3.8. HYDROLOGY and WATER QUALITY

3.8.1. ENVIRONMENTAL SETTING

Westlands Solar Park and WSP Gen-Tie Corridors

Climate and Rainfall

The climate at the WSP and gen-tie corridors area is characterized by hot dry summers and cool, mild winters, and relatively low humidity. Summers are hot and dry with average high temperatures in the upper 90s and lows in the high 50s. The winters tend to be foggy and cool, with average highs in the mid-50s and average lows in the mid-30s. Rainfall occurs primarily in the winter months between October and May, and average annual rainfall is about 8 inches.

Regional and Local Drainage

The WSP and gen-tie corridors area is located on the floor of the San Joaquin Valley which receives drainage flows from the Sierra Nevada to the east and the Diablo Range, one of the Coast Ranges, from the west.

To the west of the WSP plan area several streams that originate in the Diablo Range and flow toward the valley floor. These creeks generally terminate at the California Aqueduct which follows the foot of the alluvial fans in a general northwest to southeast heading. The nearest creek originating from the west is the Los Gatos Creek system, which terminates at a large detention basin just north of the City of Huron located approximately 9 miles west of the WSP plan area, and about 3 miles northwest of the northern gen-tie corridor. In the WSP vicinity, no natural drainage flows extend eastward beyond the California Aqueduct, which is located 2 miles west of the WSP plan area at the nearest point. Likewise, no natural drainage courses pass through the gen-tie corridors vicinity.

On the east side of the valley, drainage flows from the Sierra Nevada are conveyed by an extensive network of rivers and streams into the San Joaquin Valley. While streams and rivers to the north of Fresno ultimately flow out to the Pacific Ocean, 3 of the 4 major rivers of the southern Sierra: the Kings, Kaweah, and Tule, as well as a number of lesser streams all drain west into the Tulare Lake Bed which has no outlet to the ocean. The southern-most river - the Kern River - historically flowed to the Buena Vista Lake Bed at the southern end of the San Joaquin Valley. These rivers and creeks historically formed broad deltaic fans as they emerged from the foothills, and branched out as they emerged from the Sierra foothills to form distributary systems that spread out over the alluvial fans. Since the Tulare Basin is the topographical low point in the WSP vicinity, the distributary channels historically converged at Tulare Lake. The water courses flowed undammed toward the Tulare Basin in dozens of channels and sloughs that shifted periodically during flood events. During particularly wet years, Tulare Lake could expand to over 800 square miles, and in the event of extreme rainfall and flooding, the surface water reach elevations where it began to flow north into Fresno Slough and ultimately to the San Joaquin River. Beginning the mid-1800s, settlers began building canals and diversion structures to redirect

surface water for irrigation of agricultural lands. Irrigation infrastructure constructed upstream from Tulare Lake slowly cut off the lake from its source waters and it began to shrink, and by the end of the century it had all but disappeared. The lakebed was converted to agriculture with levee construction and the formation of reclamation districts. During extremely wet years, the Tulare Basin will flood to form a temporary lake feature, but water elevations have remained below the level where flows would be released to Fresno Slough to the north. In recent times, Tulare Lake has flooded in 1969, 1983, and 1997 (Austin 2012).

The dry Tulare Lake bed is bounded on the west and northwest by a major perimeter canal, known as Blakely Canal, which runs along the southeast side of State Route 41 at a distance of about ½ mile from the southeasterly WSP boundary. The Lower Kings River runs parallel to northeastern WSP boundary and passes within approximately 1.3 miles of the plan area at its nearest point. Since flows from the Sierra in this region flow into the Tulare Lake Basin or are intercepted by the Kings River or Blakely Canal, no drainage flows enter the WSP plan area from the east.

Drainage of the WSP and Gen-Tie Corridors Area

There are no natural surface drainage features within the WSP plan area or in the immediate vicinity. As discussed above, the farthest westward extent of the creeks, rivers and sloughs carrying Sierra runoff is the low point formed by the Tulare Lake bed and Kings River to the east. Creeks originating in the Coast Ranges terminate west of the California Aqueduct to the west of the WSP plan area. The surface water features closest to the WSP include the Empire Westside Canal, which is near the southeast WSP boundary. Just northeast of the plan area is a series of sewage treatment and stormwater retention basins that occupy approximately 275 acres. These effluent and evaporation basins are owned and operated by the Naval Air Station Lemoore.

The WSP plan area is currently served by Westlands Water District's delivery system and a series of privately owned and operated interconnected irrigation canals and ditches, as well as drainage ditches and ponds. The irrigation canals and ditches convey and distribute imported surface water and pumped well water throughout the plan area. The irrigation drainage water, also known as irrigation return flow or tailwater, is collected by drainage ditches and conveyed to small basins for reuse as irrigation water. Some irrigation return flows are conveyed to an artificial tailwater pond located just outside the WSP plan area north of Nevada Avenue, where the water evaporates or percolates into the soil. There is no drainage outlet from the WSP plan area.

The topography of the WSP plan area descends very gradually to the east, with ground elevations ranging from 280 feet AMSL on the west boundary to 205 feet AMSL on the east boundary, a distance of 8 miles. This represents an elevation change of 10 feet per mile, or an average slope of 0.2 percent. During the rainy season, stormwater percolates directly into the soil or is captured by the system of agricultural canals and ditches. Surface runoff of stormwater is negligible.

The WSP Gen-Tie Corridors pass through the drainage area of Arroyo Pasajero (also known as the "Los Gatos Creek System), which encompasses the largest drainage area in the western San Joaquin Valley. The major creeks in the system include Arroyo Pasajero and its tributaries Warthan, Jacalitos, and Zapato-Chino Creeks. Arroyo Pasajero flows through the City of Coalinga and Pleasant Valley and then

passes under I-5 between El Dorado and Jayne Avenues. Water from Arroyo Pasajero is collected in a large detention basin on the west side of the California Aqueduct north of the City of Huron.

Surface Water Quality

Under the federal Clean Water Act Section 303(d), the California State Water Resources Control Board (SWRCB) is required to identify water bodies that do not meet water quality standards. In the vicinity of the WSP plan area, the listed "Impaired Water Body," and the pollutants causing the impairment are as follows:

- Lower Kings River (36-mile segment from Island Weir to Stinson and Empire Weirs) – electrical conductivity (salinity), molybdenum, toxaphane (SWRCB 2010).

This reach of the Kings River runs from north to south approximately 2 miles east of the WSP plan area. The WSP plan area neither drains into the Kings River nor is subject to overbank flooding from the Kings River, which is at least 10 feet lower in elevation than the nearest part of the WSP plan area.

Flooding Potential

According to the Flood Insurance Rate Maps (FIRM) covering Kings County, the WSP plan area lies entirely outside both the 100-year and 500-year flood zones designated by the Federal Emergency Management Agency (FEMA)(See Figure HYD-1). The nearest FEMA-designated flood-prone areas occur to the west in Fresno County, to the east along the Kings River, to the southeast within the Tulare Lakebed, and to the south along the California Aqueduct (FEMA 2009b).

In 2007, the California Department of Water Resources (DWR) completed its Awareness Floodplain Mapping for Kings County which identifies flood hazard areas ("Special Flood Zones") that are not mapped under FEMA's program. There are two small areas within the WSP plan area which are mapped as lying within the Special Flood Zone area. The first area, located in the southern tip of the WSP plan area, encompasses approximately 300 acres along an ephemeral drainage that runs from northwest to southwest toward SR-41 and the Tulare Lakebed. The second area, located along the eastern boundary of the WSP plan area, comprises an area of approximately 100 acres. (The DWR-mapped flood zones are shown on Figure HS-6 in the Health and Safety Element of the Kings County 2035 General Plan.) The DWR Awareness Floodplain Maps are not regulatory floodplain maps but are intended to provide additional understanding of potential flood hazards that are not currently mapped by FEMA (DWR 2016).

The major and minor stream systems that enter the west side of the valley from the Diablo Range are prone to high flows that result in localized flooding throughout the area. The areas subject to flooding during the 100-year event are shown in Figure HYD-1. Heavy flows from Arroyo Pasajero can result in flooding in downstream communities of Coalinga and Huron. Apart from flooding of agricultural lands, the major facilities such as I-5 and the California Aqueduct are also subject to potential flooding.

As mentioned, flood water from Arroyo Pasajero is collected downstream in a large detention basin on the west side of the California Aqueduct north of the City of Huron. Due to high sediment volumes, the storage capacity of the basin diminished over time and flood flows would enter the aqueduct.

Arroyo Pasajero also carries asbestos from an abandoned asbestos mill in Coalinga, and during high flows, asbestos would enter the aqueduct. In 2004, DWR enlarged the detention basin to increase its holding capacity during flooding (US EPA 2016).

During major flood events, there is potential for Arroyo Pasajero flows to cause physical damage to the I-5. During a major storm in 1995, flood flows in Arroyo Pasajero washed out the twin bridges on I-5, which were replaced with bridges that could accommodate larger stream flows. Extensive riprap channel protection was also added to prevent scouring around the bridge foundations (Fresno County 2000a).

