4.9 HYDROLOGY AND WATER QUALITY

This section describes federal, State, and local regulations applicable to hydrology and water quality. It also describes the existing environmental setting of the County of Imperial with regard to the surface water, groundwater, and water quality. A discussion of hydrology and water quality impacts is also provided and mitigation measures are identified to address potential impacts.

4.9.1 Regulatory Setting

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Federal Laws and Requirements

Federal Clean Water Act of 1972

The Federal Clean Water Act of 1972 (CWA) is the basic federal law that addresses surface water quality control and protection of beneficial uses of water. The purpose of the CWA is to provide guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters through prevention and elimination of pollution. The CWA applies to discharges of pollutants into waters of the United States. The CWA establishes a framework for regulating stormwater discharges from municipal, industrial, and construction activities under National Pollutant Discharge Elimination System (NPDES) regulations. In California, the State Water Resources Control Board (SWRCB) administers the NPDES program. The following CWA sections are most relevant to the regulation of surface water in the County of Imperial.

CWA Section 303(d)

Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the CWA, water quality standards consist of two primary elements: 1) designated beneficial uses of waterbodies; and 2) criteria that protect the designated uses.

Under CWA Section 303(d), states, territories, and authorized tribes are required to develop a list of waterbodies that are considered to be "impaired" from a water quality standpoint. Waterbodies that appear on this list do not meet, or are not expected to meet, water quality standards even after the minimum required levels of pollution-control technologies have been implemented to reduce point sources of pollution. The law requires that respective jurisdictions establish priority rankings for surface waterbodies on the list and develop action plans, referred to as total maximum daily loads (TMDLs), to improve water quality. TMDL refers to the amount of a specific pollutant a river, stream, or lake can assimilate and still meet federal water quality standards as provided in the CWA. TMDL accounts for all sources of pollution, including point sources, nonpoint sources, and natural background sources.

The Section 303(d) list of impaired water bodies provides a prioritization and schedule for development of TMDLs for the State. SWRCB, in compliance with the Section 303(d) of the CWA (33 U.S. Code, Section 1313[d]), publishes the list of segments having limited water quality in California, which includes a priority schedule for the development of TMDLs for each contaminant or "stressor" impacting the water body (SWRCB 2011).

CWA Section 401

Every applicant for a federal permit or license for any activity that may result in a discharge to a water body must obtain a CWA Section 401 Water Quality Certification for the proposed activity and comply with State water quality standards prescribed in the certification. In California, these certifications are issued by SWRCB under the auspices of the Regional Water Quality Control Board (RWQCB). Most certifications are issued in connection with CWA Section 404 U.S. Army Corps of Engineers (USACE) permits for dredge and fill discharges.

CWA Section 402

CWA Section 402 sets forth regulations that prohibit the discharge of pollutants into waters of the United States from any point source without obtaining an NPDES permit. SWRCB implements the NPDES and the State's water quality programs by regulating point-source discharges of wastewater and agricultural runoff to land and surface waters to protect their beneficial uses. To comply with the CWA water quality regulations, the various RWQCBs in California (nine regions) require permits for discharging or proposing to discharge materials that could affect water quality. SWRCB and its RWQCBs administer the NPDES permit program.

Although the NPDES permit program initially focused on point-source discharges of municipal and industrial wastewater that were assigned individual permits for specific outfalls, results of the Nationwide Urban Runoff Program identified contaminated stormwater as one of the primary causes of water quality impairment. To regulate runoff-related (nonpoint-source) discharges, the U.S. Environmental Protection Agency (USEPA) developed a variety of general NPDES permits for controlling industrial, construction, and municipal stormwater discharges.

SWRCB/RWQCB also regulates discharges to, and the quality of, groundwater resources through the issuance of Waste Discharge Requirements (WDRs). WDRs are issued to discharges that specify limitations relative to the Water Quality Control Plan for the Colorado River Region (SWQCB 2014).

CWA Section 404

Section 404 of the CWA establishes a permit program, administered by USACE, regulating discharge of dredged or fill materials into waters of the United States, including wetlands. Activities in waters of the United States that are regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for farming and forestry. CWA Section 404 permits are issued by USACE.

Federal Antidegradation Policy

The federal antidegradation policy has been in existence since 1968. The policy protects existing uses, water quality, and national water resources. It directs states to adopt a statewide policy that includes the following primary provisions:

- maintain and protect existing instream uses and the water quality necessary to protect those uses

- where existing water quality is better than necessary to support fishing and swimming conditions, maintain and protect water quality unless the State finds that allowing lower water quality is necessary for important local economic or social development

- where high-quality waters constitute an outstanding national resource, such as waters of national and State parks, wildlife refuges, and waters of exceptional recreational or ecological significance, maintain and protect that water quality

Executive Order 11988 — Floodplain Management

Executive Order (EO) 11988 directs federal agencies to avoid, to the extent practicable and feasible, short- and long-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever a practicable alternative can be found. Further, EO 11988 requires the prevention of uneconomic, hazardous, or incompatible use of floodplains; protection and preservation of the natural and beneficial floodplain values; and consistency with the standards and criteria of the National Flood Insurance Program (NFIP).

The basic tools for regulating construction in potentially hazardous floodplain areas are local zoning techniques and Federal Emergency Management Agency (FEMA) floodplain mapping. The Federal Insurance Rate Map (FIRM) is the official map created and distributed by FEMA and NFIP that delineates Special Flood Hazard Areas (SFHAs) — areas that are subject to inundation by a base flood — for every county and community that participates in the NFIP. FIRMs contain flood risk information based on historic, meteorological, hydrologic, and hydraulic data, as well as open-space conditions, flood control works, and development.

For projects that would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source and, thus, result in the modification of the existing regulatory floodway, effective Base Flood Elevations (BFEs), SFHA, or conditional letter of map revision (CLOMR) would need to be prepared and approved by the California Department of Transportation (Caltrans), the County, and FEMA prior to any work occurring.

State Regulations and Policies

Porter-Cologne Water Quality Control Act of 1969

Division 7 of the California Water Code is the basic water-quality control law for California. This law is titled the Porter-Cologne Water Quality Control Act (Porter-Cologne). Porter-Cologne establishes a regulatory program to protect water quality and the beneficial uses of State waters.

Porter-Cologne is California's comprehensive water-quality control law. It requires the adoption of water quality control plans (basin plans) by the RWQCBs for watersheds within their regions. The basin plans are reviewed triennially and amended as necessary by the RWQCB, subject to the approval of the California Office of Administrative Law, SWRCB, and ultimately USEPA. Moreover, pursuant to Porter-Cologne, these basin plans become part of the California Water Plan when such plans have been reported to the legislature (California Water Code, Section 13141). Porter-Cologne also regulates river or stream crossings during road, pipeline, or transmission line construction that may result in a discharge into a State waterbody that is not considered to be under the jurisdiction of USACE.

In some cases, the RWQCB may issue WDRs under Porter-Cologne that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

Statewide Construction General Permit

Dischargers whose projects disturb one or more acres of soil, or less than 1.0 acre but are part of a larger common plan of development that in total disturbs 1.0 or more acres, are required to obtain coverage under SWRCB Order 2012-0006-DWQ (amending Order 2009-0009-DWQ as amended by 2010-0014-DWQ), the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit). Construction activity subject to this permit also includes linear underground/overhead projects disturbing at least 1.0 acre. Construction and demolition activities subject to this permit include clearing, grading, grubbing, and excavation, or any other activity that results in a land disturbance equal to or greater than 1.0 acre.

Linear Utility Project (LUP) construction includes those activities necessary for installation of underground and overhead linear facilities (e.g., conduits; substructures; pipelines; towers and poles; cables and wires; connectors; switching, regulating, and transforming equipment; and associated ancillary facilities). LUP construction also includes those activities necessary for underground utility mark-out; potholing; concrete and asphalt cutting and removal; trenching, excavating, boring, and drilling; access road and pole/tower pad and cable/wire pull station construction; substation construction; substructure installation; tower footings and/or foundations construction; pole and tower installations; pipeline installations; welding; concrete and/or pavement repair or replacement; and stockpile/borrow locations. As Order 2003-0007-DWQ previously regulated LUP construction activities, these projects are now regulated by Attachment A of Order 2012-0006-DWQ.

Permit applicants are required to submit a Notice of Intent (NOI) to the SWRCB and to prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP identifies best management practices (BMPs) that must be implemented to reduce construction effects on receiving water quality based on potential pollutants. The BMPs identified are directed at implementing sediment- and erosion-control measures and other measures to control potential chemical contaminants. The SWPPP also includes descriptions of the BMPs to reduce pollutants in stormwater discharges after all construction phases are completed at the site (postconstruction BMPs).

The Construction General Permit requires a risk-level assessment for construction sites, an active stormwater effluent monitoring and reporting program, rain event action plans, and numeric effluent limitations and numeric action levels for pH and turbidity.

