that the construction and post-construction conditions at a project site do not cause or contribute to direct or indirect impacts on water quality (i.e., pollution and/or hydromodification) upstream and downstream. To comply with the requirements of the Construction General Permit, project

applicants must file a notice of intent with the SWRCB to obtain coverage under the permit; prepare a Storm Water Pollution Prevention Plan (SWPPP); and implement inspection, monitoring, and reporting requirements appropriate to the project's risk level as specified in the SWPPP. The SWPPP includes a site map, describes construction activities and potential pollutants, and identifies Best Management Practices (BMPs) that would be employed to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources, such as petroleum products, solvents, paints, and cement. Construction activities subject to the general construction activity permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce non-stormwater discharges to storm sewer systems and other waters. The permit also requires dischargers to consider the use of post-construction permanent BMPs that will remain in service to protect water quality throughout the life of the project. All NPDES permits also have inspection, monitoring, and reporting requirements.

Sustainable Groundwater Management Act

In 2014, the California Legislature enacted a three-bill law (Assembly Bill [AB]1739, Senate Bill [SB] 1168, and SB 1319), known as the SGMA. The SGMA was created to provide a framework for the sustainable management of groundwater supplies, and to strengthen local control and management of groundwater basins throughout the state with little state intervention. The SGMA is intended to empower local agencies to adopt groundwater sustainability plans that are tailored to the resources and needs of their communities, such that sustainable management would provide a buffer against drought and climate change, and ensure reliable water supplies regardless of weather patterns. The SGMA and corresponding regulations require that each high- and medium-priority groundwater basin is operated to a sustainable yield, balancing natural and artificial groundwater recharge with groundwater use to ensure undesirable results such as chronic lowering of groundwater levels, loss of storage, water quality impacts, land subsidence, and impacts to hydraulically connected streams do not occur. The SGMA is considered part of the statewide, comprehensive California Water Action Plan that includes water conservation, water recycling, expanded water storage, safe drinking water, and wetlands and watershed restoration. The SGMA protects existing surface water and groundwater rights and does not affect current drought response measures.

California's 515 groundwater basins are classified into one of four categories; high-, medium-, low-, or very low-priority based on components identified in the California Water Code Section 10933(b). Basin priority determines which provisions of California Statewide Groundwater Elevation Monitoring and the SGMA apply in a basin.

The SGMA requires that local agencies form one or more GSAs within two years (i.e., by June 30, 2017). The SGMA requires local agencies to develop and implement groundwater sustainability plans in high- and medium-priority groundwater basins throughout the State of California. Groundwater sustainability plans are not required for low- or very low-priority basins. Agencies located within high- or medium-priority basins

were required to adopt GSPs by January 31, 2020, or January 31, 2022, respectively.[2] Local agencies will have 20 years to fully implement GSPs after the plans have been adopted. Intervention by the SWRCB would occur if a GSA is not formed by the local agencies, and/or if a GSP is not adopted or implemented.

The South American Subbasin is a high-priority basin. A GSP for the South American Subbasin has been prepared (Sacramento Central Groundwater Authority et al. 2022), and has been approved by DWR.

LOCAL

SACRAMENTO COUNTY GENERAL PLAN

The *Sacramento County General Plan of 2005–2030* (Sacramento County 2011, as updated in 2017 and 2019) includes the following policies related to hydrology and water quality that apply to the proposed project.

CONSERVATION ELEMENT

Policy CO-7: Support the Water Forum Agreement Groundwater Management Element. Prior to approving any new development, a water supply plan shall be approved that demonstrates consistency with an adopted groundwater management plan.

Policy CO-8: Applicants proposing developments in areas with significant groundwater recharge characteristics shall evaluate the impact of said development on groundwater recharge and quality. This evaluation should recognize criteria defined in any broader Countywide determination and/or evaluation of groundwater recharge areas.

Policy CO-23: Development approval shall be subject to a finding regarding its impact on valuable water-supported ecosystems.

Policy CO-25: Support the preservation, restoration, and creation of riparian corridors, wetlands and buffer zones.

Policy CO-26: Protect areas susceptible to erosion, natural water bodies, and natural drainage systems.

Policy CO-28: Comply with other water quality regulations and NPDES permits as they apply to County projects or activities, such as the State's Construction General Permit and Aquatic Pesticides Permit.

[2] Unless the local agency has submitted an Alternative as defined in the SGMA which has been approved by DWR.

Policy CO-31: Require property owners to maintain all required stormwater measures to ensure proper performance for the life of the project.

Policy CO-33: Support an adequate and reliable Municipal and Industrial (M&I) water supply for development.

Policy CO-35: New development that will generate additional water demand shall not be approved and building permits shall not be issued if sufficient water supply is not available, as demonstrated by a Water Supply Assessment and Written Verification processes.

Policy CO-53: Encourage BMPs and appropriate soil conservation practices regularly utilized by farmers and ranchers.

Policy CO-71: Development design shall help protect natural resources by:

- Minimizing total built development in the floodplain, while designing areas of less frequent use that can support inundation to be permitted in the floodplain.

Policy CO-93: Discourage fill in the 100-year floodplain.

Policy CO-94: Development within the 100-year floodplain and designated floodway of Sacramento streams, sloughs, creeks or rivers shall be:

- Consistent with policies to protect wetlands and riparian areas; and
- Limited to land uses that can support seasonal inundation.

Policy CO-95: Development within the 100-year floodplain should occur in concert with the development of the Floodplain Protection Zone.

Policy CO-107: Maintain and protect natural function of channels in developed, newly developing, and rural areas.

Policy CO-112: The use of concrete and impervious materials is discouraged where it is inconsistent with the existing adjacent watercourse and overall ecological function of the stream.