Inundation Potential Due to Dam Failure

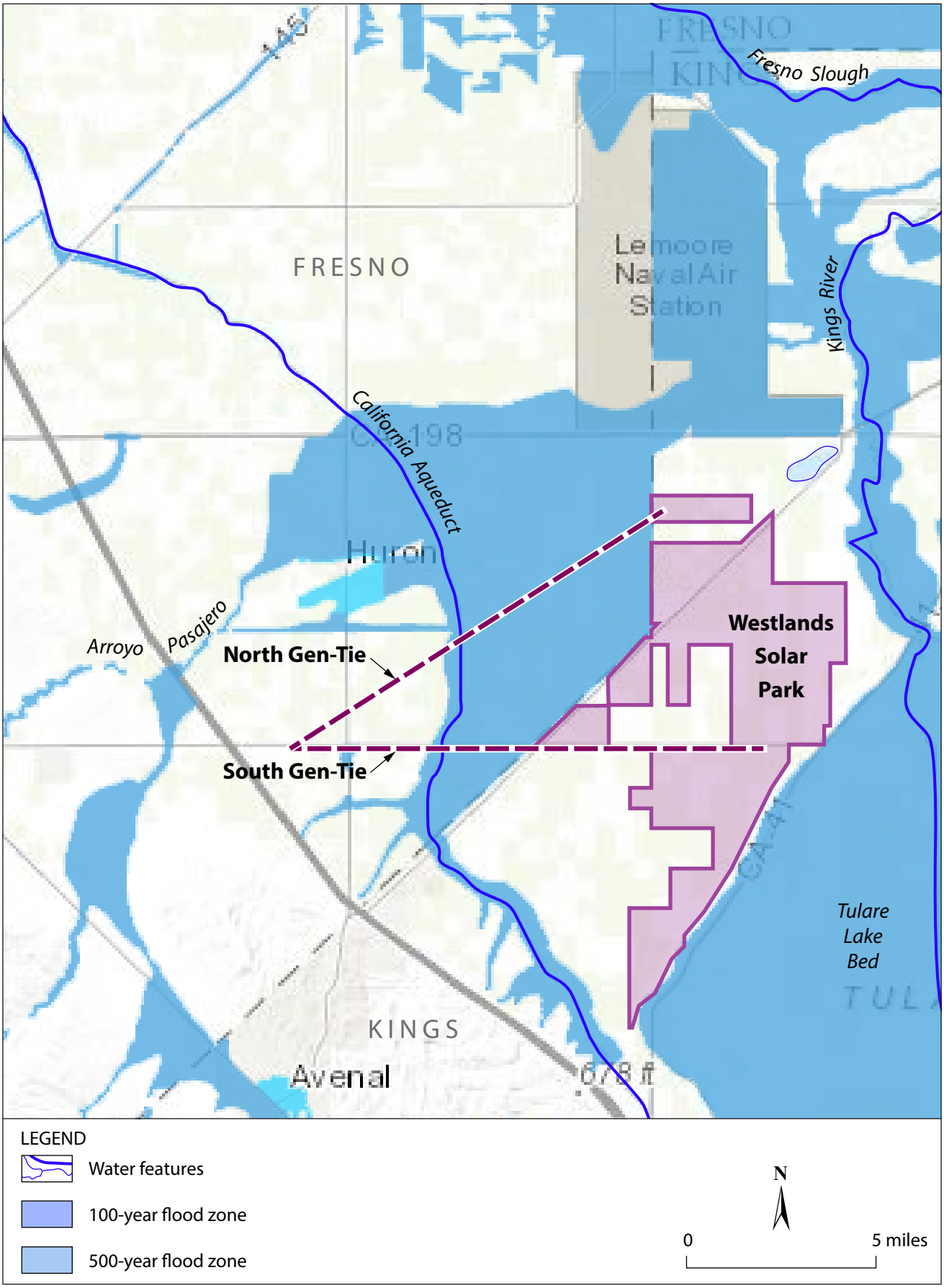
Some portions of Kings County located to the east and northeast of the WSP plan area are subject to potential inundation in the event of the failure of dams located in the Sierra Nevada. According to maps prepared by the U.S. Army Corps of Engineers, the failure of the Pine Flat Dam, located upstream on the Kings River, would result in a potential inundation that could extend as far west as Stratford and the City of Lemoore, but would stop short of the eastern WSP boundary. A failure of the Terminus Dam on the Kaweah River would inundate an area extending to a point just east of the City of Hanford, or more than 10 miles east of the WSP plan area. If Pine Flat Dam failed while at full capacity, its floodwaters would arrive in Kings County within approximately five hours. If Terminus Dam failed while at full capacity, its floodwaters would arrive in Kings County within approximately 12 hours. The chances of any of these dams failing while at full capacity are considered remote. (The mapped inundation areas are shown on Figure HS-7 in the Health and Safety Element of the Kings County 2035 General Plan.) According to the Army Corps of Engineers inundation maps, the failure of Success Dam on the Tule River would not affect Kings County. Pine Flat and Terminus are the only dams in the region which, if breached, might cause flooding of significance to local inhabited areas (see Figure HS-7). In summary, the WSP plan area is not located within the mapped inundation areas for any of the reservoirs in the region, and therefore would not be subject to risk of flooding in the unlikely event of dam failure. There are no nearby reservoirs in the Diablo Range with the potential to inundate the WSP or the gen-tie corridors.

Groundwater

The San Joaquin Valley is underlain by deep water-bearing alluvial deposits. For planning purposes, the California Department Water Resources (DWR) divides the valley into groundwater basins and subbasins. The WSP plan area is located within the Westside Subbasin of the San Joaquin Groundwater Basin. The boundaries of the Westside Subbasin correspond closely with the boundaries of the Westlands Water District.

The Westside Subbasin consists of two main water-bearing zones, an upper and a lower zone, separated by several clay layers, the deepest of which is the impervious Corcoran Clay formation. The Corcoran clay layer ranges in thickness from 20 to 200 feet, and occurs at depths of 200 to 800 feet, depending on location. The Corcoran Clay divides the groundwater system into two major aquifers – lower aquifer and upper aquifer.

Groundwater quality typically varies with depth, with the poorer quality (more saline) water present in the upper and lower limits of the basin, and optimum quality somewhere in between. The base of fresh water is defined as the level at which total dissolved solids (TDS or salts) exceeds 3,000 parts per million.



Source: FEMA, 2009

Surface Hydrology

Figure HYD-1

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The depth to the base of fresh water varies substantially throughout the subbasin, ranging from a depth of 800 feet to 3,500 feet, below ground surface. Within the WSP plan area, the base of fresh water is 2,000 to 2,400 feet below the ground surface (WWD 2013)

Within Westlands Water District, the primary source of irrigation water is from surface water deliveries provided by the U.S. Bureau of Reclamation from the Central Valley Project (CVP) facilities that convey captured Sierra snowmelt to the west side of the San Joaquin Valley. Groundwater is used to augment surface supplies, and during the 30-year period from 1988 to 2017, the annual groundwater withdrawals within the District averaged 273,000 acre-feet per year, or about 0.48 acre-feet per irrigable acre (WWD 2017). However, the volume of groundwater pumping varies substantially from year to year depending on availability of CVP surface water deliveries. For example, in 2006 and 2017, the latest years WWD received 100 percent of its CVP water allocation, the annual volume of groundwater pumped averaged 28,500 acre-feet over the two years, representing a small portion of overall annual irrigation requirement of about 1.5 million acre-feet District-wide. During years of severe drought, like the recent drought of 2012 through 2016, groundwater pumping increases to make up for shortfalls of surface water deliveries. During those five drought years, WWD growers received an average of 13 percent of CVP surface water deliveries, and total groundwater pumping within the District averaged 586,000 acre-feet per year, or slightly more than 1.0 acre-foot per irrigable acre. From 2012 to 2014, the groundwater elevations in the lower (sub-Corcoran) aquifer dropped by as much as 400 feet (WWD 2013, 2015, 2016, 2017; DWR 2003).

3.8.2. REGULATORY SETTING

Federal

Clean Water Act

The Clean Water Act (CWA) was enacted with the primary purpose of restoring and maintaining the chemical, physical, and biological integrity of the Nation's waters. The CWA directs states to establish water quality standards for all "waters of the United States" and to review and update such standards on a triennial basis. Other provisions of the CWA relate to basin planning including Section 208, which authorizes the preparation of waste treatment management plans, and Section 319, which mandates specific actions for the control of pollution from non-point sources. Section 303 requires states to adopt water quality standards for all surface waters of the U.S. Standards are based on the designated beneficial use(s) of the water body. Where multiple uses exist, water quality standards must protect the most sensitive use. Section 402 mandates that certain types of construction activity comply with the requirements of Environmental Protection Agency's National Pollution Discharge Elimination System (NPDES) stormwater program. The U.S. Environmental Protection Agency (USEPA) has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the NPDES Program, to the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB). Construction activities that disturb one or more acres of land must obtain coverage under the NPDES general construction activity stormwater permit, which is issued by Central Valley Regional Water Quality Control Board (RWQCB) (see detailed discussion on NPDES permit requirements below).

Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers regulates the filling or grading of "waters of the U.S." (i.e., jurisdictional waters) and associated wetland resources. (See Section *3.4. Biological Resources* for a full description of Section 404 and related regulatory requirements.)

National Flood Insurance Program

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities complying with FEMA regulations that limit development in floodplains. FEMA issues flood insurance rate maps for communities participating in the NFIP. These maps delineate flood hazard zones in the community. Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. It requires (1) avoidance of incompatible floodplain development, (2) consistency with the standards and criteria of the NFIP, and (3) restoration and preservation of the natural and beneficial floodplain values. (See "Local" below for further discussion of flood regulations.)

State

Porter-Cologne Water Quality Control Act

Adopted in 1969, the Porter-Cologne Act is California's comprehensive water quality law, establishing an extensive regulatory program and planning and management functions to protect water quality and beneficial uses of the state's water. It established the State Water Resources Control Board and the nine Regional Boards, whose primary responsibility is the development and implementation of Basin Plans (or Water Quality Control Plans). Pursuant to the authority delegated under CWA Section 303, the Regional Boards issue NPDES discharge permits and Waste Discharge Requirements (WDRs) to municipal wastewater treatment plants and industrial dischargers.

Central Valley Regional Water Quality Control Board

In southern San Joaquin Valley, the state water quality standards are regulated by the Central Valley Regional Water Quality Control Board (CVRWQCB or Regional Board). As noted above, the Regional Board establishes beneficial uses and water quality objectives for surface water and groundwater resources the region through the Tulare Lake Basin Plan. The Regional Board also implements Clean Water Act (CWA) Section 303(d) total maximum daily load (TMDL) process, which consists of identifying candidate water bodies where water quality is impaired or limited by the presence of pollutants. The TMDL process is implemented to determine the assimilative capacity of the water body for the pollutants of concern and to establish equitable allocation of allowable pollutant loading within the watershed.

CWA Section 401 requires an applicant pursuing a federal permit to conduct any activity that may result in a discharge of a pollutant to obtain a water quality certification (or waiver) from the applicable RWQCB. The RWQCBs primarily implement basin plan policies through issuing waste discharge requirements for waste discharges to land and water. The RWQCBs have also been delegated responsibility for administering the NPDES permit program, which is designed to manage and monitor point and nonpoint source pollution.

