EXHIBIT B

FINAL

Environmental Information Document for Wastewater Collection and Treatment System Palo Verde, California

January 2012

US Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, California 94105

Border Environment Cooperation Commission
Comisión de Cooperación Ecológica Fronteriza
Boulevard Tomas Fernández, No. 8069
Ciudad Juárez, Chihuahua, México
Telephone: (011-52-16) 25-91-60

Contract No. CONTA10-004

OVERVIEW

Summary of the Proposed Action

The Community of Palo Verde has submitted an application to the Border Environment Cooperation Commission (BECC) for certification of border funds to develop a wastewater collection and treatment system. The proposed action would include the installation of a new gravity and pressure wastewater collection system in the project area that would provide service to 222 parcels (164 parcels are currently occupied and 58 are vacant) and a project population equivalence of 328 persons[1]. Additionally, the project would involve the installation of a new wastewater treatment plant (WWTP) to provide a central treatment facility for wastewater generated in Palo Verde. The WWTP would be interconnected with the newly installed wastewater collection system and would serve the same area and population as the wastewater collection system.

Summary of the Purpose and Need

The proposed wastewater collection system and treatment facility are intended to provide increased health, sanitation and security to residents within Palo Verde. The proposed wastewater collection system (or sanitary sewer) and facility would eliminate existing septic systems and leach fields that are in generally poor condition. These upgrades would eliminate wastewater overflows and/or leaks through the abandonment of existing septic systems in the area, which would protect groundwater and water of the Palo Verde Lagoon, thereby improving water quality and providing potential health benefits by reducing the elevated levels of e-coli and other fecal coliform bacteria. The project would also address issues of non-compliance through the elimination of septic systems located within 50 to 100 feet of the Palo Verde Outfall Drain and Lagoon system, which is designated as a setback area.

Summary of the Alternatives Considered

Four alternatives to implement the Proposed Action were evaluated; however, three alternatives were considered but discarded due to cost or environmental constraints.

Two alternatives, the Proposed Action and a No Action Alternative, are further considered for this project:

1) Alternative 1, the Preferred Alternative, would involve the installation of a new wastewater collection system and aerated facultative lagoon (pond) WWTP to the east of the northern terminus of Sunset Way in Palo Verde that discharges into percolation/evaporation ponds.

[1] The 328 persons equates to the 164 parcels fully occupied according to Imperial County criteria (e.g., two dwelling units per acre and two persons per dwelling unit for a low density residential parcel [Imperial County 2008]).

2) Alternative 2, the No Action Alternative, under which the Proposed Action would not be implemented and the wastewater collection system in the project area would continue to use failing septic systems and result in related water quality degradation in the Palo Verde Lagoon. In compliance with National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations, the No Action Alternative (i.e., not implementing the Proposed Action) must be considered and associated potential impacts evaluated.

Three alternatives were considered but discarded due to cost or environmental constraints:

1) Proposed Alternative 3 would involve the construction of a new wastewater collection system and aerated facultative lagoon WWTP at the northwest corner of State Highway 78 and Clark Way (also known as the 'Wheelies' site) that discharges wastewater directly into the Palo Verde Lagoon. Based on geotechnical evaluations at the potential WWTP sites for Alternatives 1 and 3, the percolation basins for Alternative 3 would need to be in excess of 6 acres. The inability of the soils to percolate the effluent at the site for Alternative 3 decreases the viability of this option, and the land required for effluent disposal at these slower percolation rates is not available at this site. Alternatively, the effluent would require surface discharge or disposal via injection wells or vadose zone wells. These alternative effluent disposal options would require more advanced wastewater treatment and would significantly increase capital costs, in excess of Alternative 1. Therefore, Alternative 3 is not considered a viable alternative.
2) Proposed Alternative 4 would involve installation of a main pump station in the alley north of First Street to pump wastewater flows from Palo Verde to the Ripley WWTP, approximately 10 miles to the north in Riverside County. Alternative 4 is not considered a viable alternative due to the service capacity issues of the existing Ripley WWTP and probable need to upsize the facility. Such expansion would not be physically feasible due to the site being land-locked (BECC 2011). In addition, this alternative would require a service agreement between Riverside County (owner and operator of the Ripley WWTP) and the Community of Palo Verde to accept, treat, and dispose of the wastewater delivered to the WWTP. These agreements would be cost-prohibitive and therefore are not considered viable.
3) Proposed Alternative 5 would involve the construction of a new wastewater collection system and packaged rotating biological contactor (RBC) WWTP, instead of an aerated facultative lagoon WWTP, at the potential locations identified in Alternatives 1 and 3. An RBC WWTP was discarded due to the substantially higher capital costs required for this type of system.

Identification of the Preferred Alternative

Alternative 1 was selected as the Preferred Alternative for its cost-effectiveness and overall beneficial impacts to several environmental resources with few negative impacts to few environmental resources. Since impacts to environmental resources for all alternatives were determined to result in overall beneficial impacts to several environmental resources with few

negative impacts to few environmental resources, the other alternatives were eliminated due to cost or design complexity.

Summary of Environmental Impacts of the Alternatives

Three primary screening criteria were used when evaluating the alternatives, including operational effectiveness (must meet the project *purpose and need*), feasibility and cost-effectiveness, and environmental constraints (minimal impacts to environmental and cultural resources). After evaluating each alternative against the three criteria, Alternative 1 was selected as the Preferred Alternative. Potential impacts to resources are evaluated and described in Sections 4-1 through 4-12. Table OV-1 provides a summary of the potential impacts to resource areas that were fully evaluated and associated with the Preferred Alternative and the No Action Alternative.