Policy CO-113: Encourage revegetation of native plant species appropriate to natural substrate conditions and avoid introduction of nonindigenous species.

Policy CO-114: Protect stream corridors to enhance water quality, provide public amenities, maintain flood control objectives, preserve and enhance habitat, and offer recreational and educational opportunities.

Policy CO-118: Development adjacent to waterways should protect the water conveyance of the system, while preserving and enhancing the riparian habitat and its function.

Policy CO-123: The use of native plant species shall be encouraged on revegetation plans.

Policy CO-126: Prohibit obstruction or underground diversion of natural waterways.

SAFETY ELEMENT

Policy SA-5: A comprehensive drainage plan for major planning efforts shall be prepared for streams and their tributaries prior to any development within the 100-year floodplain, and/or the 200-year floodplain in areas subject to the Urban Level of Flood Protection, defined by full watershed development without channel modifications. The plan shall:

a. Determine the elevation of the future 100-year flood, and/or the 200-year flood in areas subject to the Urban Level of Flood Protection, associated with planned and full development of the watershed;

b. Determine the boundaries of the future 100-year floodplain, and/or the 200-year floodplain in areas subject to the Urban Level of Flood Protection, for both flood elevations (planned and full development) based on minimum 2-foot contour intervals;

c. Assess the feasibility of gravity drainage into the existing flowline of the stream;

d. Assess the feasibility of alternative means of drainage into the stream;

e. Identify potential locations for sedimentation ponds and other stormwater treatment facilities;

f. Determine practical channel improvements and/or detention basins to provide the flood control needs of the proposed development;

g. Determine the location and extent of marsh, vernal pool and riparian habitat;

h. Develop measures for protecting and mitigating natural habitat;

i. Develop measures for protecting and mitigating for federal and state-listed endangered species;

j. Develop and ensure implementation of measures that would reduce vector larvae;

k. Identify appropriate plant species to be included as part of the natural features of the comprehensive drainage plan.

Policy SA-14: The County shall require, when deemed to be physically or ecologically necessary, all new urban development and redevelopment projects to incorporate runoff control measures to minimize peak flows of runoff and/or assist in financing or otherwise implementing Comprehensive Drainage Plans.

Policy SA-15: The County shall regulate, through zoning and other ordinances, land use and development in all areas subject to potential flooding and prohibit urban uses on unprotected flood land.

Policy SA-22a: Sacramento County will evaluate development projects and all new construction located within a defined Flood Hazard Zone (FHZ) to determine whether the 200-year Urban Level of Flood Protection or 100-year FEMA flood protection applies, and whether the proposed development or new construction is consistent with that standard. Prior to approval of development projects or new construction subject to either standard, the appropriate authority must make specific finding(s) related to the following:

a. Urban Level of Flood Protection standard (200-year) applies to projects in a Flood Hazard Zone that meet certain criteria, developed by the State of California Department of Water Resources, related to urbanization, watershed size, and potential flood depth.

b. Federal Emergency Management Agency (FEMA) standard of protection (100-year) applies to projects in a Special Flood Hazard Area that are not subject to the Urban Level of Flood Protection.

Policy SA-22b: New development shall be elevated as required by the applicable flood standards (100-year, or 200-year in areas subject to the Urban Level of Flood Protection) and should be constructed to be resistant to flood damage consistent with the Floodplain Management Ordinance.

Sacramento County Land Grading and Erosion Control Ordinance

Sacramento County Municipal Code Title 16, Chapter 16.44, was enacted to minimize water quality degradation, minimize damage to and disruption of drainage flows, and to comply with the County's NPDES MS4 Permit (where applicable). A Grading and Erosion Control Permit from the County is required if a project involves grading, filling, excavation, storage, or disposal of 350 cubic yards or more of soil or other earthen material, or if a project requires clearing and grubbing of one acre or more of land. Agricultural cropland is exempt from this requirement. The permit application must include copies of all applicable state and federal permits (such as CWA Section 404 permits for fill of wetlands), and proposed grading plans that include the following information (among other requirements):

- location of all watercourses, wetlands, and drainage systems;
- location of all roads and structures;
- proposed grading, slopes, and elevation shown by contours;
- quantity of material to be excavated;
- location, implementation schedule, and maintenance schedule of all erosion control measures and sediment control measures to be implemented or constructed prior to, during, or after the proposed activity;
- description of measures designed to control dust and stabilize the construction site road and entrance; and
- description of the location and methods of storage and disposal of construction materials.

Sacramento County Floodplain Management Ordinance

Sacramento County Municipal Code Title 16, Chapter 16.02, Section 16.02.060 (Ordinance SZC-2016-0023) requires a Floodplain Management Permit for any new construction, substantial improvements, or alteration of land within a special flood hazard area (FEMA Zones A, AO, Al-A30, AE, A99, AH, or AR). These standards control filling, grading, and other development which may increase flood damage; and are intended to prevent or regulate the construction of flood barriers that would unnaturally divert flood waters, or which may increase flood hazards in other areas. Per Ordinance SZC-2016-0023, Section 905-01, a project applicant must apply for a development permit for construction in a FEMA flood zone, and approval by the County's floodplain administrator is required. The permit application must include plans showing elevations of proposed structures and the elevations of areas proposed for materials and equipment storage; the proposed elevation in relation to mean sea level, of the lowest floor of all structures; the proposed elevation in relation to mean sea level to which any structure will be floodproofed; the location, volume, and depth of proposed fill and excavation within the 100-year floodplain and floodway; and a description of the extent to which any watercourse will be altered or relocated as a result of project development.