NPDES General Permit for Discharges of Storm Water Associated with Construction Activity

As noted above, the portion of the NPDES program that regulates stormwater discharges associated with construction activities applies to construction sites which disturb over one acre. The NPDES General Permit for Discharges of Storm Water Associated with Construction Activity applies to all of California. Since the proposed project would disturb more than 1 acre of land, the project will be subject to the General Permit for stormwater discharges. Administration of the General Permit has not been delegated to cities, counties, or Regional Boards but remains with the State Board. Enforcement of permit conditions, however, is the responsibility of Regional Board staff, assisted by local municipal or county staff. Prior to construction grading for a project, applicants are required to file a "Notice of Intent" (NOI) with the State Board to comply with the General Permit and prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) which addresses measures to be included in the project to minimize and control runoff during and after construction. The SWPPP is required to specify the site-specific best management practices (BMPs) to control erosion and sedimentation and discharges of other construction-related pollutants (e.g., petroleum products, solvents, paints, concrete) that could contaminate nearby water resources during the construction phase. The SWPPP is also required to contain a summary of the structural and non-structural BMPs to be implemented during the post-construction period. The SWPPP is to be kept on-site during construction, and is to be updated each year as site development proceeds.

DWR's Awareness Floodplain Mapping Project

The California Department of Water Resources (DWR) initiated the Awareness Floodplain Mapping project in order to identify flood hazard areas for areas that are not mapped under the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP) and to provide the community and residents an additional tool in understanding potential flood hazards currently not mapped as a regulated floodplain. The awareness maps identify the 100-year flood hazard areas using approximate assessment procedures. These floodplains are shown simply as flood prone areas without specific depths and other flood hazard data. These maps are not FEMA regulatory floodplain maps; however, at the request of the community, FEMA would include this data on their maps (DWR 2016).

Sustainable Groundwater Management Act

In September 2014, Governor Brown signed the Sustainable Groundwater Management Act (SGMA). The goal of the legislation is to sustainability manage California's groundwater basins identified as medium to critically over drafted subbasin. SGMA required that all medium to critically over drafted subbasins identified by DWR are managed by a groundwater sustainability agency (GSA). The GSA is responsible for locally managing the groundwater subbasin through the development and implementation a Groundwater Sustainability Plan (GSP). Medium and high priority groundwater subbasins are required to submit their GSP by 2022 and critically overdrafted subbasin are required to submit their GSP by 2020. As the primary water purveyor and local agency overlying the Westside Subbasin, Westlands Water District is the designated GSA for the subbasin. DWR designated the Westside Subbasin as a critically overdrafted basin which requires WWD to prepare a by January 31, 2020.

Westlands Water District

The Westlands Water District provides agricultural irrigation water to the WSP plan area from surface water deliveries provided by the U.S. Bureau of Reclamation from the Central Valley Project (CVP) facilities that convey captured Northern Sierra snowmelt to the west side of the San Joaquin Valley. WWD water users conjunctively use surface water and groundwater, and quantities vary depending on the surface water allocation from the CVP's South of Delta agricultural allocation. Groundwater is pumped by water users within WWD to augment surface supplies. In an ongoing effort to adapt to surface supply shortages, and to reduce groundwater overpumping, WWD provides funding for education and technology, enabling growers to effectively utilize surface water allotments through efficiencies. The District also monitors the water quality and quantity of pumped groundwater as part of its Water Management Plan (WWD 2013).

A key component of the District's Water Management Plan is water conservation. This program consists of the following elements.

- Irrigation Guide for water requirements per crop
- Water Conservation and Management Handbook
- Workshops and meetings on water management information
- Technical assistance and conservation computer programs
- Meter repair and update program
- Groundwater monitoring
- Pump efficiency tests
- Conjunctive use of supplies
- Irrigation System Improvement Program
- Satellite imagery purchased about once every two weeks

As the primary water purveyor in the DWR-designated critically overdrafted Westside Subbasin, WWD is serving as the GSA for the subbasin, effective November 1, 2016, pursuant to SGMA (described above).

Kings County

Kings County General Plan

The 2035 Kings County General Plan contains the following policies related to hydrology and water quality that are relevant to the proposed project:

Resource Conservation Element

A. Water Resources

RC Policy A1.4.1: Evaluate proposed land uses and development projects for their potential to create surface and groundwater contamination from point and non-point sources. Confer with other appropriate agencies, as necessary, to assure adequate water quality review to prevent soil erosion; direct discharge of potentially harmful substances; ground leaching from storage of raw

materials, petroleum products or waste; floating debris; and runoff from the site.

RC Policy A1.4.2: Monitor and enforce provisions to control water pollution contained in the U.S. EPA National Pollutant Discharge Elimination System (NPDES) program as implemented by the California Water Quality Control Board, Central Valley Region.

RC Policy A1.4.3: Require the use of feasible and cost-effective BMPs and other measures designed to protect surface water and groundwater from the adverse effects of construction activities and urban and agricultural runoff in coordination with the California Water Quality Control Board, Central Valley Region.

RC Policy A1.4.4: Encourage and support the identification of degraded surface water and groundwater resources and promote restoration where appropriate.

Health and Safety Element

A. Natural Hazards

HS Policy A4.1.1: Review new development proposals against current Federal Emergency Management Agency (FEMA) digital flood insurance rate maps and California Department of Water Resource special flood hazard maps to determine project site susceptibility to flood hazard.

HS Policy A4.1.2: Reserve FEMA designated flood hazard areas for agricultural and natural resource conservation uses along the floodway channels and Tulare Lake Basin.

HS Policy A4.1.3: Determine base flood elevations for new development proposals within or adjacent to 100 year flood zone areas as identified in latest FEMA Digital Flood Insurance Rate Map, to definitively assess the extent of property potentially subject to onsite flood hazards and risks.

HS Policy A4.1.4: Direct new urban growth to existing cities and community districts, or away from New Community Discouragement Areas to avoid flood hazard areas and increased risk to people and property.

HS Policy A4.1.5: Regulate development, water diversion, vegetation removal, and grading to minimize any increase in flood damage to people and property.

HS Policy A4.1.6: New development shall provide onsite drainage or contribute towards their fair share cost of off-site drainage facilities to handle surface runoff.

HS Policy A4.1.7: Consider and identify all areas subject to flooding in the review of all land divisions and development projects.

HS Policy A4.1.8: Enforce the "Kings County Flood Damage Prevention Ordinance," Chapter 5A of the Kings County Code of Ordinances.

Kings County Code of Ordinances

Kings County Flood Damage Prevention Ordinance

Kings County maintains a floodplain management program which is implemented through the County's *Flood Damage Prevention Ordinance* (Chapter 5A of the Kings County Code of Ordinances). The purpose of this ordinance is to ensure that proposed development is constructed to prevent flood damage, and to ensure that development in those areas can avoid or withstand flooding without increasing flood risk elsewhere. Flood prevention and control in community districts and urban fringe areas are most effectively deterred by structural means such as curbs, gutters and storm drainage systems. In more rural and less developed Agriculture and Open Space areas, more passive measures are relied upon such as high crowns on roadway pavement to divert floodwaters onto adjacent properties that are more suited to accommodate the diverted drainage.

Kings County Improvement Standards

The Kings County Improvements Standards serves as an engineering reference for Kings County staff and private parties in the design and construction of improvements for public works projects and private development improvements. The standards include engineering design specifications for the construction of streets, water supply systems, storm drainage, and sewage disposal.

Fresno County

Since no portion of the Westlands Solar Park is located within Fresno County, the County's plans, policies and regulations are not applicable to WSP solar development. Transmission projects that are to be constructed or co-sponsored by an investor-owned utility (IOU) such as PG&E are subject to the sole permitting jurisdiction of the California Public Utilities Commission (CPUC) and are exempt from local jurisdiction. However, CPUC General Order 131-D requires public utilities to coordinate with local jurisdictions regarding consistency of their projects with local plans and policies (CPUC 1994). Transmission lines that may be privately owned (such as gen-ties) are not under CPUC jurisdiction, and thus are subject to Fresno County jurisdiction and may require the issuance of a conditional use permit from the County.

Fresno County General Plan

The Health and Safety Element of the Fresno County General Plan contains several relevant policies related to Flood Hazards. In general, these policies require compliance with FEMA requirements pertaining to development within flood-prone areas, and that new development not increase flood hazards to other property. The Health and Safety Element is directly accessible at the following web address:
http://www2.co.fresno.ca.us/4510/4360/General_Plan/GP_Final_policy_doc/Health%20Element_rj.pdf

The Open Space and Conservation Element of the Fresno County General Plan contains several relevant policies related to water quality. In general, these policies require new development to minimize erosion, sedimentation, and release of pollutants in order to protect water quality. The Open Space and Conservation Element is directly accessible at the following web address: http://www2.co.fresno.ca.us/4510/4360/General_Plan/GP_Final_policy_doc/Open_Space_Element_rj.pdf

Fresno County Ordinance Code

The Fresno County Ordinance Code, Chapter 15.48 – Flood Hazard Areas, provides regulations for flood hazard reduction for new construction within flood-prone areas as defined in FEMA flood mapping. Ordinance Code Title 17 – Divisions of Land, requires subdivisions to provide for control of drainage, stormwater runoff, and prevention of erosion and sedimentation.

3.8.3. ENVIRONMENTAL IMPACT ANALYSIS

SIGNIFICANCE CRITERIA

Based on the State CEQA Guidelines, Appendix G, a project would be considered to result in a significant hydrological or water quality impact if it would:

a. Violate any water quality standards or waste discharge requirements. (Impact HYD-1.)

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). (Impact HYD-2.)

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site. (Impact HYD-3.)

d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. (Impact HYD-4.)

e. Create or contribute runoff water which would exceed the capacity of the existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. (Impact HYD-5.)

f. Otherwise substantially degrade water quality. (Impact HYD-6.)

g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. (Impact HYD-7.)

h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows. (Impact HYD-8.)

i. Expose people or structures to a significant risk or loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. (Impact HYD-9.)

j. Inundation by seiche, tsunami, or mudflow. (Impact HYD-10.)

IMPACTS AND MITIGATION MEASURES

Impact HYD-1. Violate Water Quality Standards or Waste Discharge Permits

***Westlands Solar Park*. The development of solar generating facilities within WSP would not violate any water quality standards or waste discharge requirements. (*No Impact*)**

***WSP Gen-Tie Corridors*. Construction of the WSP gen-tie projects would not violate any water quality standards or waste discharge requirements. (*No Impact*)**

This impact analysis addresses significance criterion 'a' above.

Water quality standards can refer to drinking water standards or surface water standards. Further, there are separate surface water standards for discharges from wastewater treatment plants and for discharges of stormwater. These are discussed in turn below for Westlands Solar Park and Westlands Transmission Corridors.