Statewide Industrial General Permit

The SWRCB issued Water Quality Order 97-03-DWQ, NPDES General Permit No. CAS000001 WDRs for discharges of stormwater associated with industrial activities. This General Permit is intended to cover all new or existing stormwater discharges and authorized nonstormwater discharges from facilities required by federal regulations to obtain a permit, including those designated by the RWQCBs, facilities whose operators seek coverage under this General Permit, and facilities required by future USEPA stormwater regulations. Attachment 1 of the permit describes the types of facilities that are covered, summarized as follows:

- facilities that are subject to stormwater effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards (40 C.F.R. Subchapter N)
- manufacturing facilities
- mining/oil and gas facilities
- hazardous waste treatment, storage, or disposal facilities
- landfills, land application sites, and open dumps that receive industrial waste
- recycling facilities such as metal scrap yards, battery reclaimers, salvage yards, and automobile yards
- steam electric-generating facilities
- transportation facilities that conduct any type of vehicle maintenance such as fueling, cleaning, repairing, etc.
- sewage treatment plants
- certain facilities (often referred to as "light industry") where industrial materials, equipment, or activities are exposed to stormwater

Requirements of this permit include effluent limitations, receiving water limitations, SWPPP preparation, and stormwater monitoring programs. Facility operators must control pollutant discharges using the best available technology economically achievable and best conventional pollutant control technology. Discharges from facilities must not cause or contribute to a violation of an applicable water quality standard.

California Fish and Wildlife Code, Section 1602

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation pursuant to Section 1602 of the California Department of Fish and Game Code. Section 1602 makes it unlawful for an entity (i.e., any person, state, or local governmental agency or public utility) to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake without first notifying the California Department of Fish and Wildlife (CDFW) of such activity. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. A CDFW Streambed Alteration Agreement (SAA) must be obtained for any project that would result in an impact to a river, lake, or stream that would adversely affect any fish or wildlife resource.

California Toxics Rule

Under the California Toxics Rule (CTR), USEPA has proposed water quality criteria for priority toxic pollutants for inland surface waters, enclosed bays, and estuaries. These federally promulgated criteria

create water quality standards for California waters. The CTR satisfies CWA requirements and protects public health and the environment. USEPA and the SWRCB have the authority to enforce these standards, which are incorporated into the NPDES permits that regulate the current discharges of a particular project.

Regional and Local Requirements

Water Quality Control Plan for the Colorado River Basin

The Water Quality Control Plan for the Colorado River Basin (Basin Plan) sets forth water quality standards and control measures for surface and groundwaters of the Colorado River Basin. The County of Imperial is entirely within the Colorado River Basin. The Basin Plan designates beneficial uses for waterbodies and establishes water quality objectives, waste discharge prohibitions, and other implementation measures to protect those beneficial uses. State water quality standards also include a Nondegradation Policy. Water quality control measures include TMDLs, which are often, but not always, adopted as Basin Plan amendments. The Colorado River Basin RWQCB administers the Basin Plan for the region. Specifically, the Basin Plan is designed to accomplish the following:

- designate beneficial uses for surface and ground waters
- set the narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to California's antidegradation policy
- describe implementation programs to protect the beneficial uses of all water in the region
- describe surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan

The Basin Plan incorporates by reference all applicable SWRCB and RWQCB plans and policies. In addition to the Basin Plan, federal water quality standards for certain toxic pollutants apply to surface waters within California, including the Colorado River Basin. These standards are contained in the National Toxics Rule (40 C.F.R. 131.36) and the CTR. The SWRCB adopted a statewide implementation policy for the federal toxics standards. The federal standards have not yet been incorporated into the Basin Plan.

Phase II Small Municipal Separate Storm Sewer Systems General Permit

On April 30, 2003, the SWRCB issued a General Permit for the Discharge of Storm Water from Small Municipal Separate Stormwater Sewer System (MS4s) (Water Quality [WQ] Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities (population less than 100,000), including nontraditional Small MS4s, which are facilities such as military bases, public campuses, and prison and hospital complexes. The Phase II Small MS4 General Permit covers Phase II Permittees statewide. On February 5, 2013, the Phase II Small MS4 General Permit 2013-0001 DWQ was adopted; it became effective on July 1, 2013.

The Cities of Imperial, El Centro, Calexico, and Brawley and the County of Imperial are enrolled under the State Water Board General Order for Phase II MS4s. Permittees are required to comply with all provisions of the permit, including the following:

- Discharge prohibitions

- Effluent limitations
- Receiving-water limitations
- Program management element in Storm Water Management Program (SWMP)
- Education and outreach program
- Public involvement and participation program
- Illicit discharge detection and elimination
- Construction site stormwater runoff control program
- Pollution prevention/good housekeeping for permittee operations program
- Postconstruction stormwater management program
- Water quality monitoring
- Program effectiveness assessment and improvement
- TMDL compliance requirements
- Annual reporting program

The County of Imperial SWMP is designed to reduce the discharge of pollutants through its MS4s through the use of BMPs to the maximum extent practicable. The Small MS4 Permit requires postconstruction stormwater management programs, including the following measures:

- Site design measures
- Source control measures
- Low-impact development (LID) design standards
- Hydromodification measures
- Enforceable mechanisms
- Operation and maintenance of stormwater control measures
- Postconstruction BMP condition assessment
- Planning and development review process
- Postconstruction stormwater management requirements based on assessment and maintenance of watershed processes
- Alternative postconstruction stormwater management program

Hydromodification measures within the Colorado River Hydrologic Region (HR) would apply to projects that create and/or replace 1.0 acre or more of impervious surface. Those projects with no net increase in impervious surface are not required to comply. Applicable projects would be required to ensure that post-project runoff does not exceed estimated pre-project flow rate for the 10-year, 24-hour storm.

County of Imperial Flood Management Plan

The County of Imperial Department of Public Works (DPW) and the engineering departments of the incorporated areas are responsible for designing, constructing, and maintaining flood control facilities in their respective jurisdictions. These responsibilities include evaluation of proposed construction projects with regard to their potential to increase flood hazard. The County of Imperial Office of Emergency Services (OES) developed the Flood Management Plan (FMP) (County 2007a) to identify known flood problems, reduce flooding and flood hazards, and protect the beneficial functions of floodplains. The County of Imperial recognizes that flood management is a comprehensive process that requires constant planning and implementation of flood protection and mitigation measures, strict land use regulations and enforcement, and community-wide awareness and vigilance. Included in this FMP are the County of Imperial and Cities of Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial, and

Westmorland, with participation and input from the Imperial Irrigation District, Imperial County School District, and the Salton Community Services District.

Imperial Irrigation District

The Imperial Irrigation District (IID) is an irrigation district organized under the California Irrigation District Law, codified in Section 20500 *et seq*. of the California Water Code. Critical functions of IID include diversion and delivery of Colorado River water to the Imperial Valley, operation and maintenance of the drainage canals and facilities including those in the study area, and generation and distribution of electricity. Several policy documents govern IID operations and are summarized below:

- The Law of the River and historical Colorado River decisions, agreements and contracts
- The Quantification Settlement Agreement (QSA) and Transfer Agreements (TAs)
- The Definite Plan, now referred to as the Systems Conservation Plan, which defines the rigorous agricultural water conservation practices being implemented by growers and IID to meet the QSA commitments
- The Equitable Distribution Plan, which defines how IID will prevent overruns and stay within the cap on the Colorado River water rights
- Existing IID standards and guidelines for evaluation of new development and define IID's role as a responsible agency and wholesaler of water
- Integrated Water Resources Management Plan (IWRMP), September 2009

In relation to the projects, IID maintains regulation over the drainage of water into their drains, including the design requirements of stormwater retention basins. IID requires that retention basins be sized to handle an entire rainfall event in case the IID system is at capacity. Additionally, IID requires that outlets to IID facilities be no larger than 12 inches in diameter and must contain a backflow prevention device (IID 2009).

4.9.2 Existing Environmental Setting

Surface Water

The major surface water features within the County of Imperial are the Colorado River and Salton Sea. Several small rivers and creeks occur within the County of Imperial; but only the San Felipe River, New River, and Alamo River are perennial. The County of Imperial is entirely within the Colorado River HR. Each HR is further divided into hydrologic units (HUs) that are defined as an entire watershed of one or more streams. The County of Imperial is composed of portions of the Imperial Reservoir HU, Salton Sea HU, Lower Colorado HU, San Felipe Creek HU, Carrizo Creek HU, and Southern Mojave HU (Figure 4.9-1). Each HU is divided into hydrologic areas (HAs), which are the major tributaries and/or major groundwater basins within the HU, and further subdivided into hydrologic subareas (HSAs), which are major subdivisions of HAs, including both water-bearing and nonwater-bearing formations.