Per Ordinance SZC-2016-0023, Section 906-05, commercial solar power plants are treated as development (governed by Section 906-06), and any structures or electrical panels for such facilities must be elevated or floodproofed at least 1.5 feet above the base flood elevation and designed and anchored in accordance with the standards of Section 906-06. A declaration of land use restriction in a format approved by County Counsel must be recorded if any part of the commercial solar development will be lower than 1.5 feet above the base flood elevation.

IMPACTS AND ANALYSIS

SIGNIFICANCE CRITERIA

Based on Appendix G of the State CEQA Guidelines, the proposed project would have a significant impact related to hydrology and water quality if it would:

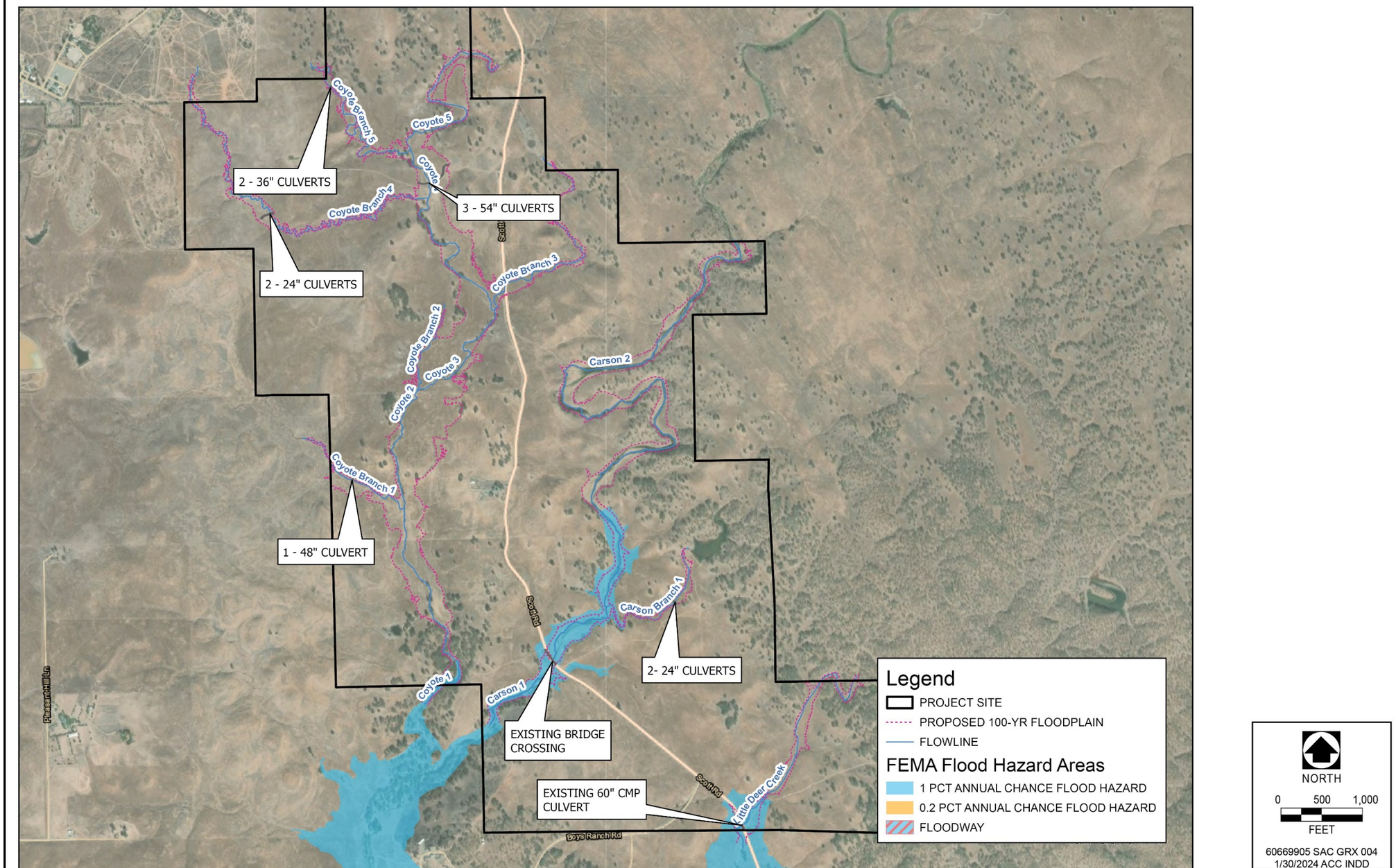
- violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;
- substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
  - i) result in substantial erosion or siltation on- or off-site;
  - ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
  - iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
  - iv) impede or redirect flood flows;
- in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or
- conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

ISSUES NOT DISCUSSED FURTHER

Risk Release of Pollutants from Inundation in a Tsunami, Seiche, or Flood Hazard Zone—The project site is approximately 92 miles from the Pacific Ocean and therefore is not located in a tsunami hazard zone. There are no waterbodies near the project site large enough to represent a seismic seiche hazard.

The only FEMA 100-year floodplains are situated along the streambed of Carson Creek and Little Deer Creek (Plate HYD-2 and Plate HYD-3). Narrow, site-specific 100-year floodplains have also been found to be present along the smaller, upstream reaches of Carson Creek and Little Deer Creek, as well as Coyote Creek and its tributaries (Plate HYD-2 and Plate HYD-3). Temporary construction staging areas and construction trailers would be located outside of the FEMA and outside of the locally modeled 100-year floodplains.