Westlands Solar Park

Drinking Water Standards. Drinking water standards are implemented by the state Department of Public Health, and apply to local water distribution systems for domestic water supply. No domestic water distribution systems are anticipated to be installed for any WSP solar development. Since drinking water for solar facility employees would be provided by bottled water delivered by truck, the drinking water standards would be applicable at the water bottling plant. (See section *3.17. Utilities and Services* for a detailed discussion of water supply.)

Surface Water Quality Standards. As discussed in Section *3.8.2 Regulatory Context*, the Regional Board identifies water bodies where water quality is impaired or limited by the presence of pollutants. Within the WSP plan area, the Lower Kings River is listed as a water quality limited river segment that is impaired by electrical conductivity (salinity), molybdenum, and Toxaphene, all of which originate from agricultural activity. Since the WSP plan area is not hydrologically connected to the Kings River, there is no potential for WSP solar development to exacerbate or be adversely affected by the pollutant loads in the lower Kings River.

Stormwater Standards. The Central Valley Regional Water Quality Control Board has not established numeric standards for surface water runoff quality; therefore, no surface water quality standards apply to the WSP solar development. (See Impacts HYD-3, HYD-5 and HYD-6 for discussions of water quality impacts and mitigations during project construction, operation, and decommissioning.)

Wastewater Treatment Standards. Waste Discharge Requirements refers to standards applied to local wastewater treatment facilities by the Regional Water Quality Control Board for quantities and quality of wastewater discharge. No wastewater treatment facilities would be constructed in conjunction with WSP solar development, so no discharge requirements would apply. Individual septic systems are regulated under the Kings County Plumbing Code, which sets forth design criteria and standards for their installation. It is not anticipated that septic systems will be installed at any WSP solar facilities. For larger SGFs, wastewater disposal may be provided by septic tanks which would be pumped periodically and disposed of at an approved wastewater treatment facility in the region. For smaller project, sanitary needs would be provided by portable chemical toilets that would be serviced by an outside contractor as needed.

In summary, the development of solar generating facilities within WSP would not violate any water quality standards or waste discharge requirements. Therefore, WSP solar development would result in *no impact* in terms of water quality standards and requirements.

WSP Gen-Tie Corridors

Drinking Water Standards. No domestic water distribution systems are anticipated to be installed in conjunction with the gen-tie projects. Since drinking water for construction workers and maintenance staff would be provided by bottled water the drinking water standards would be applicable at the water bottling plant.

Surface Water Quality Standards. There are no impaired water bodies identified by the Regional Board in the vicinity of the gen-tie corridors. Nearest impaired water bodies are the Kings River, located at least 4 miles east, and Panoche Creek, located at least 46 miles northwest of the gen-tie corridors. The lands in the vicinity of the gen-tie corridors are not hydrologically connected to either of these impaired water bodies, so there is no potential for the gen-tie projects to exacerbate or be adversely affected by the pollutant loads in either water body.

Stormwater Standards. The Central Valley Regional Water Quality Control Board has not established numeric standards for surface water runoff quality; therefore, no surface water quality standards apply to the WSP gen-tie projects. (See Impacts HYD-3, HYD-5 and HYD-6 for discussions of water quality impacts and mitigations during construction and project operation.)

Wastewater Treatment Standards. No wastewater treatment facilities would be constructed in conjunction with the WSP gen-tie projects, so no discharge requirements would apply. When workers are scheduled at a particular construction site for extended periods, sanitary needs would be provided by portable chemical toilets.

In summary, the construction of the WSP gen-tie projects would not violate any water quality standards or waste discharge requirements. Therefore, the transmission projects would result in *no impact* in terms of water quality standards and requirements.

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact HYD-2. Effects on Groundwater Use and Recharge

***Westlands Solar Park*. WSP solar development would result in a substantial reduction in net groundwater use compared to the existing agricultural uses, and would not interfere with groundwater recharge. WSP solar development would reduce the overall volume of groundwater pumped in the plan area which would help offset the decline of groundwater levels in the basin. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. Construction and operation of the WSP gen-tie projects would require the use of small volumes of water, which would have little or no effect on groundwater supplies. The very small amount of impervious surfaces resulting from the gen-tie projects would not interfere with groundwater recharge. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'b' above.

Westlands Solar Park

WSP solar development would involve the use of groundwater during the construction, operation, and decommissioning phases of each solar project, as discussed below. [It is noted that this discussion is focused only on impacts to groundwater resources; the broader analysis of overall water supply impacts is addressed in Section *3.17. Utilities and Service Systems*.]

SGF Construction

During the grading and construction for solar development, water would be regularly applied to exposed soils and internal access driveways for dust suppression. During earthwork, water would also be required in soil conditioning for optimum moisture content. As discussed in the Chapter *2. Project Description*, it is estimated that each MW of solar generation capacity would involve the use of 2.0 acre-feet of water during the grading and construction phases. It is anticipated that all construction water would be obtained from the existing agricultural wells that are located throughout the WSP plan area. For a typical 250 WM solar project, the total groundwater pumped during project construction would be approximately 500 acre-feet, or about 0.20 acre-feet per acre for a 2,500-acre site.

As discussed in Section *3.8.1. Environmental Setting*, current groundwater pumping in the area varies substantially from year to year depending on availability of surface water deliveries of CVP water delivered through the WWD. During years when WWD receives most of its CVP water allocation, groundwater pumping provides a relatively minor portion of irrigation requirements. During years of severe drought, like the recent drought of 2012 through 2015, groundwater pumping increases to make up for shortfalls of surface water deliveries. In the 30-year period from 1988 to 2017, groundwater withdrawals within WWD averaged 273,000 AF per year, or the equivalent of approximately 0.48 acre-feet per irrigable acre within WWD. Westlands Water District is in the process of developing the sustainable yield of the subbasin through its compliance efforts under the Sustainable Groundwater Management Act (SGMA)(see Section *3.8. Hydrology and Water Quality* for a description of SGMA). Once the sustainable yield number is determined, the yield per acre will vary somewhat throughout WWD depending on localized hydrogeology. However, sustainable yield of the Westside Subbasin will likely be a lower extraction rate than the historical average.

The 2,000 MW Westlands Solar Park would be built-out over a period of about 12 years, reflecting an installation rate 167 MW per year on average. For purposes of analysis, it is assumed that the maximum pace of development would be equivalent to about 250 MW in any given year. This represents an annual groundwater demand of 500 acre-feet, or 0.20 acre-feet per acre per year. This volume of groundwater pumping is less than half the 0.48 acre-feet "historical average annual pumping volume throughout WWD since 1988, and is substantially less than the average groundwater pumping volumes of about 1.0 acre-foot per acre during the recent drought years of 2012-2016. Therefore, while groundwater pumping for SGF construction would continue for 12 years, the groundwater pumped during construction would be substantially less than historical pumping volumes, and thus would very likely be within sustainable yield (currently in the process of being determined by WWD) for the groundwater basin on a per acre basis. Therefore, construction of the WSP solar facilities would not contribute to the depletion of groundwater or contribute to the lowering of local groundwater levels. As such, the impact of WSP solar project construction upon groundwater resources would be *less than significant*.

SGF Operation

During SGF operation, non-potable water will be required for activities such as panel cleaning, watering sheep, washing or rinsing equipment, and other operational uses. As described in Chapter *2. Project Description*, the combined water usage from all operational activities is estimated to be 0.0135 acre-feet per acre annually, or approximately 33.8 acre feet per year for a 250 MW solar facility on 2,500 acres.

Operational supplies will be provided by Westlands Water District (WWD) through its existing system of lateral pipelines for conveyance of imported surface water. Under the WWD's Municipal and Industrial (M&I) Regulations, an applicant may apply for and receive up to 5 acre-feet annually for water for M&I use. The District has estimated that solar development requires 3-5 acre-feet per year per 160 acres. In order to provide for solar projects greater than 160-acres in size, the WWD has established an exception to the M&I limit whereby solar development would be eligible to receive up to 5 acre-feet per year for each 160 acres developed (WWD 2013b). The estimated 0.0135 acre-feet per acre for annual operational water consumption for a typical WSP solar project is equivalent to 2.16 acre-feet per quarter section (160 acres). Since this is well within the 5.0 acre-feet per year of imported surface water

per quarter section that a solar project would be eligible to receive under WWD's M&I rules, there would be no need to augment surface water supplies with groundwater for SGF operations.

Temporary periodic curtailment of surface water supplies to meet the operational demands of WSP solar development is not currently foreseen. However, in the unlikely event that such unforeseen curtailment may occur in the future, possibly in the event of a prolonged severe drought, the relatively small volumes of untreated water that would be required for SGF operations would likely be obtained from the existing groundwater wells within the WSP plan area. In the unlikely event that such backup groundwater supplies to the SGFs were also to be curtailed at the same time, the relatively small volumes of untreated water required for SGF operations would be purchased from alternative sources and trucked to the sites. (See Section *3.17. Utilities and Service Systems* for further discussion.)

With regard to groundwater recharge, approximately 90 percent of each WSP solar facility site would remain in pervious vegetative cover. This would allow for continuation of rainwater percolation through the soils and into the groundwater basin. Therefore, WSP solar development would result in little if any reduction in groundwater recharge, and the impact in terms of interference with groundwater recharge would *less than significant*.

SGF Decommissioning

At the end of the useful life of each WSP solar facility, untreated water would be required for decommissioning, although the volume of water needed is expected to be less than required during the construction phase. Since vegetative cover would be maintained during deconstruction, there would be relatively little exposed soil that would require watering for dust suppression. Similarly, water would not be required for soil conditioning, as it is during construction. The source of water during decommissioning is expected to be from existing wells within the WSP plan area. The total groundwater pumped during decommissioning is expected to be substantially less than the estimated 0.2 acre-feet per acre required during project construction. As discussed above under "SGF Construction," this rate of groundwater pumping is not expected to exceed the sustainable yield of the groundwater basin on a per acre basis. As such, the impact of decommissioning of WSP solar projects upon groundwater resources would be *less than significant*.