Average annual precipitation for the Colorado River HR ranges from less than 3 inches along the eastern boundary near Imperial Valley to 25 inches in the mountain divide between the Salton Sea and Pacific

Ocean drainages. Runoff occurs from winter precipitation, especially in the higher elevations, and from summer thunderstorms. The surface water that intermittently exists flows toward the Salton Sea and Colorado River.

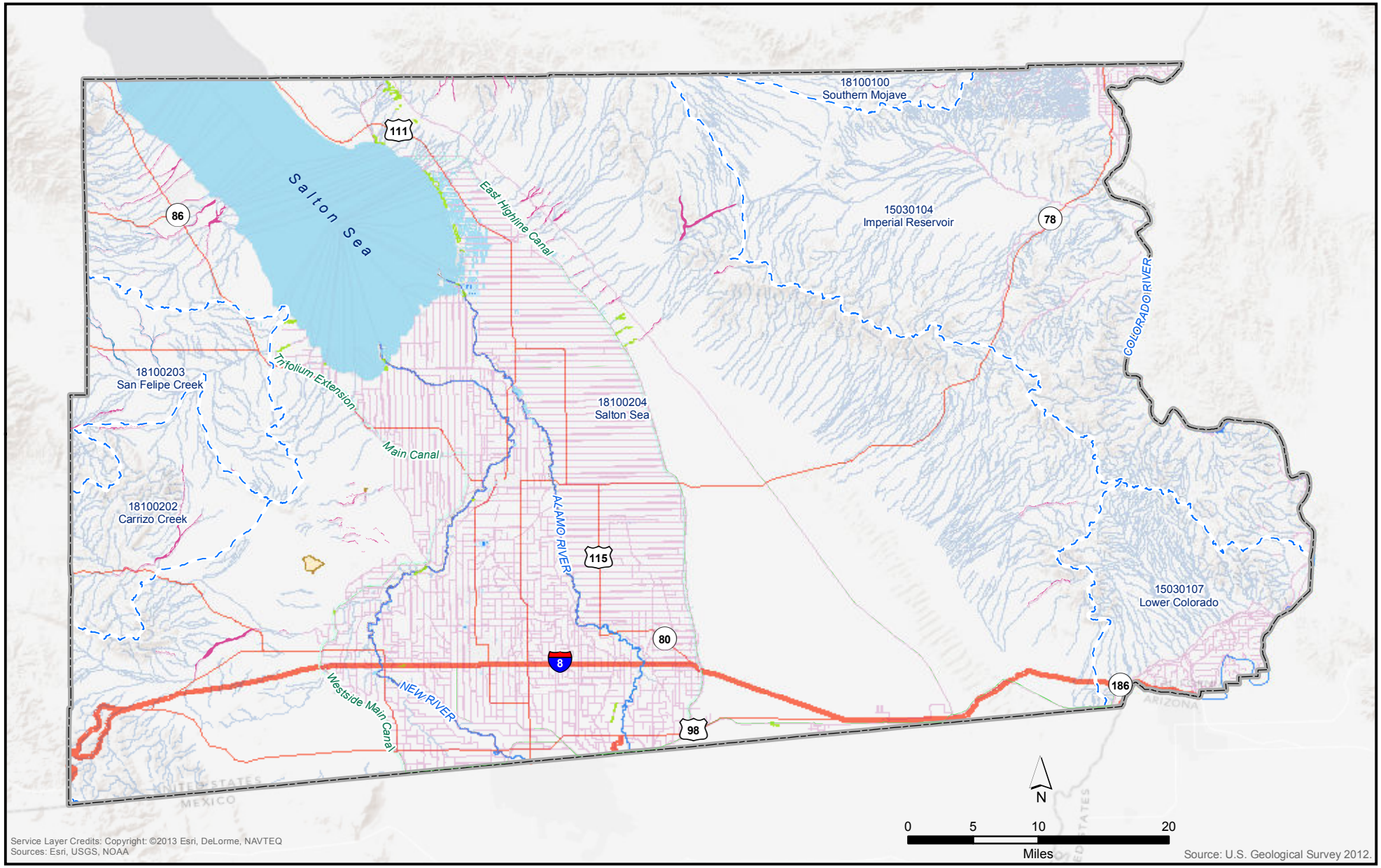
The Colorado River Basin RWQCB divides the Colorado River HR into seven major planning areas based on economic and hydrologic characteristics. Only four of these planning areas lie within the County of Imperial: Anza-Borrego, Imperial Valley, East Colorado River, and Salton Sea (Figure 4.9-2). The Lucerne Valley planning area is entirely outside the County of Imperial. A very small portion of both Coachella Valley and Hayfield planning areas occur within the County boundaries, but they are not significant enough to warrant further discussion. Characteristics of each of the four Colorado River HR planning areas in the County of Imperial are described below.

Anza-Borrego Planning Area

The Anza-Borrego Planning Area includes the Clark, West Salton Sea, and Anza-Borrego HUs. It comprises 1,000 square miles, mostly within San Diego and Imperial counties, with a small segment in Riverside County. Elevations in Imperial County range from 235 feet below sea level at the surface of the Salton Sea to 4,548 feet amsl at Blue Angel Peak. The principal communities in the planning area are Salton City and Borrego Springs. Drainage flows to the Salton Sea except for two small areas of internal drainage in Clark and Borrego valleys in the northwest corner of the planning area. Average annual precipitation ranges from less than 3 inches along the eastern boundary near Imperial Valley to 25 inches in the mountain divide between the Salton Sea and Pacific Ocean drainages. Runoff occurs from winter precipitation, especially in the higher elevations, and from summer thunderstorms. Perennial flow includes reaches of Coyote and San Felipe creeks (SWQCB 2014).

Imperial Valley Planning Area

The Imperial Valley Planning Area comprises 2,500 square miles in the southern portion of the Colorado River HU, almost all of it in Imperial County. A small portion in the southwestern part of the planning area lies within San Diego County. The easterly and westerly boundaries are contiguous with the westerly and easterly boundaries of the East Colorado River Basin and the Anza-Borrego Planning Area, respectively. Its northern boundary is along Salton Sea and the Coachella Valley Planning Area, and its southern boundary follows the international border with Mexico. The planning area's central feature is the flat, fertile Imperial Valley. The principal communities are El Centro, Brawley, and Calexico. Surface waters mostly drain toward the Salton Sea. The New and Alamo rivers convey agricultural irrigation drainage water from farmlands in the Imperial Valley, surface runoff, and lesser amounts of treated municipal and industrial waste waters from the Imperial Valley. The New River also contains agricultural drainage, treated and untreated sewage, and industrial waste discharges from Mexicali, Mexico. Average annual precipitation ranges from less than 3 inches over most of the planning area to approximately 8 inches in the Coyote Mountains on the western border. Colorado River water, imported via the All-American Canal, is the predominant water supply and is used for irrigation and industrial and domestic purposes (SWQCB 2014).



Legend

- Hydrologic Unit
- Lake-Pond
- Playa
- Reservoir
- Swamp-Marsh
- Other Flowline Types (Pipeline, Connector, Canal Ditch, Artificial Path)
- Stream/River: Intermittent
- Stream/River: Perennial

Hydrologic Area

- Canal/Ditch
- Inundation Area
- Stream/River: Intermittent
- Stream/River: Perennial
- Wash

Figure 4.9-1

Imperial County Renewable Energy and Transmission Element Update PEIR
Surface Waters