Plate HYD-3: Proposed Conditions 100-Year Floodplain



Source: Kimley Horn 2023a, adapted by AECOM in 2024

During project operation, the proposed substation, switchyard, BESS, and maintenance yard, along with all of the solar panels (which would be mounted to poles anchored into the ground via steel piers), would be outside of the FEMA and locally modeled 100-year floodplains (Kimley Horn 2023c). Thus, there would be no buildings or other structures that would use or store chemicals or other pollutants within the FEMA or locally modeled 100-year floodplain. Thus, there would be no risk for release of pollutants from inundation in a tsunami, seiche, or flood hazard zone, and there would be **no impact**; this issue is not evaluated further in this EIR.

IMPACT HYD-1: VIOLATE WATER QUALITY STANDARDS OR SUBSTANTIALLY DEGRADE SURFACE OR GROUNDWATER QUALITY

The proposed project would add a solar power generating facility with a substation, switchyard, BESS and maintenance yard, pole-mounted solar panels, and internal native dirt or gravel roads to the current ranchland. As indicated in the project's Agricultural Management Plan (Appendix AG-1), grazing would occur under the solar panels in the spring. As shown in Plate HYD-2, stormwater runoff at the project site drains via overland flow into Coyote Creek, Carson Creek, and Little Deer Creek and their tributaries. Coyote Creek discharges into Carson Creek just southeast of the project site; Carson Creek and Little Deer Creek both discharge into Deer Creek at the same point approximately 1.5 miles south of the project site. Deer Creek continues to flow southwest generally parallel to and north of the Cosumnes River for several miles, eventually discharging into the Lower Cosumnes River just before the State Route 99 overcrossing. As discussed above in the Environmental Setting, the Lower Cosumnes River is included on the SWRCB's 303(d) list of impaired water bodies for indicator bacteria, invasive species, toxicity, mercury, and dissolved oxygen (SWRCB 2022).

Construction activities including excavating and grading would disturb sediment that could be transported in stormwater runoff during the winter rainy season. In addition, disturbed sediment could be transported via wind, particularly during the summer months. Sediments, in addition to being contaminants in their own right, transport other contaminants, such as trace metals, nutrients, and hydrocarbons that adsorb to suspended sediment particles. The proposed project would affect long-term water quality by adding minor new impervious surfaces and adding associated minor new additional urban stormwater runoff. New development has the potential to alter the types, quantities, and timing of contaminant discharges in stormwater runoff, which can adversely affect water quality.

To receive a building permit from the County, a grading and erosion control plan must be submitted to the Engineering Department that must incorporate stormwater pollution control, as well as storm drainage design features to control increased runoff from the project site. A Preliminary Grading Plan has been prepared for the proposed project (Kimley Horn 2023b). As described under the Regulatory Setting section above, the County's Land Grading and Erosion Control Ordinance requires implementation of erosion and sediment control BMPs to protect receiving water quality, which includes both surface water and groundwater. Groundwater quality can be affected either by direct contact during construction-related earthmoving activities, or by indirect contact as a

result of percolation of stormwater. Earthmoving activities associated with foundations for the poles at the substation and switchyard, and foundations for the transmission line towers, could encounter groundwater. The project applicant is required by law to obtain permits by the Central Valley RWQCB through the project-specific permitting process; the permits contain provisions (in form of permit terms and conditions) that are specifically intended to protect groundwater quality. Protection of surface water and groundwater quality from stormwater percolation is accomplished through implementation of the NPDES permit (discussed below).

Projects that disturb more than one acre of land during the construction process must comply with the requirements in the SWRCB General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order WQ 2022-0057-DWQ, NPDES Permit No. CAS000002 [Construction General Permit]). Through the NPDES and WDR process, SWRCB seeks to ensure that the construction and post-construction conditions at a project site do not cause or contribute to direct or indirect impacts on water quality. The Construction General Permit requires preparation and implementation of a SWPPP with associated BMPs that are specifically designed to reduce construction-related erosion, sedimentation, and pollutant transport. The Construction General Permit includes a numeric, two-part, risk-based analysis process. It also identifies the need to address changes in the hydrograph, defined as hydrograph modification or hydromodification, which could result from urbanization of a watershed, and requires Low Impact Development (LID) controls to more closely mimic the pre-developed hydrologic condition. Examples of BMPs for erosion and sediment control relating to construction activities and stormwater runoff that could be implemented include mulch, re-seeding, straw wattles, check dams, sediment traps, silt fencing, sediment basins, placement of rip rap under drain outfalls, and stabilizing construction entrances and exits.

Long-term water quality impacts from project operation must be reduced using site design and source control measures to help keep pollutants out of stormwater as required by the SWRCB. In addition, the proposed project would require appropriate NPDES permits/WDRs, and implementation of BMPs consistent with the California Stormwater Quality Association (CASQA) *Industrial/Commercial BMP Handbook* (CASQA 2019) or its equivalent, including annual reporting of any structural control measures and treatment systems.

At the completion of project construction, the land would be reseeded with native vegetation designed to support spring sheep grazing. The project site is currently zoned for agricultural use and has been used for cattle ranching for the last 100 years. The proposed sheep grazing would only occur during an approximately eight-week period in the spring as compared to existing conditions where cattle are grazed at the site year-round. Furthermore, substantially fewer animals would be grazed as compared to existing conditions. Therefore, the proposed project would result in a substantial decrease in livestock-related pollutants and erosion as compared to existing conditions.

In conclusion, compliance with the above-listed laws, regulations, ordinances, and permit terms would require the project to reduce pollutants in construction and operational

stormwater runoff generated in the proposed project site through implementation of BMPs and pollutant source control measures, along with preparation of a SWPPP with associated BMPs designed to control construction-related erosion and pollutants. These project design features are requirements of regulatory permits and would also be made enforceable through County conditions of approval and would protect water quality as required by the Basin Plan. Therefore, the proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality, and therefore this impact is considered **less than significant**.