In summary, the estimated groundwater pumping during all phases of WSP solar development would not be expected to exceed the sustainable yield of the groundwater basin, and would also be substantially less than current groundwater used in agricultural production, on a per acre basis. Also, the substantial retention of pervious vegetated area within each solar facility site would ensure there is no interference with groundwater recharge. Therefore, WSP solar development would not contribute to the depletion of groundwater or contribute to the lowering of local groundwater levels. As such, the impact of WSP solar development upon groundwater resources would be *less than significant.*

WSP Gen-Tie Corridors

During construction of the WSP gen-tie projects, water would be needed for dust suppression, cleaning, and in mixing of concrete for tower foundations. Non-potable water would be purchased from local water purveyors and hauled to each tower site, temporary access driveway, or staging area. The overall acreage subject to disturbance would be relatively small (~149 acres) and would occur at isolated locations over

the 23 miles of gen-tie corridor, or equivalent to approximately 6.5 acres of disturbed area per mile. Assuming overall water use would be similar to that of WSP solar development, or 0.2 acre-feet per acre, the total water demand for gen-tie project construction would be approximately 30 acre-feet. This would be equivalent to the irrigation requirements of about 12 acres of agricultural land for one year (assuming the average WWD water application rate of 2.5 afy per acre). If all of the water requirements for gen-tie construction were obtained from groundwater, this very small amount of groundwater pumping over the substantial length of the corridors would have a negligible effect on groundwater levels.

During operation of the gen-tie lines, very little water would be used in maintenance and repair activities. While the gen-tie lines would be constructed over the groundwater basins of the San Joaquin Valley, the total area of impervious surfaces resulting from the gen-tie projects would be very small, consisting mainly of concrete tower footings, which would not interfere with groundwater recharge.

In summary, the construction and operation of the WSP gen-tie projects would require the use of small volumes of water. While some or all of the water demand may be provided by groundwater, the volumes involved would be very small and would have a negligible effect on groundwater supplies. The gen-tie projects would result in a very small increase in impervious coverage, and would not interfere with groundwater recharge. Therefore, the impact of the WSP gen-tie projects upon groundwater resources would be *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact HYD-3. Alteration of Drainage Patterns, Erosion or Sedimentation

***Westlands Solar Park*. The WSP solar projects would result in potential water quality impacts from erosion and sedimentation during the construction and decommissioning phases. (*Less-than-Significant Impact with Mitigation*)**

***WSP Gen-Tie Corridors*. The construction of the gen-tie projects would result in potential water quality impacts from erosion and sedimentation during the construction. (*Less-than-Significant Impact with Mitigation*)**

This impact analysis addresses significance criterion 'c' above.

Westlands Solar Park

There are no natural drainage courses within the WSP plan area, and it is not part of a larger watershed. Under current conditions, rainfall percolates into the soil or evaporates, with little or no runoff. Therefore, the WSP plan area is essentially a hydrologically closed system with respect to stormwater.

The WSP solar projects would involve site clearing, minor grading, soil compaction, establishment of temporary construction staging areas, excavation of temporary water supply basins, and trenching for solar arrays, and construction of support facilities and internal access driveways. Since the existing ground is virtually level, solar development within the WSP plan area can be accommodated without mass grading. Ground preparation would include tilling and minor grading to smooth out existing agricultural furrows, followed by compaction with rollers. Finished grades would be designed to provide for positive site drainage. As discussed in the Chapter *2. Project Description*, site clearing and soil preparation would occur incrementally and would not take place until a given area is needed for the next construction phase within each solar development, which typically would comprise the next solar block or array in a predetermined sequence. Vegetative cover would be retained as long as possible to minimize exposed soils and reduce potential for erosion and wind-blown dust.

Once vegetation is removed, the exposed and disturbed soil would be susceptible to erosion from wind and rain, although the potential for sediment transport would be reduced by the flat terrain. This represents a *potentially significant impact*. With implementation of Mitigation Measure HYD-1 below, the impact would be reduced to *less than significant*.

WSP Gen-Tie Corridors

Construction of the gen-tie projects would involve soil-disturbing activities such as leveling and excavation for tower foundations and grading for temporary access roads. Although the potential for erosion and sedimentation is reduced in the gen-tie corridors due to the flat terrain, the impact would be *potentially significant*. With implementation of Mitigation Measure HYD-1 below, the impact would be reduced to *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. Implement MM HYD-1.**

***WSP Gen-Tie Corridors*. Implement MM HYD-1.**

MM HYD-1. Stormwater Quality Protection. Prior to construction grading and prior to the decommissioning, the applicant shall be required to file a "Notice of Intent" (NOI) with the SWRCB to comply with the General Permit and prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP for each project phase shall be prepared by a licensed engineer and shall detail the treatment measures and best management practices (BMPs) to control pollutants that shall be implemented and complied with during the construction and post-construction phases of solar development. The

SWPPP(s) required for decommissioning shall specify BMPs to be implemented during that final project phase. The construction contracts for each project phase, and for the decommissioning phase, shall include the requirement to implement the BMPs in accordance with the SWPPPs.

As discussed in Section *3.8.2. Regulatory Setting*, the solar projects developed within the WSP will be subject to the U.S. EPA's National Pollutant Discharge Elimination System (NPDES) permit requirements for construction activities. These are implemented at the state level through the General Permit for Discharges of Storm Water Associated with Construction Activity, as administered by the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB). All project SWPPPs would be subject to approval by the Central Valley Regional Water Quality Control Board (CVRWQCB), which would make the final determinations on which BMPs are required for each project. The construction contracts for each construction phase, and for the decommissioning phase, would include the requirement to implement the BMPs in accordance with the SWPPPs. The SWPPPs would identify the responsible entities for both the construction and post-construction periods. The SWPPPs are to be kept on-site during construction, where they would be subject to inspection by Kings County and CVRWQCB staff. The SWPPPs are to be updated each year for each solar project while construction is ongoing.

The SWPPPs will specify such practices as: scheduling construction activities around forecasted rain events, designation of restricted-entry zones, sediment tracking control measures (e.g., crushed stone or riffle metal plate at construction entrances), truck washdown areas, diversion of runoff away from disturbed areas, protective measures for sensitive areas, outlet protection, provision mulching for soil stabilization during construction, and provision for revegetation upon completion of construction within a given area. The SWPPPs will also prescribe treatment measures to trap sediment once it has been mobilized, at a scale and density appropriate to the size and slope of the catchment area. For solar development, these measures would typically include: straw bale barriers, straw mulching, fiber rolls and wattles, silt fencing, and/or siltation or sediment ponds. Upon completion of each solar block, the finished grades beneath and around the finished solar arrays would be vegetated with a native seed mix. The reestablished vegetated cover would stabilize the soils and minimize the potential for post-construction erosion.

The gen-tie projects would be subject to the same NPDES requirements for preparation and implementation of SWPPPs, as discussed above for the WSP plan area. Typical BMPs would be the same or similar to those described above for the Westlands Solar Park.

Impact HYD-4. Drainage and Flooding

***Westlands Solar Park*. The WSP solar projects would result in a slight increase stormwater runoff compared to existing conditions; however, stormwater runoff would be controlled and retained within each solar project site, and flooding would be avoided. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. The gen-tie projects would result in a slight increase stormwater runoff compared to existing conditions; however, stormwater runoff would be controlled within each disturbance area, and flooding would be avoided. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'd' above.

Westlands Solar Park

The WSP solar projects would result in minimal impervious surface coverage of their sites. The solar arrays would occupy approximately 90 percent of each site and would be mounted on steel posts, with the ground beneath retained in vegetated cover. Impervious surfaces would consist of transformer and inverter pads, small operations buildings, footings and pads for on-site substations and switching stations, and small asphalt areas for accessible parking. These structures would occupy less than one percent of each solar project site. Internal gravel driveways would take up the remaining 9 percent of each project site, and would be composed of permeable gravel to allow for percolation of rainfall into the underlying soil. With 99 percent of each solar project site retained in permeable surfaces, the resulting increase in stormwater runoff would be negligible. The very small amount of runoff from the impervious surfaces would be displaced to immediately adjacent vegetated areas and readily absorbed into the ground. The solar arrays would not displace runoff, and rainwater falling from edges of the panels would spread to vegetated areas beneath the arrays and percolate into the ground.

The terrain of the WSP plan area is virtually flat, with a maximum gradient of 0.3 percent. Under current conditions, rainfall percolates into the soil with little or no runoff. The WSP solar projects would result in no substantial modification of existing site grades. During normal rain events, runoff from impervious surfaces would be absorbed by the adjacent vegetated ground and percolate into the soil. During more intense or prolonged storm events, the ground could become saturated and relatively minor volumes of stormwater may temporarily pond on the surface and gradually evaporate or percolate into the ground, as occurs under existing conditions. Given the virtually level ground and almost complete coverage of each solar project site with permeable soils to absorb rainwater, the conditions that would allow for stormwater to be mobilized and concentrated in sustained runoff flows would not exist. The introduction of very small areas of impervious surfaces distributed throughout each solar project would not have a discernable effect on drainage runoff patterns within the WSP solar project sites, and would not result in flooding within or beyond each SGF site.

In summary, given the minimal terrain alteration and the very small amount of impervious surface coverage resulting from the WSP solar projects, there would be no discernable effect on runoff patterns within the WSP plan area. Therefore, drainage and flooding impacts associated with the WSP solar development would be *less than significant*.

WSP Gen-Tie Corridors

The gen-tie projects would result in placement of very few permanent features on the ground surface. These features would consist primarily of concrete footings for tower structures, which would add a negligible amount of impervious surface area. The very small volume of additional runoff from these impervious surfaces would be readily absorbed into the ground adjacent to these features. There is no potential for gen-tie projects to result in increased flood hazard. Therefore, the drainage and flooding impacts associated with the gen-tie projects would be *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact HYD-5. Operations-Related Impacts to Water Quality

***Westlands Solar Park*. The WSP solar facilities would generate minimal stormwater pollutants, and would result in little or no stormwater runoff; therefore, the operation of WSP solar facilities would not adversely affect water quality. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. The gen-tie projects would generate minimal stormwater pollutants, and would result in little or no stormwater runoff; therefore, the operation of gen-tie lines would not adversely affect water quality. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'e' above.

Westlands Solar Park

The operation of the WSP solar facilities would not introduce substantial sources of stormwater pollutants, such as oil, grease, metals, and debris typically associated with stormwater pollution generated on urban streets and parking lots. The very minor leaks of oil or lubricants that may occur from maintenance vehicles and equipment used at the solar facilities would not be substantially different in nature or quantity from those expected from farm machinery used within the WSP plan area under pre-project conditions. As discussed under Impact HYD-4, above, the stormwater generated at the solar facility sites would tend to percolate into the soil, as under current conditions, due to the very small amount impervious surfaces that would be created by the solar projects (i.e., less than 1 percent of total SGF site area). Given also the flatness of the terrain, there would be little or no off-site runoff generated by the solar facilities. Considering also the absence of natural drainage features in or near the WSP plan area, there is virtually no potential for the small amount of stormwater pollutants

generated at the solar facilities to reach downstream water bodies and adversely affect water quality. Therefore, the potential water quality impacts resulting from the operation of WSP solar facilities would be *less than significant*.