Table OV-1. Summary of Impacts for Fully Evaluated Resources

Resource	Preferred Alternative (Alternative 1)	No Action Alternative
Air Resources	Combustion emissions associated with construction vehicles and equipment would be minimal due to the short-term duration of proposed construction. Construction-related air quality and noise impacts would be minimal and temporary, and would not continue beyond the period of construction. The proposed pond WWTP would be in compliance with required setbacks and odors are anticipated to be minor. Therefore, implementation of the Preferred Alternative would result in ***no significant impacts*** to air resources.	Conditions would remain as described in *Section 3.1, Air Resources.*
Water Resources	Implementation of the Preferred Alternative would eliminate leaking of untreated wastewater into the environment, reducing the negative impacts to surface water resources. Groundwater recharge rates would not be affected and compliance with water quality discharge permits would ensure no degradation of groundwater quality would occur. The proposed pond WWTP would be constructed outside of floodplains and design features would protect infrastructure built within floodplains. No significant impacts to wetlands would occur. Therefore, Implementation of the Preferred Alternative would provide ***beneficial impacts*** to water resources.	Conditions would remain as described in *Section 3.2, Water Resources.* Negative impacts would continue to occur through the leakage of untreated wastewater into the environment.
Public Health and Safety	The proposed improvements under the Preferred Alternative would eliminate the use of septic systems that currently result in the leakage of untreated wastewater into the environment. Therefore, implementation of the Preferred Alternative would provide ***beneficial impacts*** to public health and safety.	Conditions would remain as described in *Section 3.3, Public Health and Safety.* Negative impacts would continue to occur through the leakage of untreated wastewater into the environment.
Surface Resources	The Preferred Alternative includes construction consisting of trenching for pipeline collection system, a pond WWTP, and pump systems. No significant landforms or areas of unique or sensitive resources would be impacted by construction. All construction would occur in previously disturbed areas. Impacts from potential development to Threatened and Endangered Species or to sensitive species habitat would be less than significant with implementation of agency-required measures. Implementation of the Preferred Alternative would result in ***less than significant impacts*** to existing surface resources.	Conditions would remain as described in *Section 3.4, Surface Resources.* Negative impacts would continue to occur through the leakage of untreated wastewater into the environment.
Cultural Resources and Historic Properties	The proposed improvements would occur in areas that have previously been disturbed and no cultural resources have been recorded as occurring in the project area. However, should cultural or historical resources be encountered during development, compliance with applicable cultural and historical resource regulations would be required. Therefore, the Preferred Alternative would result in ***less than significant impacts*** to cultural or historical resources.	Conditions would remain as described in *Section 3.5, Cultural Resources and Historic Properties.*
Land Use	The Preferred Alternative would require a rezone of the subject parcel to Government/Special Public (G-S), as well as a minor subdivision or a Parcel Map Waiver from Imperial County. Under the Preferred Alternative, the proposed wastewater collection lines would occur within existing roads, alleys, and right-of-ways. The Preferred Alternative would	Conditions would remain as described in *Section 3.6, Land Use.*

Table OV-1. Summary of Impacts for Fully Evaluated Resources

Resource	Preferred Alternative (Alternative 1)	No Action Alternative
	provide a reliable and effective wastewater collection and treatment system, would eliminate sewage leaks to the environment, and would allow for the redevelopment of properties abandoned after the tornado. Therefore, the Preferred Alternative would result in ***beneficial impacts*** to the quality of land use in Palo Verde.	
Aesthetics	The improvements proposed under the Preferred Alternative would include a pump station and a pond WWTP northeast of the developed community. The WWTP would be visually obscured by existing vegetation and the project would therefore not result in significant impacts. Short-term impacts would be temporary and would not be significant. Therefore, implementation of the Preferred Alternative would result in ***less than significant impacts*** to aesthetic resources.	Conditions would remain as described in *Section 3.7, Aesthetics.*
Socioeconomics	The Preferred Alternative would result in temporary benefits to socioeconomics by creating some short-term construction jobs. No long-term employment would be generated. Therefore, ***no significant impacts*** to socioeconomics would occur.	Conditions would remain as described in *Section 3.8, Socioeconomics.*
Waste Management	The proposed pond WWTP would create hazardous waste associated with sewage sludge. Generated wastes would be disposed of according to federal and state regulations. ***No significant impacts*** would occur. Existing infrastructure would be improved such that inadvertent discharge of partially treated wastewater would no longer be released into the environment. Therefore, the Preferred Action would result in ***long-term beneficial impacts*** to waste management.	Conditions would remain as described in *Section 3.9, Waste Management.*
Transportation	Implementation of the Preferred Alternative would include construction access along existing roadways and previously disturbed areas. Some short-term access may be restricted during construction; however, impacts would be minimized using standard engineering and traffic management practices; therefore, the Preferred Alternative would result in ***less than significant impacts*** to transportation.	Conditions would remain as described in *Section 3.10, Transportation.*
Energy	Improvements proposed under the Preferred Alternative would result in an increase in energy required for pumping the water distribution system and operation of the pond WWTP. However, impacts to energy resources would be ***less than significant.***	Conditions would remain as described in *Section 3.11, Energy.*
Environmental Justice and Protection of Children	Implementation of the Preferred Alternative would improve public health by eliminating untreated wastewater leakage into the environment, improving the area for the entire population. Therefore, ***beneficial impacts*** to environmental justice and protection of children would result from the Preferred Alternative.	Conditions would remain as described in *Section 3.12, Environmental Justice and Protection of Children.* Negative impacts would continue to occur through the leakage of untreated wastewater into the environment.

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1.0 PURPOSE AND NEED FOR ACTION

1.1 Introduction

The United States (US) Environmental Protection Agency (EPA) administers funds for water and wastewater infrastructure projects located 62 miles (100 kilometers [km]) within the US and Mexico, measured from the US-Mexico international boundary. EPA policy for border funds requires certification by the Border Environment Cooperation Commission (BECC) as a condition for grant award; further, completion of the National Environmental Policy Act (NEPA) process for a proposed project is also required by the BECC. The EPA requires compliance with NEPA before Border Environment Infrastructure Fund (BEIF) financing can be authorized (BECC 2000). The Proposed Action under consideration is funding for the construction of a wastewater collection and treatment system for the Community of Palo Verde (Palo Verde), California, United States, in Imperial County.