Impact HYD-2: Impede Sustainable Groundwater Management of the Basin by Substantially Decreasing Groundwater Supplies or Interfering with Groundwater Recharge

As described in detail in the Environmental Setting, the project site overlies two different groundwater resource areas. The northwestern half of the site is within the South American Groundwater Subbasin, where groundwater is held within confined aquifers. The southeastern half of the project site does not overlie a groundwater aquifer; instead, it overlies older bedrock deposits where groundwater is present within small rock pores and fractures, and the amount of water that can be obtained from any given location is highly variable.

There are four water supply wells on the project site that have been used in the past 50 years, all of which are in the vicinity of the existing on-site ranch house; three of the wells are non-operational. The non-operational well on the north side of Scott Road is 120 feet deep with a depth to groundwater of 43 feet; data for the other non-operational wells is not available. The one on-site operational well, which currently supplies water for the ranch house, is 35 feet deep with a depth to groundwater of 10 feet, and has been known to go dry during periods of drought. There are additional exploratory borings located within the solar development area that were associated with past exploratory mine activities. These boreholes provide another potential source of on-site groundwater east of Scott Road in older Mesozoic Bedrock (Dudek 2024a). In addition to the on-site wells, the operational groundwater supply well for the Prairie City SVRA is immediately adjacent to and north of the solar development area, on the northeast side of the existing paved Prairie City SVRA access road. The Prairie City SVRA well is situated in the South American Subbasin. The well is 285 feet deep and the most recent depth to groundwater (obtained in 2021) at this well was 194.6 feet (Dudek 2024b).

In support of the project's *Water Supply Assessment*, Dudek also prepared a *Groundwater Resource Impact Analysis* (Groundwater Study) for the project site which are both included as Appendix HYD-1 (Dudek 2024). The Groundwater Study evaluated the feasibility of using groundwater wells to satisfy the water demands of the proposed project, including potential well yields, subsidence, groundwater drawdown in neighboring wells, groundwater dependent ecosystems, and depletion of groundwater storage, which are discussed separately below.

Groundwater Demands and Potential Well Yields

Water demand for the construction phase of the project is estimated to be approximately 253 acre-feet (AF) during the 18-month construction period. Subsequent operation and maintenance of the project during its anticipated 35-year operational life would require approximately 10.5 acre-feet per year (AFY) of water for solar module washing, sheep grazing, landscape irrigation, and restroom use. Decommissioning water demand was conservatively estimated to be the same as that for project construction (i.e., 253 AF) (Dudek 2024b).

The boundary of the Aerojet contaminated groundwater plume in the project area (see Plate HAZ-2 in Chapter 9, "Hazards and Hazardous Materials") is essentially consistent with the boundary of the South American Subbasin shown in Plate HYD-1. The Groundwater Study recommended no project-related pumping from any existing groundwater wells and no project-related drilling of any new groundwater supply wells that are either inside of, or within 2,000 feet of, that portion of the project site which overlies the Aerojet contaminated groundwater plume in order to avoid potential plume migration and contamination of additional wells (Dudek 2024b). See Chapter 9, "Hazards and Hazardous Materials," for additional details and analysis related to the groundwater plume.

As summarized in the Groundwater Study, previous well yield studies included borehole testing in the older Mesozoic bedrocks units at the project site. The results indicated that although initial groundwater level depths were generally shallow (groundwater was obtained relatively near the surface), the drawdowns for the given pumping rates indicated relatively low specific capacities (meaning the well yields were low). The project's annual operational demand of 10.5 AFY equates to approximately 6.6 gallons per minute, and therefore the Groundwater Study concluded that one or more of the sample boreholes that were previously drilled on the project site in the Mesozoic bedrock units would be able to support the project's yearly operational demand, but would not support the project's construction and decommissioning demand (i.e., 253 AF each) (Dudek 2024).

Therefore, the Groundwater Study assumed that water to meet the project's demands for construction and decommissioning (253 AF each) would be from groundwater obtained from Sloughhouse Solar Project wells or the Sacramento County Water Agency (SCWA), or a combination of the two sources (Dudek 2024b, Dudek 2024c, and SWCA 2024). Due to data gaps regarding on-site hydrogeology and the potential lack of on-site groundwater availability, water demands for construction and decommissioning (253 AF each) were not assumed to be provided by existing on-site groundwater wells. As explained in the Groundwater Study, additional data and analysis would be required to accurately assess the availability of on-site groundwater for construction and decommissioning (Dudek 2024b). Additionally, as discussed in Chapter 9, "Hazards and Hazardous Materials", and the Groundwater Study prepared for the proposed project, the proposed project would not source groundwater from any area subject to restrictions of the EPA and the SWRCB on groundwater applicable to the Aerojet Superfund remediation site and operable units, including groundwater extraction with the 2,000-foot consultation zone (Dudek 2024a).

Subsidence

As noted in the Groundwater Study, the Cenozoic sedimentary deposits within the South American Subbasin are currently producing some groundwater through the Aerojet Remediation Project, but these production rates are not available. The Groundwater Study also noted that land subsidence was not identified as an undesirable result in the South American Subbasin GSP. The Groundwater Study concluded that any adverse effects to infrastructure, or to beneficial uses, from subsidence due to project-related groundwater withdrawal would be unlikely due to the low historical total vertical displacement in the South American Subbasin (i.e., less than 0.05 feet over 4 years). The remainder of the project site consists of Mesozoic bedrock units that are not susceptible to land subsidence (Dudek 2024b).