WSP Gen-Tie Corridors

After completion of the gen-tie projects, the ongoing inspection, maintenance, and repair activities would involve travel to the tower sites by maintenance vehicles which could leak minor amounts of oil or lubricants. Since almost all of surrounding areas would consist of natural or cultivated pervious soil cover, the potential for the very small amounts of these pollutants to become entrained in stormwater runoff and be conveyed to downstream water bodies is virtually nil. Therefore, the potential water quality impacts resulting from the operation of the gen-tie lines would be *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact HYD-6. Other Impacts to Water Quality

***Westlands Solar Park*. The WSP solar projects would result in potential water quality impacts related to discharges of hazardous materials during construction and decommissioning. (*Less-than-Significant Impact with Mitigation*)**

***WSP Gen-Tie Corridors*. The gen-tie projects would result in potential water quality impacts related to discharges of hazardous materials during construction. (*Less-than-Significant Impact with Mitigation*)**

This impact analysis addresses significance criterion 'f' above.

Westlands Solar Park

During the construction and decommissioning phases for each WSP solar project, there is a potential for discharges of hazardous materials that could adversely affect the quality of surface water or groundwater. Spills or leaks from heavy equipment and machinery can result in oil and grease contamination of stormwater. Staging areas and building sites can be the source of pollution due to paints, solvents, cleaning agents, and metals contained in the surface of equipment and materials. Gross pollutants such as trash, debris, and organic matter are additional potential pollutants associated with the construction and decommissioning phases of the project. The potential discharges of hazardous materials during construction and decommissioning of WSP solar projects could result in a

potentially significant impact to water quality. With implementation of Mitigation Measure HYD-1 above, the impact would be reduced to *less than significant*.

WSP Gen-Tie Corridors

During construction of the gen-tie projects, there is a potential for discharges of hazardous materials, as discussed above for Westlands Solar Park, which could adversely affect the quality of surface water or groundwater. The potential discharges of hazardous materials during construction of the gen-tie projects could result in a *potentially significant impact* to water quality. With implementation of Mitigation Measure HYD-1 above, the impact would be reduced to *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. Implement MM HYD-1. No additional mitigation is required.**

***WSP Gen-Tie Corridors*. Implement MM HYD-1. No additional mitigation is required.**
The measures required under MM HAZ-1 to prevent hazardous contamination during the construction and decommissioning phases would be specified in the Storm Water Pollution Prevention Plans (SWPPPs) required to be implemented for each project. The project SWPPPs will include construction and decommissioning phase housekeeping measures for control of contaminants such as petroleum products, paints and solvents, detergents, fertilizers, and pesticides, as well as vehicle and equipment fueling and maintenance practices, and waste management and disposal control practices, among other things.

Impact HYD-7. Impacts to Development within 100-year Floodplain

***Westlands Solar Park*. During the 100-year storm event, small portions of the WSP plan area may be subject to minor flooding; however, any building and equipment pads in these areas would be raised above surrounding ground elevations to prevent flooding damage to such structures. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. In areas where the gen-tie corridors cross mapped flood zones, transmission towers would be placed to avoid flood zones, or where avoidance is not possible, tower structures would be designed to withstand flood flows. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'g' above.

Westlands Solar Park

As discussed in *Section 3.8.1. Environmental Setting*, FEMA's flood zone mapping for Kings County indicates that the WSP plan area is not located within the flood zones for the 100-year or 500-year events as

mapped on the Flood Insurance Rate Maps (FIRM)(see Figure HYD-1). However, mapping conducted by the California Department of Water Resources as part of the Awareness Floodplain Mapping project indicates that relatively small areas of flood-prone lands, not mapped by FEMA, are located near the southern tip of the WSP plan area and along the northeastern boundary. (The DWR-mapped flood zones are shown on Figure HS-6 in the Health and Safety Element of the 2035 Kings County General Plan.) DWR's awareness maps identify flood-prone areas using approximate assessment procedures and are not mapped as regulated floodplains by FEMA.

The Kings County General Plan requires consideration of the DWR-mapped flood zones in reviewing development proposals, including solar projects. The Kings County Flood Damage Prevention Ordinance requires new development to be designed and constructed to prevent flood damage. Within the DWR-mapped flood-prone areas of the WSP plan area, any planned structures, such as possible O&M facilities, and transformer and inverter pads, would be raised above flood elevations in order avoid potential flooding damage to these facilities. Buried electrical conduit planned for flood-prone areas would be enclosed in waterproof pipes**.**

In summary, the no portion of the WSP plan area is mapped as regulated floodplain by FEMA flood zone mapping, but relatively small flood-prone areas occur near the southern and eastern boundaries of the WSP plan area, as mapped by DWR. Within these minor flood-prone areas, any buildings and equipment pads would be raised above flood elevations to avoid flooding impacts. Therefore, potential flooding impacts within the WSP plan area would be *less than significant*.

WSP Gen-Tie Corridors

As shown in Figure HYD-1, the gen-tie corridors pass through 100-year flood zones in southwest Fresno County. The largest flood-prone area is located between the WSP plan area and the California Aqueduct to the west. This area would be traversed by the WSP North to Gates Gen-Tie, which crosses 6 miles of flood zone, and the WSP South to Gates Gen-Tie, which crosses 2.5 miles of flood zone.

The transmission towers would be placed outside of the flood zones wherever possible. In areas where spanning the flood zone is not possible, the tower structures would be designed to withstand flood flows. As such, potential flooding impacts to the gen-tie facilities would be *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact HYD-8. Impede or Redirect Flood Flows

***Westlands Solar Park*. No lands within the WSP plan area are mapped within the 100-year flood zone or the 500-year flood zone, per FEMA's regulatory flood zone mapping. In the small areas of the WSP plan area that are mapped as flood-prone by DWR, the solar facilities would be raised above flood elevations and thus would not impede or redirect flood flows. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. The placement of some transmission towers within 100-year flood zones is unavoidable; however, the relatively small concrete footings of the intermittently spaced tower structures would not impede or redirect flood flows. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'h' above.

Westlands Solar Park

There are no FEMA-designated floodways in the vicinity of the WSP plan area. The nearest floodway mapped by FEMA is the reach of Cross Creek between SR-198 and the Tulare Lakebed which is at least 15 miles east of the WSP boundary. The Kings River, located 2 miles east of the WSP plan area, is designated as a floodway by the Central Valley Flood Protection Board. As shown in Figure HYD-1, there are no FEMA-designated 100-year flood zones or 500-year flood zones within the WSP plan area; however, there are two small areas at the eastern and southern peripheries of the plan area that are mapped by DWR's Awareness Floodplain Mapping project as being subject to potential flooding during the 100-year event. . The awareness maps identify the 100-year flood hazard areas using approximate assessment procedures. These floodplains are shown simply as flood prone areas without specific depths and other flood hazard data. These maps are not FEMA regulatory floodplain maps.

The WSP solar projects would consist mainly of solar arrays which would be mounted several feet above ground level on metal posts. Within any flood-prone areas, buildings and equipment pads within solar projects would be raised above flood elevations on short concrete piers to minimize displacement of flood waters. As such, the potential for the affected WSP solar projects to redirect or block of flood flows would be negligible, and the potential impact would be *less than significant*.

WSP Gen-Tie Corridors

The gen-tie corridors pass through a broad area of mapped 100-year flood zone located between the San Luis Canal/California Aqueduct and the Fresno/Kings County line. Spanning the flood zones would not be possible within this broad area of flooding. However, the only permanent structures that would be placed in the flood zone would be the concrete footings supporting each of the tower structures. The volume of displaced flood flows at each tower site would be very small. Given that the towers would be spaced 1,000 feet apart, on average, the overall displacement of flood flows resulting from the tower footings would be negligible. Therefore, the potential impacts of the transmission corridors in terms of redirecting or blocking flood flows, would *be less than significant*.

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact HYD-9. Inundation Potential Due to Dam Failure

***Westlands Solar Park*. In the event of failure of large dams in the Sierra Nevada, the potential inundation areas would extend into the eastern areas of Kings County, but would not extend to the WSP plan area. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. In the Diablo Range, the nearest potential inundation areas are located substantial distances from the gen-tie corridors, and have no potential to affect the gen-tie projects. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'i' above.

Westlands Solar Park

Some portions of Kings County located to the east and northeast of the WSP plan area are subject to potential inundation in the event of the failure of dams located in the Sierra Nevada. The failure of the Pine Flat Dam, located upstream on the Kings River, would result in potential inundation of an area that could extend as far west as Stratford and the City of Lemoore, but would stop short of the eastern WSP boundary. Failure of the Terminus Dam on the Kaweah River would include an inundation area that would extend to a point just east of the City of Hanford, or more than 10 miles east of the WSP plan area. If Pine Flat Dam failed while at full capacity, its floodwaters would arrive in Kings County within approximately five hours. If Terminus Dam failed while at full capacity, its floodwaters would arrive in Kings County within approximately 12 hours. The chances of either of these dams failing while at full capacity are considered remote. (The mapped inundation areas are shown on Figure HS-7 in the Health and Safety Element of the 2035 Kings County General Plan.) The failure of Success Dam on the Tule River would not affect Kings County. In summary, the WSP plan area is not located within the mapped inundation areas for any of the reservoirs in the region, and therefore risk to WSP solar facilities due to flooding from dam failure would be *less than significant*.

WSP Gen-Tie Corridors

The nearest inundation zones to the gen-tie corridors are the mapped inundation zones for failure of the detention dams on Los Banos Creek and Little Panoche Creek in the Diablo Range. These inundation zones are located approximately 75 miles and 60 miles from the gen-tie corridors, respectively.

Therefore, the potential failure of these dams and resulting inundation of downstream areas would have *no impact* on the WSP gen-tie facilities.

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Impact HYD-10. Inundation by Seiche, Tsunami, or Mudflow

***Westlands Solar Park*. The WSP plan area is located substantial distances from areas subject to potential flood hazards from catastrophic events such as seiches, tsunamis, or mudflows; therefore, WSP solar development would not be subject to flooding risks from these sources. (*Less-than-Significant Impact*)**

***WSP Gen-Tie Corridors*. The gen-tie corridors are located substantial distances from areas subject to potential flood hazards from catastrophic events such as seiches, tsunamis, or mudflows; therefore, the WSP gen-tie facilities would not be subject to flooding risks from these sources. (*Less-than-Significant Impact*)**

This impact analysis addresses significance criterion 'j' above.