This Environmental Information Document (EID) was prepared using Council on Environmental Quality (CEQ) regulations 40 Code of Federal Regulations [CFR] Parts 1500-1508 and EPA regulations (40 CFR Part 6) as guidance. This EID documents the environmental consequences of the proposed federal action within the Area of Concern, wholly contained within the US.

The objective of this study is to perform and prepare an EID in accordance with the CEQ regulations (40 [CFR] 1502.13), as required by the EPA to meet the requirements of NEPA. This EID also complies with BEIF requirements and must be accepted by the EPA before authorization and disbursement of construction funds for the proposed development of a gravity and pressure wastewater collection system and treatment facility for the community of Palo Verde. As part of the BECC certification process, the proposed project must comply with both NEPA and the California Environmental Quality Act (CEQA); separate documentation satisfying the requirements of CEQA is being prepared concurrently with this EID.

1.2 Brief Description of the Proposed Action

The community of Palo Verde has submitted an application to the BECC for certification of border funds for the development of a gravity and pressure wastewater collection system and treatment facility. The design consists of:

1) The installation of a new gravity and pressure wastewater collection system in the project area that would provide service to 222 parcels (164 parcels are currently occupied and 58 are vacant) and a project population equivalence of 328 persons.
2) The installation of a new wastewater treatment plant (WWTP) to provide a central treatment facility for all wastewater generated in Palo Verde. The WWTP would be interconnected with the newly installed wastewater collection system and would serve the same area and population as the wastewater collection project.

The WWTP is proposed to be located on Assessor Parcel Number (APN) 006-220-056 in the northeastern portion of Palo Verde. The parcel is zoned for residential development (R-1) and has a land use designation for agriculture. In order to comply with Imperial County zoning ordinances, the proposed project would require legislative actions including a General Plan Amendment and rezone of the subject parcel to Government/Special Public (G-S). The project site would require either a minor subdivision or a Parcel Map Waiver from Imperial County in accordance with the State Subdivision Map Act. Resolution of land use and zoning consistency issues would be required prior to issuance of permits for project construction.

1.3 Proposed Project Area Setting

The community of Palo Verde is located in the far northeastern corner of Imperial County, with Riverside County abutting the community to the north (Figure 1-1). Palo Verde is approximately 50 miles north of the US-Mexico international border, 6 miles west of the Colorado River, and 13 miles south of Interstate (I)-10. State Highway 78 (Ben Hulse Highway) runs north and south through the community and is the main arterial in Palo Verde (Figure 1-2). The Palo Verde Lagoon and Outfall Drain are in the Palo Verde Valley, and the community of Palo Verde is centered on these water features. The Valley is bound on the north by the Big Marina Mountains, on the west by Palo Verde Mesa, and on the south and east by the Colorado River.

Palo Verde consists of quiet residential areas and limited commercial activities centralized around State Highway 78.

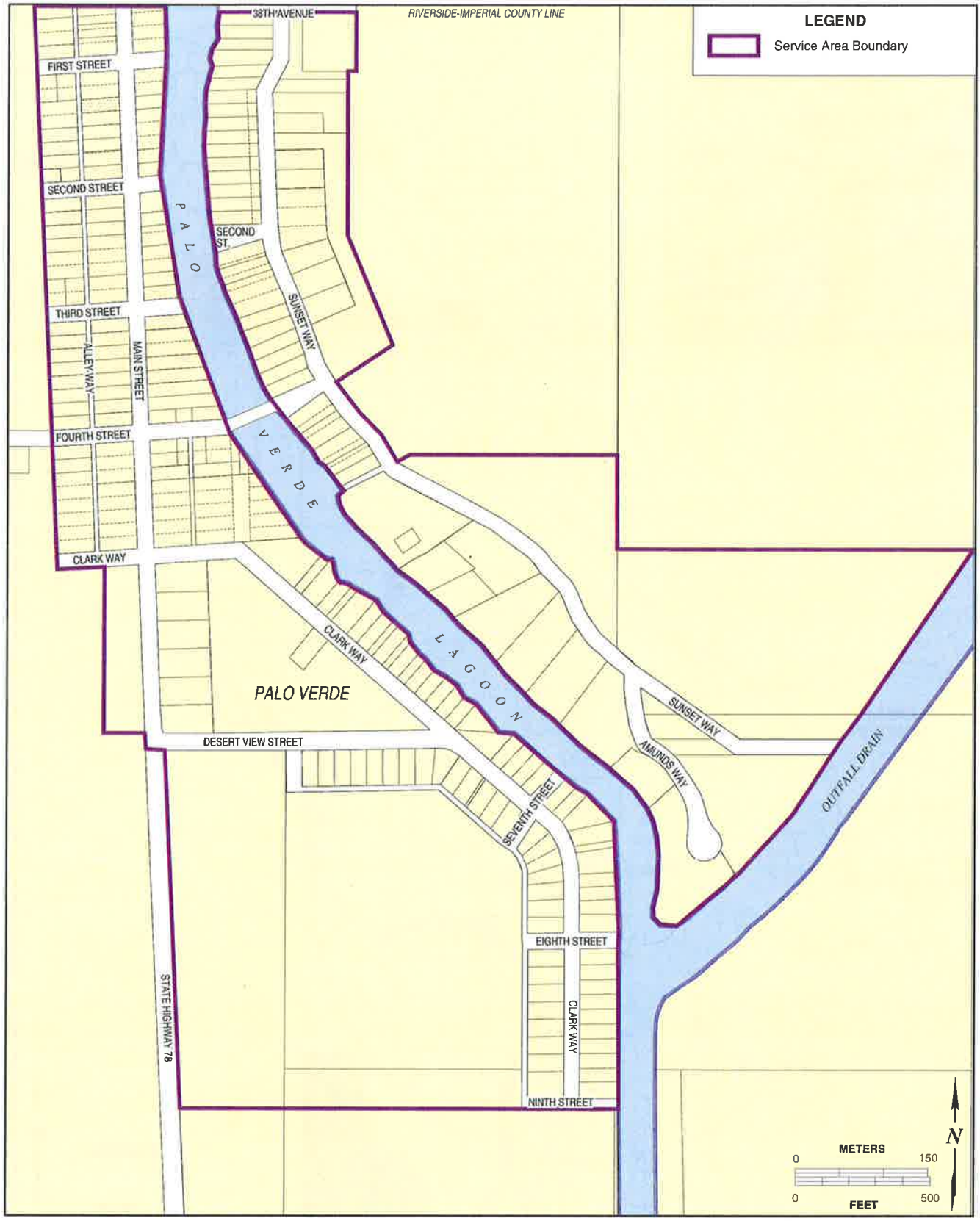
The total area of the Palo Verde community is approximately 747 acres. Palo Verde primarily consists of residences and includes two recreational vehicle (RV) parks. Palo Verde also contains a small commercial center, fire station, post office, community hall, church, and sheriff's substation. The Palo Verde Community Water District (PVCWD) owns and operates an existing water filtration plant and potable water supply system. Households in Palo Verde currently rely on septic systems for their wastewater disposal needs and many of these systems are failing. Additionally, many of the septic systems do not meet the Palo Verde and Imperial County required setback distances of 50 to 100 feet from the adjacent Palo Verde Lagoon.