Groundwater Drawdown in Nearby Wells

As discussed in the Groundwater Study, it is likely that on-site groundwater from the older Mesozoic bedrock units is not a feasible source for construction and decommissioning water requirements (253 AF over 18 months). In addition, alluvial aquifers appear to be limited within the project boundaries and an insufficient supply for the construction and decommissioning phases of the project. Due to data gaps regarding on-site hydrogeology and the potential lack of on-site groundwater availability, water demands for construction and decommissioning (253 AF each) were not assumed to be provided by existing on-site groundwater wells. If on-site groundwater well(s) would be drilled to supply the 18-month 253 AF of groundwater estimated for project construction and 12-month 253 AF for decommissioning, the project could have an adverse effect by causing a drawdown of the groundwater levels in nearby wells. The Groundwater Study indicated that the temporary lowering of groundwater levels due to project well production for construction and decommissioning would likely only be a local effect, but additional studies would be required to evaluate potential interference to nearby wells if on-site groundwater were to be used to supply water for construction and/or decommissioning of the project (Dudek 2024b). The Prairie City SVRA groundwater supply well and various Aerojet groundwater extraction and treatment wells and groundwater monitoring wells are local to the project site and therefore could be affected. The potential well interference effect would need to be evaluated in the future based on well locations, aquifer properties, and proposed pumping rates.

Groundwater Dependent Ecosystems

In addition to the South American Subbasin GSP, the Groundwater Study also reviewed DWR's Natural Communities Commonly Associated with Groundwater dataset to determine potential wetland features and vegetation that may be groundwater dependent in the vicinity of the project site.

The Groundwater Study found that there are no groundwater dependent ecosystems or potential groundwater dependent ecosystems mapped in the vicinity of the project site. However, creeks from the project site discharge to Deer Creek approximately 1.5 miles to the southwest and may potentially support groundwater depending ecosystems on the lower end of the Cosumnes River. The South American Subbasin GSP (Sacramento Central Groundwater Authority et al. 2021) found that the reach of the Cosumnes River

that flows approximately between Deer Creek and Twin Cities Road is disconnected on a seasonal basis, but that some evidence of sub-seasonal connection does exist, and that additional research is needed to understand the stream/aquifer interaction. However, the SGMA only addresses the impacts on groundwater dependent ecosystems from groundwater pumping not from surface water diversions. Surface water rights currently allow for up to 61.5 AFY to be diverted from three points of diversion at the project site for stock watering; these water rights are currently not being used to their fully authorized amounts. The Groundwater Study considered that those water rights could potentially be used for project construction purposes, but the project does not propose to obtain water from surface water sources (Dudek 2024a).

Depletion of Groundwater Storage/Sustainable Yield

The South American Subbasin GSP estimated the amount of annual groundwater recharge at 298,900 AFY under future climate conditions. The extraction of 253 AF of groundwater during each of the project's construction and decommissioning phases would equate to 0.08 percent of the total average annual recharge in the South American Subbasin. The GSP estimates that the amount of groundwater withdrawal from pumping in the South American Subbasin under future climate conditions would be 305,100 AFY; therefore, the amount of groundwater withdrawal from project-related pumping would increase pumping in the Subbasin by 0.08 percent for the 18-month construction period and the 12-month decommissioning period.

The amount of project-related groundwater pumping for yearly operation is estimated to be approximately 10.5 AFY, and therefore a substantial depletion of groundwater storage would not result from the project's 35-year operational period pumping. Furthermore, the sustainable per-acre groundwater use within the South American Subbasin is estimated to be approximately 1.21 AFY per acre. The amortized per-acre groundwater use for the proposed project would be approximately 0.01 AFY per acre[3], which is well below the South American Subbasin's per-acre sustainable use (Dudek 2024b).

Conclusion

On-site groundwater in older Mesozoic bedrock that could be used to supply the project's 10.5 AFY operational water demand would not result in land subsidence, would not result in adverse effects on groundwater dependent ecosystems, and would not result in substantial depletion of groundwater storage or groundwater level drawdown at nearby wells. Therefore, the project's operational groundwater needs (10.5 AFY over a 35-year period) can be met by on-site groundwater without adverse effects to the sustainable yield of the South American Subbasin or neighboring wells in the Mesozoic bedrock units. Therefore, the project's impact from yearly operational groundwater demand is considered **less than significant**.

[3] The proposed project would use 253 AF for construction and 253 AF for decommissioning, plus 10.5 AFY each year for 35 years (project life 35-year amortization would be 26.5 AFY), divided by a project area of 2,555 acres.

Off-site sources of groundwater to meet the project's construction and decommissioning water demands (253 AFY for both construction [18-month period] and decommissioning [12-month period]) have been identified as using imported water via water trucks from the SCWA or Sloughhouse Solar Project wells (Dudek 2024b, Dudek 2024c, SWCA 2024). As indicated in personal communication between Sacramento County and SCWA, SCWA provides water to local contractors for construction needs through fill stations where the contractor pays for the water. These fill stations are included in SCWA's water supply master plan and supporting groundwater sustainability plan for the groundwater basin and SCWA could provide 253 AFY for both construction and decommissioning for the proposed project (personal communication, SCWA 2024). Additionally, in a memorandum prepared for the proposed project regarding the use of groundwater from the Sloughhouse Solar Project wells, it was concluded that the Sloughhouse Solar Project wells would have adequate yield to supply the required 253 AFY of water for construction and decommissioning activities for the proposed project. As indicated in that memorandum, the per-acre groundwater use is 0.65 AFY per acre within the Cosumnes Subbasin. Under sustainable conditions, assuming the estimated overdraft of 10,000 AFY, the sustainable per-acre groundwater use within the Cosumnes Subbasin would be approximately 0.60 AFY per acre. The 253 AF, one-year extraction is approximately 0.31 AF per acre, about half of the Cosumnes Subbasin per-acre sustainable use (Dudek 2024c).