Westlands Solar Park

Seiches are seismically-induced waves in an enclosed body of water such as a lake or reservoir. Severe seismic shaking can cause impounded water to spill beyond the banks and inundate surrounding lands. There are no water bodies in the WSP vicinity, so there is no potential for seiches to affect the WSP plan area.

Tsunamis are large and rapidly moving ocean waves that result from sudden and large scale fault movement on the ocean floor. Due to WSP's inland location more than 70 miles from the Pacific Ocean, and given its elevation at over 200 feet above mean sea level, the WSP plan area is not subject to inundation from tsunamis.

Mudflows occur when unstable hillsides or mountain slopes fail as a result of a seismic event and/or oversaturated conditions. Also called "debris flows," these flows move quickly with large amounts of debris (soil, boulders, trees, etc.). There are no hillsides within or near the WSP plan area which would be a source of mudflows or debris flows which could affect the WSP solar facilities.

In summary, there is no potential for the WSP plan area to be affected by seiches, tsunamis, or mudflows; therefore, the potential impact to WSP solar development due to these hazards is *less than significant*.

WSP Gen-Tie Corridors

With respect to seiches, there are no large bodies of water in the vicinity of gen-tie corridors that would seiches that could affect the gen-tie facilities.

With regard to tsunamis, the gen-tie corridors would not be affected by this potential hazard, given their location at least 65 miles from the ocean and their lowest elevation at over 200 feet above mean sea level.

Regarding mudflows, or debris flows, the conditions necessary to generate these rapidly moving flows are not present on the valley floor due to the absence of hillsides.

In summary, there is no potential for the gen-tie corridors to be affected by seiches, tsunamis, or mudflows; therefore, the potential impact to the transmission projects due to these hazards is *less than significant*.

Mitigation Measures:

***Westlands Solar Park*. No mitigation is required.**

***WSP Gen-Tie Corridors*. No mitigation is required.**

Cumulative Impacts

Impact HYD-11. Cumulative Hydrology and Water Quality Impacts

***Westlands Solar Park*. The potential cumulative drainage, flooding, water quality, and groundwater impacts resulting from WSP solar development, combined with impacts from related cumulative projects, would be less than cumulatively significant under near-term and far-term conditions, with mitigation. (*Less-than-Significant Cumulative Impact with Mitigation*)**

***WSP Gen-Tie Corridors*. The potential cumulative drainage, flooding, water quality, and groundwater impacts resulting from the WSP gen-tie projects, combined with impacts from related cumulative projects, would be less than cumulatively significant under near-term and far-term conditions. (*Less-than-Significant Cumulative Impact with Mitigation*)**

Geographic Scope of Cumulative Impact Analysis

The study area for cumulative hydrology and water quality impacts is typically defined by the drainage area where a project is located and to which it contributes runoff. As discussed under Impact HYD-3 above, the WSP plan area is not physically part of a larger drainage area or watershed, so it is essentially a hydrologically closed system with respect to surface drainage. As such, it is highly unlikely that hydrology and water quality impacts would extend beyond the WSP plan area. Therefore, the geographic scope for the cumulative analysis of hydrology and water quality impacts associated with Westlands Solar Park is conservatively defined to extend no more than ¼ mile beyond the boundaries of the WSP plan area. Lands located at greater distances have no potential to contribute to cumulatively significant hydrology and water quality impacts in combination with the less-than-significant hydrology and water quality impacts associated with the WSP solar developments.

Regarding the WSP gen-tie corridors, the physical footprint of the gen-tie projects would be very small, during both construction and operation, so the area subject to potential hydrology and water quality impacts from the gen-tie projects is limited. Therefore, the geographic scope of the cumulative analysis for the gen-tie projects extends to lands adjacent to the gen-tie corridors, and includes the cumulative projects on those adjacent lands.

Westlands Solar Park

Near-Term

Under near-term conditions, there are 4 pending, approved, and completed projects (or groups of projects) within a ¼ mile radius of the WSP's outside boundaries. (Note: The Westside Solar project and Westlands Aquamarine solar project, shown in Figure PD-9, are located within the WSP plan area. Since the impacts associated with these projects are addressed in the WSP impact analysis, they are not included again in the list of cumulative projects below.) All four of these projects comprise solar PV developments. These solar projects are listed below and described in Section *2.5. Completed, Approved and Pending Projects/ Introduction to Cumulative Impact Analysis*. Their locations are shown in Figure PD-9a.

- Mustang/Orion/Kent South
- American Kings
- Mustang 2
- Kettleman

With respect to stormwater runoff, the WSP plan area and the other cumulative project sites have similar natural conditions like flat topography, semi-arid climate, lack of natural drainage courses, and no surface runoff under existing conditions. Since all of the cumulative projects involve PV solar generating facilities, the increased coverage by impervious surfaces would be 10 percent or less in all cases, resulting in very minor increases in stormwater runoff which would be readily absorbed by adjacent vegetated areas within each of those cumulative project sites. Since no stormwater would be discharged off-site from any of the cumulative projects, including solar development within the WSP plan area, there is little or no potential that runoff from the cumulative project would combine to result in cumulative drainage impacts or increased flooding risk. Even under major storm conditions, any offsite runoff would likely be captured by one of the many irrigation or agricultural drainage ditches in

the vicinity of each project site. Thus there is virtually no potential for runoff from several sites to combine to result in downstream drainage impacts. Therefore, the potential cumulative stormwater drainage impacts under near-term conditions would be *less than significant*.

With respect to flooding potential, FEMA's flood zone mapping for Kings County indicates that the WSP plan area is not located within the flood zones for the 100-year or 500-year events as mapped on the Flood Insurance Rate Maps (FIRM)(see Figure HYD-1). However, mapping conducted by the California Department of Water Resources as part of the Awareness Floodplain Mapping project indicates that relatively small areas of flood-prone lands, not mapped as regulated flood zones by FEMA, are located near the southern tip of the WSP plan area and along the northeastern boundary. . There are also 100-year flood zones adjacent to the west in Fresno County and to the southeast along SR-41, and one of the other cumulative projects (Kettleman Solar) is partially located in the FEMA-mapped 100-year flood zone along SR-41. Any cumulative projects located within mapped flood zones would be required to raise building and equipment pads above flood elevations on concrete piers or similar low profile structures to allow for passage of flows and minimize displacement of flood storage. The solar arrays themselves would be mounted on metal posts and raised above flood elevations. As such, any solar projects constructed in flood zones would not block or redirect flood flows, nor would they displace flood storage in the floodplain, and thus would not increase the depth or extent of flood-prone areas. As such, there is little or no potential that the development of the cumulative projects, including solar development of the WSP plan area, would result in new or increased flood hazard. Therefore, the cumulative flooding impact under near-term conditions would be *less than significant*.

Regarding potential inundation due to catastrophic failure of dams in the region, neither the WSP plan area nor any of the cumulative project sites are subject to inundation as a result of potential failure of Terminus Dam on the Kaweah River or Pine Flat Dam on the Kings River, or any other dam in the region. Therefore, the potential cumulative inundation impact under near-term conditions would be *less than significant*.

With respect to water quality, during the construction of each cumulative project, there is a potential for erosion of exposed soils and spills of hazardous materials that could have an adverse impact on surface water quality. This would represent a *potentially significant cumulative impact*. With implementation of Mitigation Measure HAZ-1 above, the impact would be reduced to *less than significant* for WSP solar development. It is expected that other cumulative development would also be required to implement similar water quality mitigation. Each cumulative project would be required to prepare and implement a SWPPP that would specify measures to prevent and control erosion and discharges of hazardous materials. These control measures would reduce the potential water quality impacts at each cumulative site to less-than-significant levels. Therefore, the cumulative impacts to water quality under near-term conditions would be *less than significant with mitigation*.

With respect to groundwater resources, each cumulative solar project would rely on well water during construction, and some cumulative solar projects would also rely on well water for operational use (e.g., Mustang/Orion/Kent South). The demand for water at each site would be highest during construction for purposes of dust control and soil conditioning. For most cumulative projects, construction water would be supplied by existing agricultural wells or new wells. It is estimated that construction water demand for each project would be about 0.2 acre-feet per acre (which would occur over less than one year for each acre of construction). This pumping rate is less than half the historical average

groundwater pumping rate throughout the District, and is not expected to exceed the sustainable yield for the groundwater basin on a per acre basis. Therefore, even if the other cumulative projects in the vicinity were constructed concurrently with the proposed project, the collective groundwater pumping rate is unlikely to exceed the sustainable yield of the aquifer.

The operational water supplies for each project would mainly be used for panel washing. As discussed under Impact HYD-2 above, operational water demand for the WSP solar projects is estimated to be approximately 0.0135 acre-feet per acre per year, or about 7 percent of the construction water demand rate. As noted, the project operational supply would be provided by M&I surface water deliveries from WWD, and not from groundwater pumping. Although it is likely that some of the other cumulative projects in area would rely solely on well water for operational needs, the volumes would be relatively low, and the collective water demands would not exceed the sustainable yield of the groundwater basin on a per acre basis. Therefore, the cumulative projects would not deplete groundwater supplies or resulting in lowering of the water table, either individually or collectively. In addition, since all of the cumulative projects would retain over 90 percent of their site areas in permeable vegetated cover, the projects would not interfere with groundwater recharge, individually or collectively. Therefore, the cumulative impact to groundwater supplies under near-term conditions would be *less than significant*.

In summary, the near-term cumulative drainage, flooding, and groundwater impacts resulting from the WSP solar development and related cumulative projects would be *less than cumulatively significant*. With respect to water quality, the near-term cumulative impact would be *less than significant with mitigation*.

Far Term

For far-term conditions, the cumulative analysis of hydrology and water quality impacts considers the full buildout of land uses adjacent to the WSP plan area as shown on the 2035 Kings County General Plan and the Fresno County General Plan (which covers lands immediately to the west of the plan area). The 'Kings County Land Use Map' of the Land Use Element shows that Kings County lands adjacent to the WSP boundaries are designated as either 'General Agriculture 20 ac.' or 'Exclusive Agriculture 40 ac.' Similarly, the Fresno County General Plan shows the lands adjacent to the WSP plan area are designated as 'Agriculture.' Thus it is reasonable to assume that agriculture production will remain the dominant land use in the adjacent and surrounding lands for the life of the General Plans.