The climate in the region is continental desert, of extreme aridity, and is characterized by hot summers and moderate winters. The annual average maximum temperature is 88 degrees Fahrenheit (°F) (31°C) and the average minimum temperature is 55°F (13°C). Annual precipitation of the area is approximately 4 inches, with the majority of rainfall events occurring during fall and winter months (Western Regional Climate Center [WRCC] 2009). Precipitation is generally severely limited, though rainfall can be highly variable with precipitation from a single

BECC

Regional Location Map
Palo Verde, California

FIGURE 1-1



BECC

Project Area
Palo Verde, California

FIGURE
1-2

heavy storm one year exceeding the entire annual total during a following drought year. Most natural vegetation in the Palo Verde Valley has been replaced by agricultural production and limited areas of light urban development. However, large areas of undeveloped Sonora Desert surrounding the Palo Verde Valley and the nearby Cebola National Wildlife Refuge (NWR) provide valuable habitat to a variety of wildlife species.

According to the US Geological Survey, the elevation in the project area is generally between 232 and 233 feet above sea level. The project area drops significantly (10 to 20 feet) at the banks of the lagoon. The decline across the project area is approximately 0.02 percent (BECC 2011).

Palo Verde, with a 2010 population of approximately 171, has been experiencing a gradual population decline in recent years. The PVCWD is responsible for construction and maintenance of the water distribution system throughout the community, and distributes potable water to homes and businesses throughout the community. Water is primarily obtained from wells located within the community. PVCWD currently supplies potable water to 162 residences.

Palo Verde uses individual private septic tank systems for disposal of wastewater and sewage, many of which are failing or located within 50 to 100 feet of the Palo Verde Lagoon, too close to meet required setback distances. Existing septic tanks and leach fields are in generally poor condition. The failing septic systems contribute to increased levels of e-coli and other fecal coliform bacteria in the Lagoon.

The purpose of this EID is to determine and document anticipated beneficial and adverse impacts of the Proposed Action and its alternatives within areas that may be affected. Therefore, the scope of this EID addresses those environmental resources that may be impacted.

1.4 Statement of Project Purpose and Need

The proposed wastewater collection system and treatment facility are intended to provide increased health, sanitation, and security to residents within Palo Verde. The need for improvements to the wastewater collection and treatment systems is discussed below.

The Preferred Alternative would collect and treat wastewater, eliminating the use of failing septic systems that contribute to poor water quality in the Palo Verde Lagoon.

The proposed wastewater collection system (or sanitary sewer) and facility would eliminate septic systems and

leach fields that are in generally poor condition. These upgrades would eliminate wastewater overflows and/or leaks through the abandonment of existing septic systems in the area, which would protect groundwater and water of the Palo Verde Lagoon, thereby improving water quality and providing potential health benefits by reducing the elevated levels of *e-coli* and other fecal coliform bacteria. The project would also address issues of non-compliance through the elimination of septic systems located within 50 to 100 feet of the Outfall Drain and Lagoon system, which is designated as a setback area.

1.5 Scope of the Environmental Information Document

The purpose of this EID is to identify and evaluate potential environmental impacts associated with the implementation of the Proposed Action and the evaluated alternatives. This EID was prepared in accordance with the scope of work defined in the *BEIF Environmental Assessment Guidelines* (BECC 2000).

1.6 Decision to be Made

Four alternatives were evaluated to implement the Proposed Action; however, three of the alternatives identified were considered but discarded due to environmental or cost constraints. The decision to be made is whether to implement one of two alternatives: Alternative 1 (the Preferred Alternative), would involve the installation of a new wastewater collection system and aerated facultative lagoon WWTP in the northeast portion of Palo Verde that discharges into percolation/evaporation basins; or the No Action Alternative, under which the Proposed Action would not be implemented. Both of these alternatives are described in detail in Section 2.0.

Three alternatives were considered but discarded due to cost or environmental constraints:

Proposed Alternative 3 would involve the construction of a new wastewater collection system and aerated facultative lagoon WWTP at the northwest corner of State Highway 78 and Clark Way (also known as the 'Wheelies' site) that discharges wastewater directly into the Palo Verde Lagoon. Based on geotechnical evaluations at the potential WWTP sites for Alternatives 1 and 3, the percolation basins for Alternative 3 would need to be in excess of 6 acres. The inability of the soils to percolate the effluent at the site for Alternative 3 decreases the viability of this option, and the land required for effluent disposal at these slower percolation rates is not available at this site. Alternatively, the effluent would require surface discharge or disposal via injection wells or vadose zone wells. These alternative effluent disposal options would require more advanced wastewater treatment and would significantly increase capital costs, in excess of Alternative 1. Therefore, Alternative 3 is not considered a viable alternative.