As discussed in the Groundwater Study prepared for this project, due to data gaps regarding on-site hydrogeology and the potential lack of on-site groundwater availability, water demands for construction and decommissioning (253 AF each) are assumed to be derived from the Sloughhouse Solar Project in the San Joaquin Groundwater Basin or the SCWA and would not be derived from on-site groundwater wells. Additional data and analysis are required to accurately assess the availability of on-site groundwater for construction and decommissioning. The Groundwater Study indicated that if on-site groundwater wells were used for construction and decommissioning water needs, the temporary lowering of groundwater levels due to project well production for construction and decommissioning would likely only be a local effect, but additional studies would be required to evaluate potential interference to nearby wells (Dudek 2024b). Should on-site groundwater be used for construction and decommissioning, additional studies would need to be completed, and this impact is considered **potentially significant**.

Mitigation Measures

Implement Mitigation Measure HAZ-1a (Prohibit New Groundwater Wells and Use of Existing Groundwater Wells Within the Contaminant Plume Consultation Zone).

HYD-2: Perform a Groundwater Hydrologic Study If On-site Groundwater Wells are Utilized for Project Construction and Decommissioning Activities.

Prior to the issuance of permits for grading, buildings, or improvement plans, the project applicant shall do the following:

- Retain the services of an independent consultant specializing in groundwater hydrology to perform a groundwater hydrologic study. The groundwater study

shall utilize hydrologic modeling to investigate whether the potential location of the proposed or existing groundwater well(s) and the amount of groundwater withdrawal that would be necessary to serve the proposed project would cause significant drawdown of the existing groundwater table such that existing groundwater wells would be adversely affected. The completed groundwater hydrologic study shall be submitted to the Sacramento County Department of Water Resources for review.

- Demonstrate that appropriate permits have been obtained for a permanent source of on-site or off-site water supply that would not result in a localized drawdown of the groundwater table such that other existing nearby wells would be affected (including the potable water supply well at the Prairie City SVRA). If modeling determines that significant drawdown would occur for other water wells would be adversely affected, the project applicant shall not be permitted to install a groundwater well.

Significance After Mitigation

Implementation of Mitigation Measures HAZ-1a and HYD-2 would reduce the impact from groundwater drawdown on neighboring wells by requiring that hydrologic modeling be performed to demonstrate that such drawdown would not occur before issuance of project permits. Therefore, with implementation of Mitigation Measures HAZ-1a and HYD-2, the project's impacts from construction and decommissioning water demands related to potential interference with sustainable groundwater management would be reduced. As a result, with implementation of these recommended mitigation measures, this impact would be **less than significant with mitigation**.

Impact HYD-3: Substantially Alter Drainage Patterns or Add Impervious Surfaces That Would Result in Increased Erosion, Exceed Storm Drainage Systems, Substantially Degrade Water Quality, Result in Increased Flooding, or Impede or Redirect Flood Flows

There is no existing stormwater drainage system at the project site. Stormwater runoff currently drains overland into tributaries of Coyote Creek, Carson Creek, and Little Deer Creek as shown in Plate HYD-2 and Plate HYD-3. Coyote Creek discharges into Carson Creek just southeast of the project site; Carson Creek and Little Deer Creek both discharge into Deer Creek at the same point approximately 1.5 miles south of the project site. Deer Creek continues to flow southwest generally parallel to and north of the Cosumnes River for several miles, eventually discharging into the Cosumnes River just before the State Route 99 overcrossing.

A project-specific *Level 3 Drainage Study* (Drainage Study) was performed by Kimley Horn in 2023, using Sacramento County drainage standards per the *Sacramento County Drainage Manual* (Sacramento County Department of Water Resources 1996). However, the switchyard was not included in the Level 3 Drainage Study.

Since the solar panels would be pole mounted and the ground would be re-seeded with vegetation after construction, the Drainage Study assumed the existing pre-project grassland land use type would be maintained during project operation. Most of the operational stormwater drainage would continue to sheet flow overland to existing watercourses. Installation of the pole-mounted solar panels would not require substantial grading; instead, the panels would be installed following the existing land contours (Kimley Horn 2023a, 2023b). As described in detail in Impact HYD-1, the applicant is required by the SWRCB's Construction General Permit to prepare and implement a SWPPP with associates BMPs that are designed to control erosion during the construction process.

The results of hydrologic modeling performed for the Drainage Study confirmed that construction of the proposed solar field with proposed native surface/gravel roads and creek crossings, and the proposed substation, BESS, and maintenance yard, would not alter the existing drainage patterns. Stormwater runoff for the 100-year design storm within each subshed at the project site would be substantially the same as existing conditions; either no increase in flow rates at all, or minor increases of 1 to 4 cubic feet per second (Kimley Horn 2023a).

The proposed switchyard in the northwestern corner of the project site would create approximately 8.25 acres of new impervious surfaces (600 feet x 600 feet). A detention basin (approximately 300 feet by 100 feet) would be constructed on the southwest side of the switchyard to control the associated stormwater flows (Kimley Horn 2023c).

The Drainage Study also included hydraulic modeling as required by Sacramento County for the areas where solar panels and the associated access roads would be installed. The project includes 28 proposed roadway crossings over existing creeks. However, only five of the proposed crossings were considered substantial enough to model in the Drainage Study (shown on Plate HYD-3). Four of these crossings are within the Coyote Creek subwatershed and one is within the Carson Creek subwatershed. The remaining proposed 23 crossings all drain less than 30 acres of land. Hydraulic modeling was performed for the 2-, 10-, and 100-year design storm events for each of the five crossings. The proposed on-site roads would all be 20 feet wide and would include culvert crossings underneath, which would allow for proposed drainage patterns to be consistent with existing conditions (Kimley Horn 2023a, 2023b, 2023c).