It is important to consider that, as with the lands of the WSP plan area, the agricultural designations of the 2035 Kings County General Plan allow the installation of utility-scale PV solar generating facilities subject to the approval of a conditional use permit (KC 2010). Thus it is possible that additional solar development projects could be proposed in the WSP vicinity within the 25 year planning horizon of the General Plan. Since the adjacent lands to the west of the WSP plan area are located within Fresno County, the corresponding General Plan designations for Fresno County lands would guide permitted uses on adjacent lands to the west. Again, all Fresno County lands adjacent to the WSP plan area to the west are designated 'Agriculture' under the Fresno County General Plan (Fresno County 2010b). While the Fresno County General Plan does not specifically allow PV solar development on agriculturally-designated lands, the County has initiated a process for considering solar PV development on agriculturally-designated lands, and has approved a number of solar PV projects under this process (Fresno County 2013). Although no solar projects have been proposed or approved in the nearby areas of Fresno County to date (the nearest

is the Westlands Solar Farm located 7 miles west of WSP), it is reasonable to assume that Fresno County would consider proposals for PV solar development on agricultural lands near the WSP plan area.

With respect to stormwater, there are no defined drainage courses on adjacent agricultural lands which discharge or release stormwater beyond their boundaries under current conditions. It is expected that any future PV solar development of these adjacent lands would involve a very low percentage of coverage by impervious surfaces, resulting in little or no additional runoff. Therefore, the potential for cumulative increases in stormwater runoff and downstream flooding due to cumulative development in the far term would be *less than significant*.

Regarding flooding potential, the adjacent Fresno County lands to the west and lands on the eastern WSP boundary are mapped as 100-year flood zones. As is the case with near-term cumulative development, it is expected that any buildings and equipment pads in such flood-prone areas would be raised above flood elevations on concrete piers. The solar arrays themselves would be mounted on metal posts above flood elevations. Thus there is little or no potential for cumulative solar development to block or redirect flood flows, or to displace flood storage capacity resulting in increased depths or extent of potential flooding. Therefore, the cumulative flooding impacts under far-term conditions would be *less than significant*.

Regarding potential inundation due to catastrophic failure of dams in the region, neither the WSP plan area nor any adjacent lands are subject to inundation as a result of potential failure of dams in the region. Therefore, the potential cumulative inundation impact under far-term conditions would be *less than significant*.

With respect to water quality, during the construction of potential future solar projects adjacent to the WSP plan area, there is a potential for erosion of exposed soils and spills of hazardous materials that could have an adverse impact on surface water quality. This would represent a *potentially significant cumulative impact*. With implementation of Mitigation Measure HAZ-1 above, the impact would be reduced to *less than significant* for WSP solar development. It is expected that other cumulative development would also be required to implement similar water quality mitigation. Each cumulative project would be required to prepare and implement a SWPPP which would specify measures to prevent and control erosion and discharges of hazardous materials. These control measures would reduce the potential water quality impacts at each cumulative site to less-than-significant levels. Therefore, the cumulative impacts to water quality under far-term conditions would be *less than significant with mitigation*.

With respect to groundwater resources, any future solar projects in the adjacent areas would require water during construction and operation. It is expected that such projects would obtain needed water supplies for construction from wells within or near their sites. Water supplies for operational uses would be provided either from surface water deliveries from WWD (as is planned for WSP solar projects), or from well water from on-site wells or well water purchased from off-site sources. As discussed above for near-term conditions, the anticipated demand for groundwater supplies would be not be expected to exceed the sustainable yield of the groundwater basin on a per acre basis during both the construction and operational phases for any future solar projects (even assuming all construction and operational water is supplied by groundwater sources). In addition, the retention of over 90 percent of each solar project site in pervious vegetative cover would ensure that groundwater

recharge is not impeded. Therefore, the cumulative impact to groundwater supplies under far-term conditions would be *less than significant*.

In summary, the far-term cumulative drainage, flooding, and groundwater impacts resulting from the WSP solar development and related cumulative projects would be *less than cumulatively significant*. With respect to water quality, the far-term cumulative impact would be *less than significant with mitigation*.

WSP Gen-Tie Corridors

Near Term

Under near-term conditions, there are 3 approved and pending solar projects and two transmission projects on lands adjacent to the WSP gen-tie corridors. (Note: The Westside Solar project and Westlands Aquamarine solar project, shown in Figure PD-9, are located within the WSP plan area. Since the impacts associated with these projects are addressed in the WSP impact analysis, they are not included again in the list of cumulative projects below.) These projects are listed below and shown in Figure PD-10, and described in Section *2.5. Completed, Approved, and Pending Projects/Introduction to Cumulative Impact Analysis*.

- Mustang/Orion/Kent South solar projects
- Central Valley Power Connect transmission project (Gates to Gregg Substation)
- Westside Transmission Project (Gates to Dos Amigos/Los Banos Substation)

With respect to stormwater drainage, the cumulative solar and transmission projects would result in very minor increases in stormwater runoff which would be readily absorbed by adjacent vegetated areas within each of those cumulative project sites. Since no stormwater would be discharged off-site from any of the cumulative projects, there is little or no potential that runoff from the cumulative projects would combine to result in cumulative drainage impacts or increased downstream flooding. Therefore, the potential cumulative stormwater drainage impacts under near-term conditions would be *less than significant*.

With respect to flooding potential, portions of the WSP gen-tie corridors pass through areas mapped as 100-year flood zones. However, transmission towers would be designed and constructed to withstand flood flows. Of the other cumulative projects, portions of the Gates to Gregg Transmission Project and Westside Transmission Project would also pass through mapped flood zones, but those projects are also expected to be designed and constructed to avoid flooding impacts. None of the other cumulative projects are located in mapped flood zones. As such, there is little or no potential that the development of the cumulative projects, including Westlands transmission projects, would result in new or increased flood hazard. Therefore, the combined flooding impact under near-term conditions would *be less than significant*.

Regarding potential inundation due to catastrophic failure of dams in the region, the Valley Segment of the Westside Transmission Project lies partially within the inundation zone for failure of the Little Pinoche Reservoir Detention Dam. None of the other cumulative projects lies within this or any other mapped inundation zone. However, Little Panoche Reservoir Dam is regularly inspected and meets all

applicable dam safety standards, so the probability of catastrophic failure is very low. Therefore, the potential cumulative inundation impact under near-term conditions is *less than significant*.

With respect to water quality, during the construction of each cumulative project, there is a potential for erosion of exposed soils and spills of hazardous materials that could have an adverse impact on surface water quality. This would represent a *potentially significant cumulative impact*. With implementation of Mitigation Measure HYD-1 above, the impact would be reduced to *less than significant* for WSP gen-tie projects. It is expected that other cumulative development in the near term would also be required to implement similar water quality mitigation. Each cumulative project would be required to prepare and implement a SWPPP which would specify measures to prevent and control erosion and discharges of hazardous materials. These control measures would reduce the potential water quality impacts at each cumulative site to less-than-significant levels. Therefore, the cumulative impacts to water quality under near-term conditions would be *less than significant with mitigation*.

With respect to groundwater resources, the cumulative solar projects would have low water demands during construction and operation. The solar projects would be supplied by pumped groundwater, but water demands during both construction and operation would be far lower than agricultural demands for a comparable land area. The cumulative transmission projects would have very low water demands during construction and negligible water requirements for operation and maintenance. Therefore, the cumulative impact to groundwater resources under near-term conditions would be *less than significant*.

In summary, the near-term cumulative drainage, flooding, and groundwater impacts resulting from the WSP gen-tie projects and related cumulative projects would be *less than cumulatively significant*. With respect to water quality, the near-term cumulative impact would be *less than significant with mitigation*.

Far Term

Under far-term conditions, it is assumed that all the cumulative transmission and solar projects considered in the near-term analysis will be completed. The far-term cumulative analysis of hydrology and water quality impacts assumes the full buildout of land uses adjacent to the WSP gen-tie corridors as shown on the General Plans of Kings and Fresno Counties. All adjacent lands are designated for agricultural uses in the county general plans. While both counties allow solar PV projects on agriculturally-designated lands, it is not foreseeable which lands, if any, will be proposed for solar PV development adjacent to the WSP gen-tie corridors in the far term. Also, additional transmission facilities or other public utility uses could be planned for adjacent lands, but this eventuality is also unforeseeable at this time. However, this far-term analysis assumes that some solar PV development and additional transmission projects will be constructed in the project vicinity in the far term.

With respect to stormwater, it is expected that any future PV solar development or transmission project construction on adjacent lands would involve a very low percentage of coverage by impervious surfaces, resulting in little or no additional runoff. Therefore, the potential cumulative drainage impacts and increased flooding risk due to cumulative development in the far term would be *less than significant*.

Regarding flooding, it is possible that future solar or transmission project development would be constructed in 100-year flood zones. It is expected that any solar structures associated would be raised

above flood elevations, and that any transmission towers would be placed outside of flood zones or constructed to withstand flood flows where avoidance is not possible. There is little or no potential for such development to block or redirect flood flows, or to displace flood storage capacity resulting in increased depths or extent of potential flooding. Therefore, the cumulative flooding impacts under far-term conditions would be *less than significant*.

Regarding potential inundation due to catastrophic failure of dams in the region, there are no mapped inundations zones in the vicinity of the gen-tie corridors. Therefore, the potential cumulative inundation impact under far-term conditions is *less than significant*.

With respect to water quality, the potential for erosion of exposed soils and spills of hazardous materials in conjunction with any future solar or transmission projects is expected to be avoided or minimized through the implementation of measures like Mitigation Measure HYD-1, as specified above for the WSP gen-tie projects. Therefore, the cumulative impacts to water quality under far-term conditions would be *less than significant with mitigation*.

With respect to groundwater resources, any future solar and transmission projects in the adjacent areas would require water during construction and operation. However, the water requirements would be low for both types of projects during construction and operation. Therefore, the cumulative impact to groundwater supplies under far-term conditions would be *less than significant*.

In summary, the far-term cumulative drainage, flooding, and groundwater impacts resulting from the WSP gen-tie projects and related cumulative projects would be *less than cumulatively significant*. With respect to water quality, the far-term cumulative impact would be *less than significant with mitigation*.

Mitigation Measures:

***Westlands Solar Park*. Implement MM HYD-1. No additional mitigation is required.**

***WSP Gen-Tie Corridors*. Implement MM HYD-1. No additional mitigation is required.**

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