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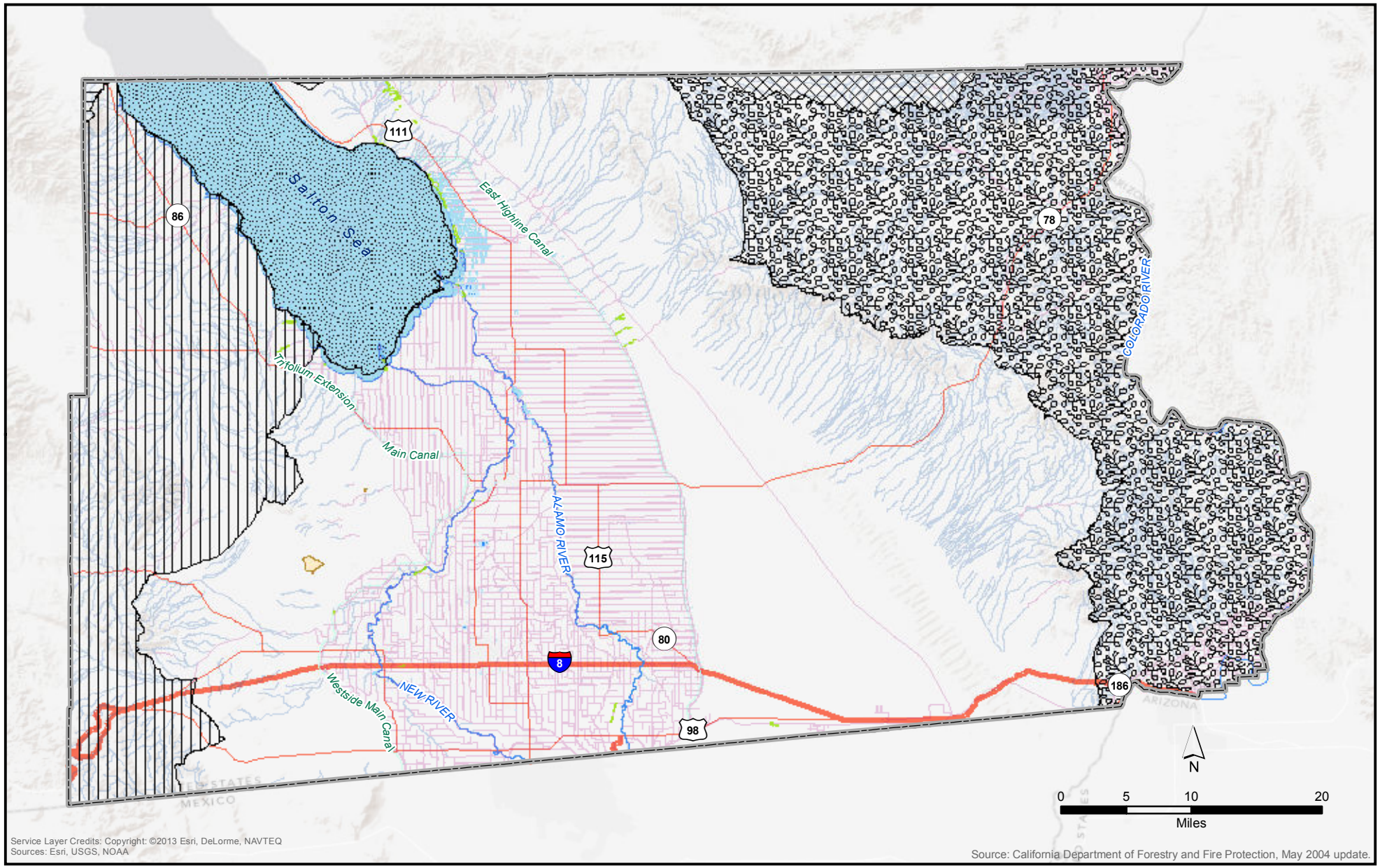

Legend

- Lake-Pond
- Playa
- Reservoir
- Swamp-Marsh
- Other Flowline Types (Pipeline, Connector, Canal Ditch, Artificial Path)
- Stream/River: Intermittent
- Stream/River: Perennial

Hydrologic Planning Area

- Anza-Borrego
- Coachella Valley
- East Colorado Unit
- Hayfield
- Imperial Valley
- Salton Sea

Figure 4.9-2

Imperial County Renewable Energy and Transmission Element Update PEIR
Hydrologic Planning Areas

Name: 20674 EIR Fig 4.9-2 Hydro Plan Areas.Mxd
Date Saved: 11/20/2014, Author: msimmons

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East Colorado River Basin Planning Area

The East Colorado River Basin Planning Area covers the eastern portion of San Bernardino, Riverside, and Imperial counties along the western bank of the Colorado River. The planning area is 200 miles long and 40 miles wide at its widest point. The area is characterized by desert valleys and low mountains that are generally less than 4,000 feet above sea level. The climate is arid, with average annual precipitation of 3 to 4 inches. Precipitation amounts are generally split, with half occurring during the summer and half occurring during the winter. All drainage flows to the Colorado River except for a minor amount that flows into the Colorado River aqueduct via Gene Wash and Copper Basin reservoirs. Perennial surface flow is limited to the Colorado River and Piute Creek; however, Piute Creek infiltrates into the ground after approximately 1 mile of perennial flow (SWQCB 2014).

The major beneficial uses for the region are presently agricultural uses, municipal and industrial uses, and recreational uses. For specific beneficial uses of the various HAs, refer to the Water Quality Control Plan for the Colorado River Basin (SWQCB 2014).

Salton Sea Planning Area

The Salton Sea Planning Area consists entirely of the Salton Sea. The Salton Sea is a saline body of water in a natural sink that is being replenished predominantly by farm drainage and seepage, with occasional inputs from stormwater runoff. The Salton Sea fluctuates in size and capacity but is currently about 35 miles long and 15 miles wide, occupies 376 square miles, and contains about 7.5 million acre-feet of water (DRECP 2014). The surface elevation is 235 feet below mean sea level. The climate is arid, and the average annual precipitation is 2.6 inches. During larger storm events, runoff from adjacent planning areas, Coachella Valley, Anza-Borrego, and Imperial Valley drain into the Salton Sea (SWQCB 2014).

Groundwater

The Colorado River HR is underlain by some 64 groundwater basins/subbasins covering approximately 8.68 million acres, or 26 percent of the HR. Within the HR, 8 percent of domestic and agricultural supply is drawn from groundwater resources. In some larger basins, particularly near dry lakes, aquifers may be separated by aquitards that create confined groundwater resources. Groundwater in most of the smaller basins is found in unconfined alluvial aquifers (DWR 2003)(Figure 4.9-3). Groundwater conditions of the four Colorado River HR planning areas are described below.

Anza Borrego Planning Area

The Anza-Borrego Planning Area groundwater is pumped principally from the unconsolidated Pleistocene sediments, but some is pumped from low-yield wells that extend to weathered and fractured bedrock. Groundwater flows in the same general direction as surface water to Clark Lake, Borrego Sink, and the Salton Sea; however, this subsurface flow is affected by pumping and may be impeded by faults. Approximately 10,000 acre-feet of subsurface flow reaches the Salton Sea annually. A safe yield of 22,000 acre-feet/year is estimated for the planning area. Storage capacity of the groundwater basin is estimated at 7 million acre-feet (SWQCB 2014).

Imperial Valley Planning Area

The Imperial Valley Planning Area groundwater is stored in the Pleistocene sediments of the valley floor, the mesas on the west, and the East Mesa and sand hills on the east; however, the fine-grained lake

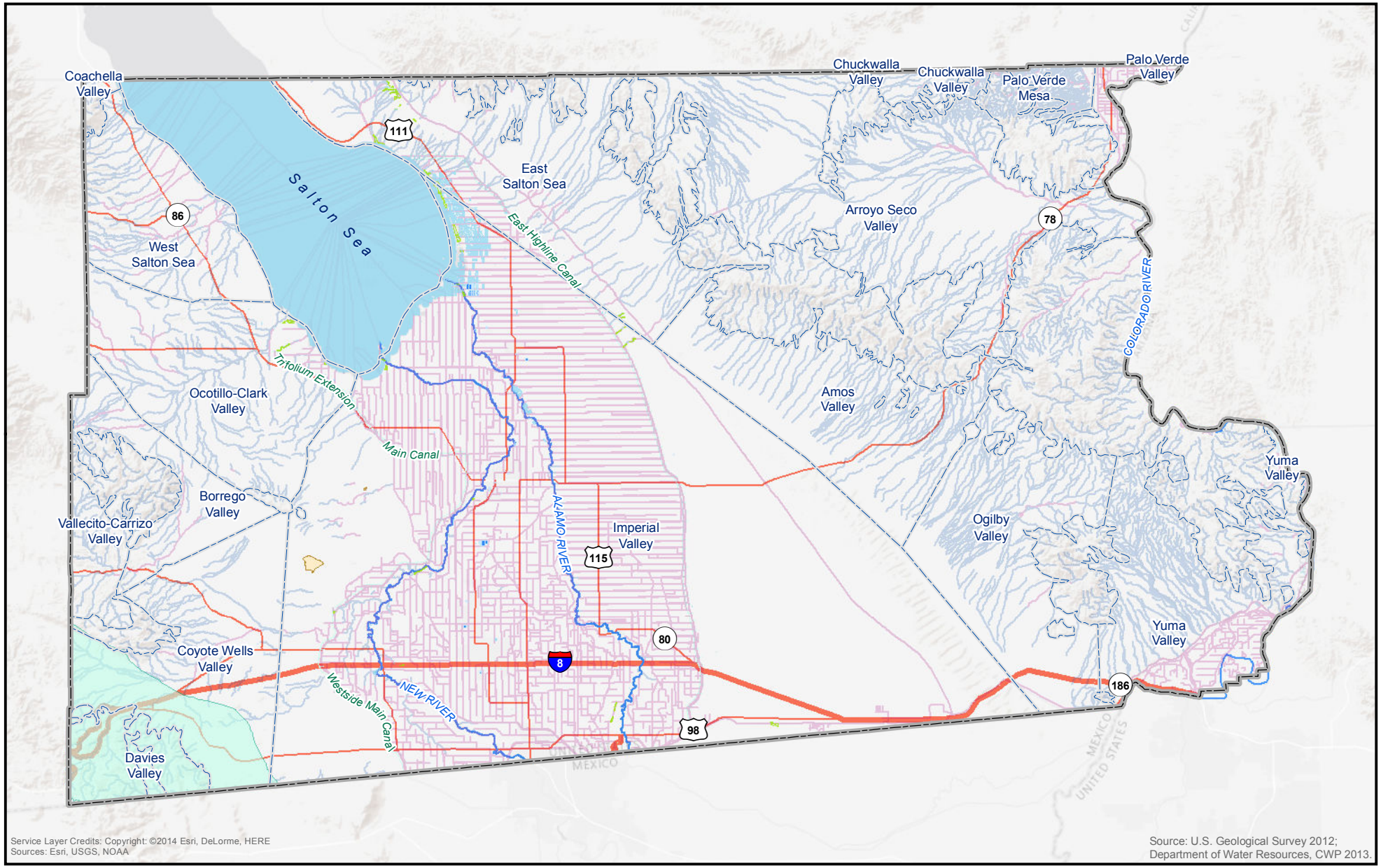
sediments in the central portion of Imperial Valley inhibit groundwater movement, and tile-drain systems are used to dewater the sediments to a depth below the root zone of crops and to prevent the accumulation of saline water on the surface. Few wells have been drilled in these lake sediments because the yield is poor and the water is generally saline. The few wells in the Imperial Valley are for domestic use only. In the Coyote Wells Hydrologic Subunit and Davies HU, which are at higher elevations, the water yield from wells is higher; and the waters are of lower salt concentration. Groundwater is the main water supply in those areas. Factors that diminish groundwater reserves are consumptive use, evapotranspiration, evaporation from soils where groundwater is near the surface, and losses through outflow and export (SWQCB 2014).