As discussed in the Environmental Setting, the only FEMA 100-year floodplains are situated along the streambed of Carson Creek and Little Deer Creek (Plate HYD-2). The results of site-specific hydraulic modeling determined that narrow, site-specific 100-year floodplains are present along the smaller, upstream reaches of Carson Creek and Little Deer Creek, as well as Coyote Creek and its tributaries (Plate HYD-2). The results of the hydraulic modeling demonstrated that the proposed development would not encroach on the existing 100-year floodplains along the creeks or on the effective FEMA floodplain (Plate HYD-3); therefore, CLOMR or LOMR submittals to FEMA would not be required and there would be no increase in upstream or downstream water surface elevations (Kimley Horn 2023a).

All of the proposed internal access roads and culverts have been sized to convey the 2-year peak flow without overtopping. Hydraulic model results indicated that internal project site road flooding could occur (in the areas where the solar panels are proposed) during 10- and 100-year storm events. However, the proposed on-site access roads where flooding could occur would only provide access to the proposed solar panels, and access is only required for periodic maintenance. Furthermore, these internal access roads would be privately owned and maintained and therefore the applicant is not required to implement County standards that would otherwise require all of the access roads to be above the modeled base flood elevation for the 10- and 100-year storm events (Kimley Horn 2023a).

In all areas of special flood hazards, including the project site, compliance with the standards set forth in the County's Floodplain Management Ordinance (Municipal Code Title 16, Chapter 16.02, Section 16.02.060) (Ordinance SZC-2016-0023) are required. The County's standards control filling, grading, and other development which may increase flood damage; and prevent or regulate the construction of flood barriers that would unnaturally divert flood waters, or which may increase flood hazards in other areas.

In conclusion, a preliminary drainage study related to construction and operational stormwater drainage effects on hydrology and hydraulics (flooding) as required by the County has been performed. Furthermore, per Sacramento County requirements, a detailed Level 4 Drainage Study would be performed and provided to the County for approval when improvement plans are submitted, and prior to issuance of any construction permits. This Level 4 Drainage Study would be required incorporate all project components, including the switchyard. Impacts related to alteration of drainage patterns or the addition of impervious surfaces that would result in increased erosion, exceed storm drainage systems, substantially degrade water quality, result in increased flooding, or impede or redirect flood flows for all project components need to be included in the drainage study to determine impacts. Therefore, this impact would be **potentially significant.**

Mitigation Measures

HYD-3. Prepare a Project-specific Level 4 Drainage Study.

Prior to obtaining a construction permit, the applicant shall prepare and submit a project-specific Level 4 Drainage Study to Sacramento County Department of Water Resources for approval. This study shall include all project components, including the switchyard components. Once approved, the applicant shall ensure that all measures are incorporated into project design and construction plans, as required by the Sacramento County Department of Water Resources.

Significance After Mitigation

Mitigation Measure HYD-3 would require the applicant to prepare a project-specific Level 4 Drainage Study to be approved by the Sacramento County Department of Water Resources. Theis Level 4 Drainage Study would be required incorporate all project

components, including the switchyard. Implementation of this mitigation measure would ensure that impacts related to alteration of drainage patterns or the addition of impervious surfaces that would result in increased erosion, exceed storm drainage systems, substantially degrade water quality, result in increased flooding, or impede or redirect flood flows for all project components would be included in the drainage study to determine impacts and appropriate measures would be incorporated into design or construction plans to reduce impacts. Therefore, this impact would be **less than significant with mitigation.**

IMPACT HYD-4: CONFLICT WITH A WATER QUALITY CONTROL PLAN OR SUSTAINABLE GROUNDWATER MANAGEMENT PLAN

Impact HYD-1, above, compliance with the applicable laws, regulations, ordinances, and permit terms would require the project to reduce pollutants in construction and operational stormwater runoff generated in the project site through preparation of a SWPPP with associated BMPs designed to control construction-related erosion and pollutants; and implementation of BMPs and pollutant source control measures to control operational erosion and pollutants. These measures would protect water quality as required by the Basin Plan (Central Valley RWQCB 2019). Therefore, development of the proposed project would not conflict with a water quality control plan, and this impact would be **less than significant**.

As described in Impact HYD-2, above, the project's limited yearly operational groundwater demands and the small amount of new impervious surfaces added as a part of the proposed project would not conflict with sustainable groundwater management as set forth in the *South American Groundwater Subbasin Groundwater Sustainability Plan* (Sacramento Central Groundwater Authority et al. 2022). As further described in detail in Impact HYD-2 above, the project's **potentially significant** impacts from construction and decommissioning water demands would be reduced through implementation of mitigation measures.

MITIGATION MEASURES

Implement Mitigation Measure HAZ-1a (Prohibit New Groundwater Wells and Use of Existing Groundwater Wells Within the Contaminant Plume Consultation Zone).

Implement Mitigation Measure HYD-2 (Perform a Groundwater Hydrologic Study If On-site Groundwater Wells are Utilized for Project Construction and Decommissioning Activities).

SIGNIFICANCE AFTER MITIGATION

Implementation of Mitigation Measures HAZ-1a and HYD-2 would reduce the potentially significant impact from groundwater contamination by limiting the area where groundwater wells can be drilled and used, and would reduce the impact from off-site groundwater drawdown on neighboring wells by requiring that hydrologic modeling be performed to demonstrate that such drawdown would not occur before issuance of project permits. Therefore, with implementation of Mitigation Measures HAZ-1a and HYD-2, the

project's impacts from construction and decommissioning water demands would not conflict with sustainable groundwater management as set forth in the *South American Groundwater Subbasin Groundwater Sustainability Plan* (Sacramento Central Groundwater Authority et al. 2022) and therefore this impact would be l**ess than significant with mitigation**.