Proposed Alternative 4 would involve installation of a main pump station in the alley north of First Street to pump wastewater flows from Palo Verde to the Ripley WWTP, approximately 10 miles to the north in Riverside County. Alternative 4 is not considered a viable alternative due to the service capacity issues of the existing Ripley WWTP and probable need to upsize the facility. Such expansion would not be physically feasible due to the site being land-

locked (BECC 2011). In addition, this alternative would require a service agreement between Riverside County (owner and operator of the Ripley WWTP) and the community of Palo Verde to accept, treat, and dispose of the wastewater delivered to the WWTP. These agreements would be cost-prohibitive and therefore are not considered viable.

Proposed Alternative 5 would involve the construction of a new wastewater collection system and packaged rotating biological contactor (RBC) WWTP, instead of an aerated facultative lagoon WWTP, at the potential locations identified in Alternatives 1 and 3. An RBC WWTP was discarded due to the substantially higher capital costs required for this type of system.

1.7 Selection Criteria

The Proposed Action must meet certain selection criteria in order to address the project's purpose and need as identified in Section 1.4. Selection criteria for the Proposed Action involve the installation of a wastewater collection system and treatment facility for the residents of Palo Verde through fixed infrastructure (i.e. PVC pipes, manholes, etc.) and treatment of effluents to comply with local, state, and federal water quality standards.

Alternative 1, the Preferred Alternative, was chosen as the Preferred Alternative because the proposed infrastructure would provide wastewater collection and treatment service to the project area in an environmentally and cost-efficient manner (additional details provided in Section 2.2). The Preferred Alternative would focus construction activities along roadways and previously disturbed areas, thereby minimizing the potential for environmental impacts to natural ecosystems, and would provide sufficient system capacity to meet current and future needs.

The No Action Alternative would not provide improved wastewater collection services to the residents of the project area and would fail to address the associated effects on public health and the environment. These two alternatives are further discussed in Section 2.0.

1.8 Area of Concern

BECC recommends that environmental resources that may be affected by a Proposed Action be evaluated within 6 miles (10 km) area from the proposed project site (BECC 2000). For this project, the Area of Concern comprises the Community of Palo Verde, and agricultural areas in Imperial County and Riverside County, California and in La Paz County, Arizona. Additionally an approximately 9.7 mile course of the Colorado River falls within the Area of Concern (refer to Figure 1-1). A more detailed description of the project area and a graphic depiction are presented in Section 3.0.

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2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

As defined by CEQ regulations (§1508.25), the scope consists of the range of actions, alternatives, and impacts to be considered in a NEPA document. The scope of the EID is limited to the relevant resources within the defined area of concern that may be affected by the No Action or one of the action alternatives (BECC 2009a). The Area of Concern for this project is contained entirely within the US.

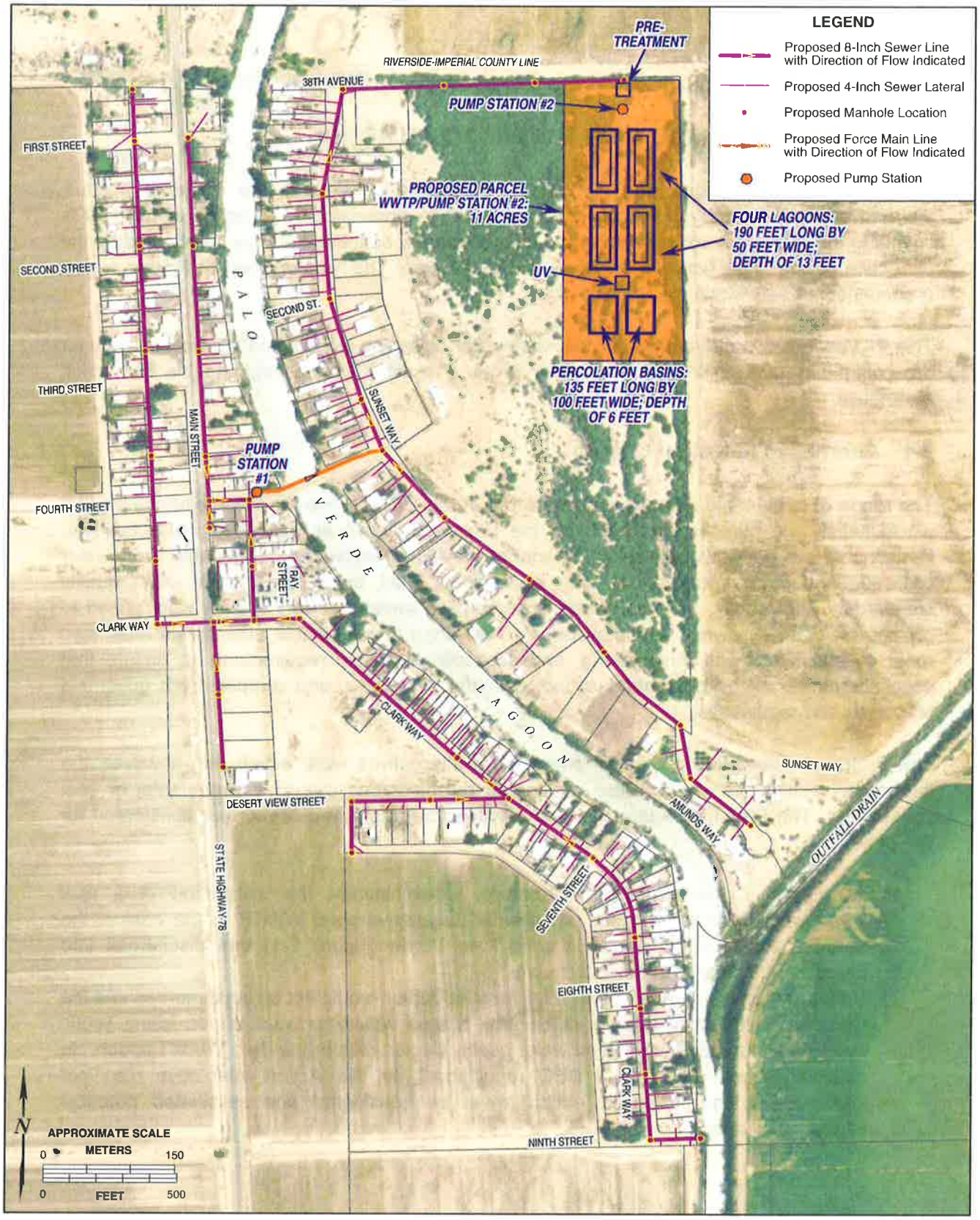
This EID defines two alternatives for the wastewater collection system and treatment facility for the community of Palo Verde: Alternative 1 (the Preferred Alternative), and the No Action Alternative.