East Colorado River Basin Planning Area

Groundwater from the East Colorado River Basin Planning Area is generally unconfined in all four HUs of the planning area; however, some confined zones probably exist in the more than 700 feet of alluvial sediments that form the aquifers in three of the units. Some subsurface water probably enters the planning area from other than the Colorado River; however, no data is available upon which to base an estimate. The subsurface inflow from Nevada into the Piute Hydrologic Subunit and from the Chuckwalla and Rice HUs into the Palo Verde and Vidal Hydrologic Subunits, respectively, may be significant in terms of the limited capacity of these subunits. Approximately 10,000 acre-feet of precipitation deep-percolates annually. The combined total storage capacity of all HUs is approximately 35 million acre-feet within a selected 200-foot zone that lies above the base of the deepest well in each HU. In three HUs, wells are 300 feet or more deep (SWQCB 2014).

Salton Sea Planning Area

The Salton Sea Planning Area does not have a delineated groundwater basin.



Legend

- Groundwater Basin
- Lake-Pond
- Playa
- Reservoir
- Swamp-Marsh
- Other Flowline Types (Pipeline, Connector, Canal Ditch, Artificial Path)
- Stream/River: Intermittent
- Stream/River: Perennial
- Ocotillo-Coyote Wells Aquifer

N

0 5 10 20
Miles

Figure 4.9-3
Imperial County Renewable Energy and Transmission Element Update PEIR
Groundwater Basins

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Water Quality

Surface Water Quality

Untreated or inadequately treated stormwater runoff can contain a number of pollutants that may eventually flow to receiving waters. Rapid growth and urbanization have placed increased pressure on water resources and resulted in local impacts to water quality, especially in the urbanized portions of the County of Imperial. In general, urbanization increases the amount of pollutants generated by human activities within a watershed and increases the amount of impervious surfaces, thus reducing the amount of water that would normally infiltrate into the soil and be filtered naturally. Pollutants such as motor oil, antifreeze, sediment, heavy metals, fertilizers and pesticides, and bacteria and viruses can be transported to surface waters in stormwater runoff. The stormwater conveyance system is not connected with the sanitary sewer system; therefore, unless adequate BMPs are incorporated, urban runoff can affect surface water and groundwater quality. Intense agriculture within the County results in runoff with varying levels of agricultural chemicals, fertilizers, and pesticides. Agricultural practices must be tailored to reduce the amount of these chemical residues in runoff.

The Colorado River HR contains waterbodies that do not meet the water quality objectives and do not support the beneficial uses as defined in the Basin Plan. These waterbodies are designated as impaired under CWA Section 303(d). Table 4.9-1 shows the CWA Section 303(d) listed waterbodies within the County of Imperial.

Table 4.9-1: Impaired Waters within Imperial County

COLORADO RIVER BASIN HYDROLOGIC REGION		
Water Body	**Pollutant/Stressor**	**Hydrologic Unit**
Alamo River	chlordane, chlorpyrifos, DDT, diazinon, dieldrin, endosulfan, Enterococcus, E. coli, mercury, PCBs, selenium, toxaphene	Imperial
Coachella Valley Storm Water Channel	DDT, dieldrin, PCBs, pathogens, toxaphene	Whitewater
Colorado River (Imperial Reservoir to California/Mexico Border)	selenium	Yuma
Imperial Valley Drains	chlordane, DDT, dieldrin, endosulfan, PCBs, sedimentation/siltation, selenium, toxaphene	Imperial
New River	chlordane, chloroform, chlorpyrifos, copper, DDT, diazinon, dieldrin, hexachlorobenzene, mercury, nutrients, organic enrichment, PCBs, pathogens, selenium, toxaphene, toxicity, trash, zinc	Salton Sea
Palo Verde Outfall Drain and Lagoon	DDT, pathogens, toxaphene	Colorado
Salton Sea	arsenic, chlorpyrifos, DDT, Enterococcus, nutrients, salinity, selenium	Salton Sea
Wiest Lake	DDT	Imperial

Waterbodies listed as impaired under the CWA Section 303(d) require the development of TMDLs to establish priority rankings and control plans. TMDLs provide the method to attain and maintain the

established water quality objectives and beneficial uses. The SWRCB and USEPA-approved TMDLs in the Colorado River HR are as follows:

- Alamo River Sedimentation/Siltation TMDL (approved on June 28, 2002)
- New River Pathogen TMDL (approved on August 14, 2002)
- New River Sedimentation/Siltation TMDL (approved on March 31, 2003)
- New River Trash TMDL (approved on September 24, 2007)
- Imperial Valley Drains Sedimentation/Siltation TMDL (approved on September 30, 2005)
- Coachella Valley Stormwater Channel Bacterial Indicators TMDL (approved on April 27, 2012
- New River Dissolved Oxygen TMDL (approved on November 16, 2012)

The following are TMDL projects in development:

- Alamo and New River Chlorpyrifos and Diazinon TMDL
- Palo Verde Outfall Drain and Lagoon DDT and Toxaphene TMDL
- Salton Sea Nutrient TMDL
- Imperial Valley Chlordane, DDT, Dieldrin, PCB, and Toxaphene TMDL

Groundwater Quality

The chemical character of groundwater in the Colorado River HR is variable. Cation concentration is dominated by sodium, with calcium common and magnesium appearing less often. Bicarbonate is usually the dominant anion, although sulfate and chloride waters are also common. In basins with closed drainages, water character often changes from calcium-sodium bicarbonate near the margins to sodium chloride or chloride-sulfate beneath a dry lake. It is not uncommon for concentrations of dissolved constituents to rise dramatically toward a dry lake where saturation of mineral salts is reached. The total dissolved solids content of groundwater is high in many of the basins in this region. High fluoride content is common; sulfate content occasionally exceeds drinking water standards; and high nitrate content is common, especially in agricultural areas (DWR 2003).

Two of the primary challenges in the Colorado River HR are overdraft in the Coachella Valley and leaking underground storage tanks. USEPA has not yet placed any contamination sites in this HR on the Superfund National Priorities List; however, one site is under consideration because of high pesticide levels (DWR 2003).

From 1994 to 2000, 314 public supply wells were sampled throughout the Colorado River HR; 14 percent of all wells had constituents that exceeded one or more State-defined mean concentration limits for drinking water. The exceedances were caused by constituents that were characterized as radiological (47 percent), inorganic (39 percent), or nitrates (14 percent) (DWR 2003).

Flood Hazards and Flood Control

The County of Imperial developed the Flood Management Plan (County 2007a) to identify known flood problems, reduce flooding and flood hazards, and protect the beneficial functions of floodplains. Due to arid climate and low permeability of the dry desert soils within the County, the interspersed heavy rains result in a medium to high hazard rating for flooding within the floodplains. Both flash flood and slow-rise flood events occur in the County of Imperial. The desert areas are subject to frequent flash flood events with little or no warning. These flood flows roughly follow dry stream beds and mountain

washes, inundating floodplains or floodways. Floodplains are generally located adjacent to rivers or other bodies of water and, in low-lying areas, near a water source. Floodways are defined as discernible drainage channels.

Since 1950, eight federal declarations of a state of emergency due to flooding have been made. More than $760,000 in flood insurance claims have been made by County of Imperial residents, not including damage to County of Imperial infrastructure such as roads, culverts, and utilities (County 2007a). To reduce the flood risk, communities that have joined the NFIP are required to implement minimum floodplain management standards. New development in areas designated as SFHAs cannot increase the flood risk and must protect existing and new buildings from floods. Figure 4.9-4 shows the FEMA FIRM floodzones for the 100-year flood and existing dams within the County of Imperial.

Stormwater Drainage and Management

A vast amount of the County of Imperial is rural land that does not support or require stormwater drainage facilities. In contrast, most urban areas within the incorporated areas of the County have a range of stormwater drainage facilities that convey surface water runoff to the area's waterbodies, the Salton Sea, or the Colorado River.

Each jurisdiction within the County requires implementation of stormwater pollution prevention efforts such that conveyance systems are designed to protect the surface water and groundwater quality as mandated by State and federal regulations. These regulations require a multifaceted approach that involves infrastructure improvements and maintenance; water quality monitoring; source identification of pollutants; land use planning policies and regulations; and pollution prevention activities such as education, code enforcement, outreach, public advocacy, and training.

4.9.3 Significance Criteria

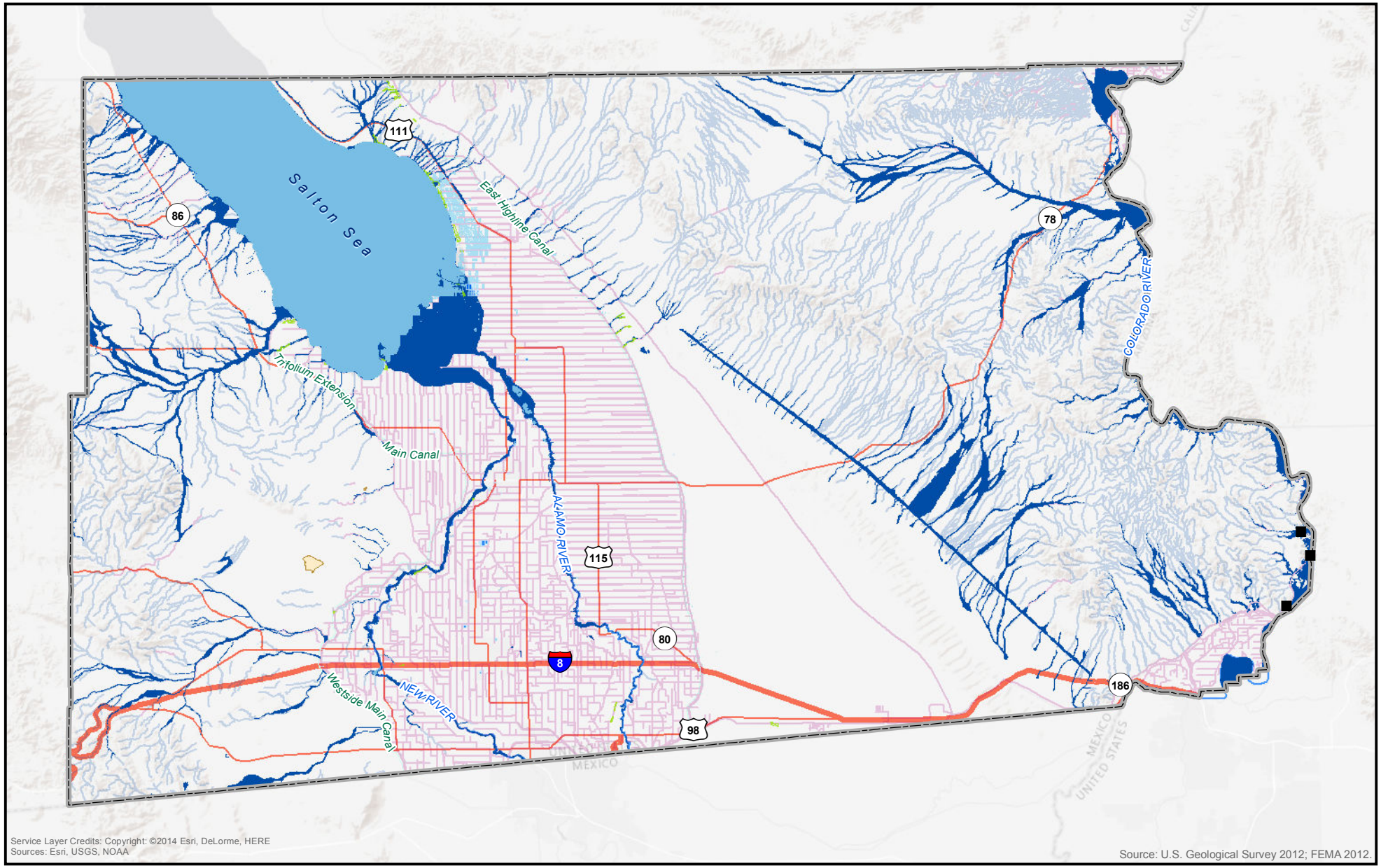
The thresholds for significance of impacts for the analysis are based on the environmental checklist in Appendix G of the State California Environmental Quality Act (CEQA) Guidelines. Consistent with the CEQA Guidelines and the professional judgment of the County's staff and environmental consultants, the proposed Project could result in a significant impact on the environment if it would:

- Violate any water quality standards or waste discharge requirements

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

- 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 that would result in substantial erosion or siltation on or off site

- 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 that would result in flooding on or off site



Legend

- FEMA 100-year Floodzone
- Lake-Pond
- Playa
- Reservoir
- Swamp-Marsh
- Other Flowline Types (Pipeline, Connector, Canal Ditch, Artificial Path)
- Stream/River: Intermittent
- Stream/River: Perennial
- Dam

N

0 5 10 20

Miles

Figure 4.9-4

Imperial County Renewable Energy and Transmission Element Update PEIR
FEMA 100-Year Floodzones

Name: 20674 EIR Fig 4.9-4 FEMA Floodzones.Mxd
Date Saved: 12/24/2014, Author: msimmons

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- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff

- Otherwise substantially degrade water quality

- Place housing within a 100-year flood hazard area as mapped on a Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map

- Place within a 100-year flood hazard area structures which would impede or redirect the flood flows

- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam

- Inundation by seiche, tsunami, or mudflow

4.9.4 Impacts and Mitigation

HYDRO-1: Violate any water quality standards or waste discharge requirements

Construction and Operation

Construction of renewable energy facilities associated with the proposed Project would involve excavation, soil stockpiling, grading, and the installation of solar reflectors and PV panels, wind turbines, geothermal wells, buildings, access roads, and substation facilities. Multiple construction-related activities could have potential direct or indirect impacts on the water quality of local surface water features and shallow groundwater resources including sedimentation, erosion, handling hazardous materials, dewatering, if required, and canal and drain crossings by the electrical distribution lines of access roads.

Hazardous materials associated with construction and operation of future renewable energy facilities described in Section 4.8.4 would have the potential to impact water quality. If precautions are not taken to contain contaminants, accidental spills of these substances during construction and operations could produce contaminated stormwater runoff (nonpoint-source pollution), a major contributor to the degradation of water quality in surface waters. Without proper containment and incident response measures in place, the operation of construction equipment could result in significant direct and indirect impacts to water quality.

Construction of individual renewable energy projects could, at times, also require dewatering of shallow, perched groundwater in the immediate vicinity of excavations and installation of underground features at a limited number of areas where groundwater depths are shallow. Groundwater withdrawn from the construction areas would be subsequently discharged to local drainage ditches or via land application. These discharges may contain sediments, dissolved solids, salts, and other water quality constituents found in the shallow groundwater, which could degrade the quality of receiving waters. Degradation of local receiving waters from the introduction of shallow groundwater during construction dewatering could result in a significant impact to receiving waters.

Prior to construction and grading activities, each project applicant is required to file a Notice of Intent (NOI) with the SWRCB to comply with the General NPDES Construction Permit and prepare a SWPPP,

which addresses the measures that would be included during project construction to minimize and control construction and postconstruction runoff to the "maximum extent practicable." In addition, NPDES permits require the implementation of BMPs that achieve a level of pollution control to the maximum extent practical, which may not necessarily be completely protective of aquatic life or address water quality impairments for local waterways. This could represent a significant direct and indirect impact. For these reasons, the implementation of the prescribed mitigation would be required to ensure that each project's SWPPPs and Grading Plan(s) include measures necessary to minimize water quality impacts as a result of project construction and postconstruction runoff. In addition, given that site decommissioning would result in similar activities as identified for construction, these impacts could also occur in the future during site restoration activities.