2.1 Alternative Selection Criteria

The range of reasonable alternatives considered in this EID is limited to those alternatives that would satisfy the purpose and need for the Proposed Action as described in Section 1.4. Reasonable alternatives would fulfill the goal of providing residences with reliable wastewater collection and a treatment system that would meet local, state, and federal water quality standards. Additionally, the wastewater collection (or sanitary sewer) system would need to replace residentially owned septic systems. The range of reasonable alternatives must also meet essential technical, engineering, and economic threshold requirements to ensure that each alternative is environmentally sound, economically viable, and complies with governing standards and regulations.

The Preferred Alternative and three other action alternatives were developed; however, the three other action alternatives were considered but discarded due to environmental or cost constraints. The Preferred Alternative and a No Action Alternative are further considered for this project:

1) Alternative 1, the Preferred Alternative, would involve the installation of a new wastewater collection system and aerated facultative pond WWTP to the east of the northern terminus of Sunset Way in Palo Verde (Figure 2-1) that discharges into percolation/evaporation ponds.
2) Under the No Action Alternative, the Proposed Action would not be implemented and the wastewater collection system in the project area would continue to use failing septic systems and experience related water quality degradation in the Palo Verde Lagoon. In compliance with NEPA and CEQ regulations, the No Action Alternative (i.e., not implementing the Proposed Action) must be considered and associated potential impacts evaluated.



BECC **Preferred Alternative: Lagoon WWTP and Wastewater Collection System**

FIGURE 2-1

2.2 Description of Alternative 1 (Preferred Alternative) – Wastewater Collection System and Lagoon WWTP

The Preferred Alternative (Alternative 1) consists of two components: construction of a residential wastewater collection pipeline system and an aerated facultative lagoon (pond) WWTP in Palo Verde.

The proposed residential wastewater collection system consists of connecting 222 parcels (164 parcels are currently occupied and 58 are vacant) and a project population equivalence of 328. The collection system would include 8-inch-diameter gravity sewer lines, 4-inch-diameter service laterals, manholes, one pump station, and force mains in order to convey wastewater to the WWTP site. Construction would be completed by open-trench technologies.

Implementation of the Preferred Alternative would include the removal of existing septic systems, many of which are within the 50-100-foot buffer area adjacent to the Palo Verde Lagoon.

A pump station and force main would be constructed to convey wastewater across the Palo Verde Lagoon at Fourth Street. The 4-inch-diameter PVC force main that would span the bridge would be installed inside an 8-inch-diameter steel casing pipe. The annular space between the force main and casing pipe would be grouted and a leak detection apparatus would be installed inside the casing pipe to provide notification if a leak does occur in the force main. The force main would be attached to the bridge deck to cross the Palo Verde Lagoon as the preferred engineering method due to operational advantages and financial considerations. Under this option, the casing and force main pipes would be installed on top of the bridge deck, which would increase the weight load on the bridge by approximately 35 pounds per foot, for a total weight of 4,130 pounds. This option would require a structural assessment of the bridge in order to determine if it could support the additional weight added by the casing and force main pipes. The bridge was inspected by the California Department of Transportation (Caltrans) on March 6, 2008 and repair work was recommended, including replacement of rotting sections of the bridge.

Alternately, if the bridge were determined to not be adequate to support the additional force main weight, the force main could be placed approximately 30 to 40 feet below ground surface and/or approximately 10 feet below the Lagoon bottom via directional drilling under the Lagoon. This depth is required to provide a safe distance between the top of the force main and the bottom of the Lagoon including the scour depth of the Lagoon.

Solar power would be installed on pumps, aerators and other mechanical equipment to the extent feasible. Pipeline construction would entail trenching, pipe laying, soil stockpiling, covering pipes with stockpiled soil, and operation of equipment to construct infrastructure to serve 222

parcels. Additionally, power lines cross the project area, which would require coordination prior to pipeline construction with Southern California Edison (SCE), Imperial County, and the Palo Verde Irrigation District (PVID), including obtaining all necessary permits. The wastewater collection system would route flows to the proposed WWTP located on the northeast (island) side of Palo Verde.

Table 2-1. Pipes Required to Provide Wastewater Collection under Alternative 1 (Lagoon WWTP and Collection System)

Pipe Type	Pipe Purpose	Pipe Diameter (inches [in], centimeters [cm])	Amount needed for Construction (feet [ft], meters [m])	Depth of Pipe
PVC SDR-35 pipe	Gravity Sewer Pipe	8 in or 20.32 cm	13,396 ft or 4,083 m	5.0-20.0 ft or 1.5-6.1 m
PVC SDR-35 pipe	Sewer Service Line	4 in or 10.16 cm	17,098 ft or 5,212 m	4.0- 8.0 ft or 1.21-2.43 m
PVC C-900 pipe	Sewer Force Main	4 in or 10.16 cm	510 ft or 155 m	0.0-5.0 ft or 0.0-1.5 m

Under the Preferred Alternative, most wastewater pipelines would be installed within or on the sides of roads as other underground utilities permit. Excavation trenches for the 4-inch-diameter sewer service lines would range from 4.0 to 8.0 feet (1.21 to 2.43 meters [m]) in depth and 3.0 to 6.0 feet (0.91 to 1.83 m) in width. Trenches for the 8-inch-diameter gravity sewer pipe would range from 5.0 to 12.0 feet (1.5 to 3.66 m) in depth and 6.0 to 13.0 feet (1.83 to 3.96 m) in width. The embedment would be a minimum of 1.0 to 3.0 feet (0.30 to 0.91 m) in depth for all wastewater installations. Asphalt or other paved surfaces would be replaced where cut, as required by Imperial County Public Works Department. Additionally, implementation of this alternative would entail the abandonment of existing septic systems and yard restoration.