Mitigation Measures

HYDRO-1a: Acquire Appropriate CWA Regulatory Permits, Prepare SWPPP, and Implement BMPs Prior to Construction and Site Restoration. Project proponents or project construction contractors for future renewable energy facilities would be required to prepare a project-specific SWPPP and be responsible for securing coverage under SWRCB's NPDES stormwater permit for general construction activity (Order 2009-0009-DWQ). The SWPPP shall identify specific actions and BMPs relating to the prevention of stormwater pollution from project-related construction sources by identifying a practical sequence for site restoration, BMP implementation, contingency measures, responsible parties, and agency contacts. The SWPPP shall reflect localized surface hydrological conditions and shall be reviewed and approved by each project applicant prior to commencement of work and shall be made conditions of the contract with each contractor selected to build and decommission future renewable energy facilities developed under the proposed Project. The SWPPP(s) shall, at a minimum, incorporate control measures in the following categories:

- Soil stabilization and erosion control practices (e.g., hydroseeding, erosion control blankets, mulching)
- Dewatering and/or flow diversion practices, if required (see Mitigation Measure HYDRO-1b)
- Sediment control practices (temporary sediment basins, fiber rolls)
- Temporary and postconstruction onsite and offsite runoff controls
- Special considerations and BMPs for water crossings, wetlands, and drainages
- Monitoring protocols for discharge(s) and receiving waters, with emphasis placed on the following water quality objectives: dissolved oxygen, floating material, oil and grease, pH, and turbidity
- Waste management, handling, and disposal control practices
- Corrective action and spill contingency measures
- Agency and responsible party contact information
- Training procedures that shall be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP

Each SWPPP shall be prepared by a qualified SWPPP practitioner with BMPs selected to achieve maximum pollutant removal and that represent the best available technology that is economically achievable. Emphasis for BMPs shall be placed on controlling discharges of oxygen-depleting substances, floating material, oil and grease, acidic or caustic substances or compounds, and turbidity. Given that Imperial Valley Drains would accept runoff from areas within the Salton Trough and are listed as impaired for sediment, the SWPPP shall include BMPs sufficient for Risk Level 2 projects. BMPs for soil stabilization and erosion control practices and sediment control practices would also be required. Performance and effectiveness of these BMPs shall be determined either by visual means where applicable (i.e., observation of above-normal sediment release), or by actual water sampling in cases where verification of contaminant reduction or elimination, (inadvertent petroleum release) is required to determine adequacy of the measure.

HYDRO-1b: Properly Dispose of Construction Dewatering in Accordance with the Colorado River Basin Regional Water Quality Control Board. If required, all construction dewatering for future renewable energy facilities developed under the proposed Project shall be discharged to an approved land disposal area or drainage facility in accordance with Colorado River Basin RWCQB requirements. Each future project proponent or project construction contractor shall provide the Colorado River Basin RWQCB with the location, type of discharge, and methods of treatment and monitoring for all groundwater dewatering discharges. Emphasis shall be placed on those discharges that would occur directly or in proximity to surface water bodies and drainage facilities.

Significance After Mitigation

Implementation of mitigation measures HYDRO-1a and HYDRO 1b would reduce impacts associated with violation of water quality standards or waste discharge requirements to a level less than significant through the inclusion of focused BMPs for the protection of surface water resources. Monitoring and contingency response measures would be included to verify compliance with water quality objectives and requirements for all surface waters crossed during construction. Particular emphasis would be placed on dissolved oxygen, floating material, oil and grease, and turbidity (or sediment), as these are generally the water quality constituents of most concern during construction-related activities.

HYDRO-2: Substantially deplete groundwater supplies or interfere substantially with groundwater recharge

Construction and Operation

Water would be needed for various activities during the construction and operational phases of future renewable energy facilities developed under the proposed Project, including concrete preparation for foundations of the support structures for solar reflectors and PV panels, wind turbine sites, and buildings; drilling of geothermal wells, drinking water for site workers, vehicle washing, road construction, and dust control on roads and construction sites. Water sources are likely to be local groundwater, surface water bodies, or recycled water, depending upon availability of those resources. Water could be trucked in from offsite sources as well. Water used for making concrete would likely be derived from an offsite source. Water rights and permits would need to be obtained from applicable local, State, and/or regional water authorities before water use could occur.

In most areas within the County of Imperial, groundwater would likely be withdrawn from local aquifers to meet a specific project's water needs. Depending on project site locations, groundwater may be present in basin sediment aquifers or carbonate aquifers and in other bedrock aquifers. Withdrawal of

groundwater could lower water levels of the source aquifer. In addition, the combined groundwater withdrawals for a future renewable energy facility and other withdrawals and uses in a basin could exceed the sustainable yield and dewater the aquifer to the degree that nearby water wells are adversely affected. Depending on site-specific geology, withdrawals exceeding the sustainable yield of the groundwater basin could cause permanent loss of storage capacity in the aquifer, result in reduction of well production rates, damage to wells due to exposure of well screens, and in some cases increased energy costs because additional pumping is required to draw the same volume of water from affected wells. Impacts of reduced groundwater flow magnitude and timing of groundwater flows to streams, springs, seeps, and wetlands would depend upon the connectivity of surface water and groundwater in the region.

Creation of new impervious surfaces associated with future renewable energy facilities developed under the proposed Project, and in particular those associated with future solar facilities, could interfere with groundwater recharge by reducing the amount of surface area through which precipitation and surface water percolates to underlying aquifers. In addition to permanent infrastructure, temporary construction facilities including covered assembly areas and staging areas would also introduce new impervious areas that could affect the rate and distribution of surface water infiltration and percolation to underlying groundwater. These factors related to groundwater may result a significant impact.

Mitigation Measures

HYDRO-2a: Groundwater Monitoring and Mitigation Plan. A Groundwater Monitoring and Mitigation Plan (Plan) shall be prepared, reviewed, and approved by the County of Imperial prior to project approval and implementation. The County must approve the Plan prior to issuance of any groundwater well permits. The Plan shall be prepared by a qualified professional geologist, hydrogeologist, or civil engineer registered in the State of California and submitted by the applicant to the County for approval.

The Plan shall provide detailed methodology for monitoring and reporting procedures; locate monitoring, extraction, and survey points; define significance criteria; and identify mitigation measures in the event that adverse impacts occur that can be attributed to the proposed Project. The Plan shall include summarization of all monitoring data and would require submission of annual reports to the County. A comprehensive summary and analysis of data shall be included in a five-year report. Monitoring shall be performed during preconstruction, construction, and operation, with the intent to establish preconstruction and specific project-related groundwater level trends that can be quantitatively compared against observed and simulated trends near the pumping wells and near potentially affected existing private wells and sensitive water resources. Additionally, at each stage of reporting, the applicant would be required to reevaluate of the adequacy of the monitoring network and Plan.

HYDRO-2b: Implement Water Conservation Measures. Project developers shall plan to implement water conservation measures related to renewable energy technology water needs in order to reduce project water requirements. Developers shall minimize the consumptive use of fresh water for power plant cooling by, for example, using dry cooling, using recycled or impaired water, or selecting solar energy technologies that do not require cooling water.

Significance After Mitigation

Implementation of mitigation measures HYDRO-2a and HYDRO-2b would reduce impacts associated with groundwater yield and storage capacity to a level less than significant through the development

and implementation of a groundwater monitoring and mitigation plan and efforts to implement water conservation.

HYDRO-3: Substantially alter the existing drainage pattern of the site or area in a manner that would result in substantial erosion or siltation on or off site or result in flooding on or off site

Construction and Operation

Construction of future renewable energy facilities developed under the proposed Project could affect natural surface water and groundwater flow systems by diverting and/or channelizing onsite and nearby streams to accommodate access road and facility construction. The level of impacts resulting from alterations of natural drainage patterns for elevated roadbeds would depend on road orientation, drainage structure, and the type of landscape that the roads cross. Hard structures, such as foundations, could increase erosion around such structures. In some cases upstream drainage would be altered such that flow would be routed around the site and through stormwater infrastructure. Excavation (trenching) or horizontal boring activities to bury pipes or wires might alter surface overland flow and allow subsurface flow to follow the filled trenches or borings. Construction activities could also damage or destroy desert pavement and biological crusts (if present), thus increasing the rate of soil erosion.

The modification of streams, washes, and drainages would alter surface runoff timing and drainage patterns and could increase peak flows and water flow velocities of downgradient streams. All these processes could lead to increased erosion, sediment transport, and sediment deposition impacts. The discharge of wastewater and stormwater could also increase the flow rates of the receiving surface waters. Land disturbance impacts are expected to be greater in areas occupied by an alluvial fan or other landscape features with topography more so than in flat areas. Some of the proposed Renewable Energy Overlay Zones are located in areas of the County that are drained primarily by sheet flow and desert washes. These areas contain alluvial fans with braided channels that drain the surrounding mountains; and the active washes crossing many of these areas are generally unstable and subject to erosion, incision, and avulsion/migration of the braided channel network. Low-frequency, high-intensity monsoonal storms in the region can result in high volumes of stormwater flow, which can cause high volumes of surface runoff to occur in the vicinity of these areas. These alterations of exiting drainage patterns could also result in flooding on or off site. These factors related to the alteration of existing drainage patterns may result in significant impacts.

Mitigation Measures

HYDRO-3: Comprehensive Drainage and Sedimentation Control Plan. Project proponents for future renewable energy facilities would be required to prepare a Comprehensive Drainage and Sedimentation Plan (Plan) prior to the initiation of construction (or decommissioning as relevant). Detailed hydrologic analysis shall be performed prior to final design of the specific future renewable energy project. Results of these analyses will be submitted to the County for review. All proposed grading and impervious surfaces on site shall be reviewed and approved by the County with respect to its potential to cause or result in additional erosion and sedimentation, increased stormwater flows, or altered drainage patterns that could lead to unintentional ponding or flooding on site or downstream, and/or additional erosion and sedimentation. The Plan shall include, but not be limited to, the following measures:

- Construction of access corridors and temporary and permanent access roads shall not block existing drainage channels and shall not significantly alter the existing topography.

- The project proponent shall delineate the active drainage channels within each drainage avoidance area and avoid placement of proposed flood protection berms within active drainage channels. The drainage avoidance areas shall protect no less than 90 percent of the area of the active drainage channels from construction impacts.

- The project proponent shall prepare hydraulic analyses that estimate the pre- and post-development peak discharges, water depths, and velocities for both smaller, more frequent events (2-, 5-, and 10-year events), as well as larger design storm events (100-year event) that would flow through each future project site, drainage avoidance area, and/or on either side of each proposed flood protection berm.

- The project proponent shall provide the County design details for the flood protection berms including subgrade preparation, construction methods, and armoring or scour protection.

Significance After Mitigation

Implementation of mitigation measure HYDRO-3 would reduce impacts to existing drainage patterns to level a less than significant through the development and implementation of a comprehensive drainage and sedimentation control plan for each future renewable energy facility developed under the proposed Project.

HYDRO-4: Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff

Construction and Operation

The majority of the proposed Renewable Energy Overlay Zones are located in rural areas that are not served by municipal stormwater drainage systems. As previously discussed, some of the proposed Renewable Energy Overlay Zones are located in areas of the County that are drained primarily by sheet flow and desert washes. These areas contain alluvial fans with braided channels that drain the surrounding mountains; and the active washes crossing many of these areas are generally unstable and subject to erosion, incision, and avulsion/migration of the braided channel network. Low-frequency, high-intensity monsoonal storms in the region can result in high volumes of stormwater flow, which can cause high volumes of surface runoff to occur in the vicinity of these areas. Surface water quality could be affected during construction of future renewable energy facilities, which in turn could result in polluted runoff. Construction activities including land disturbance-related soil erosion and sedimentation; fuel and chemical spills; storage and potential treatment of wastewater; and the potential application of pesticides, herbicides, and dust suppressant chemicals could result in polluted runoff, resulting in a significant impact.

Mitigation Measures

Mitigation measures HYDRO-1a, HYDRO-1b, and HYDRO-3 would also be implemented to reduce impacts associated with stormwater runoff.

Significance After Mitigation

Implementation of mitigation measures HYDRO-1a, HYDRO-1b and HYDRO-3 would reduce impacts associated with stormwater runoff to a level less than significant.

HYDRO-5: Otherwise substantially degrade water quality

Construction and Operation

Construction of future renewable energy facilities associated with the proposed Project could impact both groundwater and surface water quality. Construction activities that could impact water quality include land disturbance-related soil erosion and sedimentation; fuel and chemical spills; storage and potential treatment of wastewater; and the potential application of pesticides, herbicides, and dust suppressant chemicals. Surface water quality could be adversely affected in areas hydraulically downstream and downwind from disturbed areas, including staging areas, construction sites, access roads, soil piles, foundation excavation, trenching, and borrow pits. Sediments from these disturbed areas can be transported by wind or water to adjacent water bodies (including streams, playas, wetlands, and washes) and degrade water quality through the addition of sediments, dissolved solids, metals, and organics.

Improperly constructed/designed groundwater and geothermal wells could create conduits for poor-quality groundwater, as well as cause contaminants to move between aquifers. Drilling can create pathways for these fluids into the groundwater at shallower depths or commingling between aquifers of differing quality. The impacts of these pathways can alter the natural circulation of the geothermal fluids and impact the usefulness of the resource. Subsurface pathways also can allow the natural contaminants in the geothermal fluids to impact the shallow groundwater quality if mixing were to occur. The degree of impact depends on aquifer characteristics and whether special conditions (e.g., sole source aquifers) are present. Proper drilling practices and closure and capping of the wells can reduce this potential. State and Bureau of Land Management (BLM) regulations for maintaining and plugging and capping wells to prevent blowouts and mandating proper well casing and drilling techniques would minimize the risk of impacting surface water and groundwater in the immediate area of specific project sites.

Wastewater associated with future renewable energy facilities would most likely be contained in portable toilets, onsite sewage lagoons, or septic tanks with leach fields. Leaky wastewater storage containers could degrade groundwater and surface water quality and introduce pathogens. Project proponents of future renewable energy facilities would have to follow applicable federal, State, and local regulations and potentially coordinate with local treatment facilities for wastewater storage, transport, and treatment either on site (e.g., septic tank with leach field) or off site. If pesticides or herbicides are used, the leaching or transport of undegraded pesticides and herbicides would negatively affect downstream waters or groundwater. Dust suppression by water or water mixed with dust-suppression chemicals could degrade water quality by increasing total dissolved solids (TDS) concentrations in nearby water bodies and groundwater through evaporation or through the use of poor-quality groundwater or recycled water. These factors associated with groundwater and surface water quality may result in a significant impact.

Mitigation Measures

Mitigation measures HYDRO-1a and HYDRO-1b would also be implemented to reduce impacts associated with degradation of groundwater and surface water quality.

Significance After Mitigation

Implementation of mitigation measures HYDRO-1a and HYDRO-1b would reduce impacts associated with degradation of groundwater and surface water quality to a level less than significant.

HYDRO-6: Place housing or structures within a 100-year flood hazard area which would impede or redirect the flood flows

The proposed Project does not include the construction of housing and, therefore, would not place housing within a 100-year flood hazard area. Portions of the proposed overlay zones are located within areas delineated as 100-year flood zones, and development of future renewable energy facilities within these locations could impede or redirect the flood flows. This would be a significant impact.

Mitigation Measures

Mitigation measure HYDRO-3 would be implemented to address impacts associated with placing structures within a 100-year flood hazard area which would impede or redirect the flood flows.

Significance After Mitigation

Implementation of mitigation measure HYDRO-3 would reduce impacts associated placing structures within a 100-year flood hazard area which would impede or redirect the flood flows to a level less than significant.

HYDRO-7: Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam or through alteration of the existing drainage pattern

Due to arid climate and low permeability of the dry desert soils within the County, the interspersed heavy rains result in a medium to high hazard rating for flooding within the floodplains. Both flash flood and slow-rise flood events occur in the County of Imperial. The desert areas are subject to frequent flash flood events with little or no warning. The potential for damage to future renewable energy facilities due to onsite flooding would be exacerbated during the construction period. This is because a major flood event could occur at any time, including prior to the completion of onsite flood protection berms and other flood control measures. Therefore, unless construction practices and procedures are managed carefully, construction period flooding could result in damages to onsite facilities, interference with the construction process, and potential exposure of employees to flood conditions. This would be a significant impact.

Mitigation Measures

Mitigation measures beyond HYDRO-1a and HYDRO-3 would be implemented to address impacts associated with flooding.

Significance After Mitigation

Implementation of mitigation measures HYDRO-1a and HYDRO-3 would reduce impacts associated with flooding to a level less than significant.

HYDRO-8: Inundation by seiche, tsunami, or mudflow

Future renewable energy facilities associated with the proposed Project would not be impacted by tsunamis due to Imperial County's location approximately 60 miles east of the Pacific Ocean. Substantial amounts of the topography of Imperial County is relatively flat and does not pose the risk of exposure to landslides. The proposed Renewable Energy Overlay Zones do not include areas with steep topography and avoid impacts associated with mudflow. Furthermore, it is not anticipated that future renewable energy facilities would be impacted by seiches. Therefore, no impacts would occur and no mitigation measures would be required.

4.9.5 Cumulative Impacts

The proposed Project, in conjunction with existing, approved, proposed and reasonably foreseeable projects within the County, would have the potential to result in cumulative impacts related to hydrology and water quality; however, implementation of HYDRO-1a through HYDRO-3 would ensure that the future renewable energy facilities developed under the proposed Project would not violate any water quality standards or waste discharge requirements, deplete groundwater supplies, or alter natural drainage patterns. Implementation of these mitigation measures would ensure that future renewable energy facilities would comply with regulatory requirements regarding hydrology and water quality which have been developed to manage these resources at a regional level. Similar compliance is required for existing, approved, proposed, and reasonably foreseeable projects within the County, which would ensure that these projects would implement mitigation measures similar to those identified above. Therefore, implementation of HYDRO-1a through HYDRO-3 and similar regulatory compliance by existing, approved, proposed, and reasonably foreseeable projects within the County would reduce cumulative impacts related to hydrology and water quality to a level less than significant.

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