To treat collected wastewater, a pond WWTP would be constructed under the Preferred Alternative and would consist of an aerated facultative pond with percolation/evaporation ponds, screens, grit removal, flow measurement, influent pump station and an ultraviolet (UV) disinfection system. The WWTP would be designed to accommodate full buildout of Palo Verde with an average daily flow (ADF) of 57,300 gallons per day (gpd) and a peak hourly flow of 225,934 gpd. The pond would be a four-cell arrangement with two aerated cells. Each cell would be approximately 190 feet long by 50 feet wide and a total depth of 13 feet. Additionally, two percolation basins, approximately 135 feet long by 100 feet wide by 6 feet deep, would also be needed. Due to the shallow groundwater depth in the project area, 8,000 cubic yards of fill material and berm construction would be required to elevate the WWTP facilities, ponds, and percolation/evaporation ponds.

The aerators used for the treatment ponds would include a floating type aerator. The pontoon mounted aerator would include solar panels to help limit dependence on grid power and reduce operation and maintenance costs. Additional electrical supply and controls would include a cross-over connection should future potential solar photovoltaic (PV) renewable energy power supplies become available.

Potable water of adequate quality and capacity would be available and rehabilitation of existing infrastructure would not be required. In addition, the Preferred Alternative would incorporate green building practices, to the extent feasible, to be developed in coordination with BECC, North American Development Bank (NADB), and EPA. The Preferred Alternative does not include comprehensive paving of any streets or roads; only repair to disrupted surfaces would occur (i.e., asphalt surfaces would be replaced where excavation trenches have been cut).

The WWTP is proposed to be located on Assessor Parcel Number (APN) 006-220-056 in the northeastern portion of Palo Verde. The parcel is zoned for residential development (R-1) and has a land use designation for agriculture. In order to comply with the Imperial County General Plan and zoning ordinances, the proposed project would require legislative amendments including a General Plan Amendment and a rezone of the subject parcel to Government/Special Public (G-S) (R. Cabanilla, Imperial County 2012). In addition, the project would require either minor subdivision or a Parcel Map Waiver from Imperial County. Resolution of land use and zoning consistency issues would be required prior to construction. Project implementation would take place over 8 to 12 months.

2.3 No Action Alternative

This alternative includes leaving the community of Palo Verde on existing septic systems, although community outreach on proper use and maintenance of septic systems would be provided. No wastewater collection system or WWTP would be installed under this option. The wastewater collection system in the project area would continue to use failing septic systems and experience related water quality degradation in the Palo Verde Lagoon.

2.4 Regulatory Drivers and Guidance

The following are international agreements, federal regulations, state regulations, executive orders (EOs), and other requirements that may apply to water and wastewater projects within the US-Mexico border region. Those that apply to the Proposed Action are discussed further in the body of this EID.

2.4.1 International Agreements

The BECC BEIF Environmental Assessment Guidelines identify and describe the following five major bilateral agreements between the US and Mexico related to environmental protection:

- The 1889 International Boundary Convention
- The Water Treaty of 1944
- The 1983 La Paz Agreement (or Border Environmental Agreement)
- The 1992 Integrated Border Environmental Plan (IBEP)
- The 1994 North American Free Trade Agreement (NAFTA)

An excerpt from the BEIF Guidelines which summarizes these agreements is included below (BECC 2000):

"The 1889 International Boundary Convention established the International Boundary Commission (IBC). The Water Treaty of 1944 replaced the IBC with the International Boundary and Water Commission (IBWC) and granted the IBWC (US Section) enhanced authority to address water quality, conservation, and use issues within the US. All international border and water treaties with respect to Mexico are coordinated through the IBWC (US Section)."

"The IBWC was created by the governments of the US and Mexico to apply the provisions of various border and water treaties and settle differences arising from such applications through a joint international commission. IBWC coordinates the exchange of information between the US and Mexico for all program activities that involve watersheds or aquifers crossing into Mexico. The IBWC jurisdiction extends along the US-Mexico International Border, and inland into both countries where international border and water projects may exist. The IBWC has encouraged and coordinated the establishment of cooperative relationships with federal, state, and local agencies, both in the US and Mexico, in carrying out its border projects and activities."

"In order to protect, improve, and conserve the environment of the border area, the US and Mexico signed the Agreement for the Protection and Improvement of the Environment in the Border Area (La Paz Agreement) in 1983. The La Paz Agreement defined the border region as the area lying 62 miles (100 km) to the north and south of the US/Mexico International Border. In 1992, the IBEP was released, and building on this, the Border XXI Program increased the scope to include environmental health and natural resources issues."

"As part of NAFTA, a bilateral agreement was signed to address the deficiencies in water and waste infrastructure in the border area. A second environmental agreement negotiated to augment NAFTA is the 1994 US-Mexico Agreement Concerning the Establishment of a BECC and a NADB (BECC-NADB Agreement). The BECC-NADB Agreement targets certain environmental problems in the border region to remedy international border environmental or health problems. The BEIF was created by NADB to make environmental infrastructure projects affordable for communities throughout the US-Mexico border region by combining grant funds with loans or guaranties for projects that would otherwise be financially unfeasible."

2.4.2 Additional Agreements

The IBWC of the US and Mexico has approved several international agreements including Minute No. 294, to address sanitary conditions in the border region and water quality issues.

Minute No. 294: Facilities Planning Program for the Solution of Border Sanitation Problems (November 24, 1995) determines the need for financially supporting communities along the border in their efforts to improve sanitation conditions. The communities are requesting assistance to achieve certification of their planned projects from the BECC so that they may obtain financing from international financial organizations that request BECC certification.

2.5 Federal and State Requirements

2.5.1 The National Environmental Policy Act of 1969

"NEPA of 1969, as amended (Public Law [PL] 91-190, 42 United States Code [USC] 4321-4347, January 1, 1970, as amended by PL 94-52, July 3, 1975, PL 94-83, August 9, 1975, and PL 97-258, §4[b], September 13, 1982), provides for a congressional declaration of a national environmental policy (Title I) and provides for the establishment of a CEQ (Title II). The overriding purposes of the act are to (1) declare a national policy which will encourage productive and enjoyable harmony between man and his environment; (2) promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; (3) enrich the understanding of the ecological systems and natural resources important to the nation; and (4) establish a CEQ (Purpose Section 2 [42 USC §4321])" (BECC 2000).

EO 11514, Protection and Enhancement of Environmental Quality, as amended by EO 11991, sets policy directing the federal government in providing leadership in protecting and enhancing the quality of the nation's environment.

EO 12114, Environmental Effects Abroad of Major Federal Actions, signed January 4, 1979, establishes procedures for the federal agencies, including the EPA, to consider the significant effects of their actions on the environment outside the US consistent with foreign policy and national security policies of the US. For purposes of the order, "environment" means the natural and physical environment – including, global commons (oceans and the Antarctic), emissions or effluent discharges regulated by federal law in the US because of their potential toxic effects on the environment to create a serious public health risk, and natural and ecological resources of global importance designated for protection or protected by international agreement – and excludes social, economic and other environments.

2.5.2 Air Quality

The Clean Air Act (CAA) establishes federal policy to protect and enhance the quality of the nation's air resources to protect human health and the environment. The CAA requires that adequate steps be taken to control the release of air pollutants and prevent significant deterioration in air quality. The 1990 amendments to the CAA require federal agencies to determine the conformity of Proposed Actions with respect to State Implementation Plans for attainment of air quality goals.

Air Pollution Control District (APCD) Rules and Regulations (Rule 10) require that new treatment facilities north of the border obtain Authority to Construct and/or Permit to Operate permits from the APCD. This review will include air quality modeling of pollutants and requirements for best available control technology or lowest achievable emissions reduction based upon emissions thresholds.

2.5.3 Water Quality Regulations

The Clean Water Act of 1977 (CWA) (33 USC 1344) and the Water Quality Act of 1987 (33 USC 1251, et seq., as amended) establish federal policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters and, where attainable, to achieve a level of water quality that provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water. Section 404 of the CWA regulates development in streams and wetlands and requires a permit from the US Army Corps of Engineers for dredging and filling in wetlands.

The Antidegradation Policy of the CWA (40 CFR 131.12) sets out requirements to be met before any action is taken that would lower the quality of the nation's waters. The policy requires that an antidegradation analysis be performed for projects that will result in the degradation of water quality. A project that deteriorates the quality of the receiving waters cannot be allowed if the receiving waters do not meet state water quality standards. The applicable water quality standards are found in the Quantitative Standards of Minute No. 264 of the Mexican/American Water Treaty.

2.5.4 Biological Resource Regulations

The Endangered Species Act (ESA) requires federal agencies that fund, authorize, or implement actions to avoid jeopardizing the continued existence of federally listed threatened or endangered species, or destroying or adversely affecting their important habitat. Federal agencies must evaluate the effects of their actions through a set of defined procedures, which can include preparation of a Biological Assessment and formal consultation with the US Fish and Wildlife Service (USFWS). Federal Species of Concern are not protected by law; however, these species could become listed or protected at any time. The State of California has a state endangered species act (CESA) (Fish and Game Code §§ 2050, et seq.) which generally parallels the Federal ESA and is administered by the California Department of Fish and Game (CDFG). The CDFG operates and updates the California Natural Diversity Database (CNDDB) which collects, synthesizes, and catalogs information concerning the distribution and occurrence of species and habitats in need of special attention.

2.5.5 Wetlands

EO 11990, Protection of Wetlands, requires that federal agencies provide leadership and take actions to minimize or avoid the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

2.5.6 Cultural Resources

The National Historic Preservation Act (NHPA) of 1966 provides the principal authority used to protect historic properties, establishes the National Register of Historic Places (NRHP), and defines, in Section 106, the requirements for federal agencies to consider the effects of an action on properties on or eligible for the NRHP.

Protection of Historic Properties provides an explicit set of procedures for federal agencies to meet their obligations under the NHPA, including inventorying of resources and consultation with State Historic Preservation Officers (SHPOs).

The Archaeological Resources Protection Act (ARPA) of 1979 ensures that federal agencies protect and preserve archaeological resources on federal or Native American land and establishes a permitting system to allow legitimate scientific study of such resources.

2.5.7 Land Use and Floodplain Development

EO 11988, Floodplain Management, requires federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to floodplains.

2.5.8 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs federal agencies to assess the effects of their actions on minority and low-income populations within their region of influence. Agencies are encouraged to include demographic information related to race and income in their analysis of environmental and economic effects associated with their actions.

2.5.9 Protection of Children

EO 13045, Protection of Children from Environmental Health and Safety Risks, was introduced in 1997 to prioritize the identification and assessment of environmental health risks and safety risks that may affect children and to ensure that federal agency policies, programs, activities, and standards address environmental health risks and safety risks to children.

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3.0 AFFECTED ENVIRONMENT

This section describes relevant existing environmental conditions for resources potentially affected by the Proposed Action and No Action Alternative. In compliance with NEPA and CEQ regulations, the description of the affected environment focuses on only those aspects potentially subject to impacts.

3.1 Air Resources

3.1.1 Air Quality

3.1.1.1 Definition of Resource

Air quality is affected by stationary sources (e.g., industrial development) and mobile sources (e.g., motor vehicles and construction equipment). Air quality at a given location is a function of several factors, including the quantity and type of pollutants emitted locally and regionally, and the dispersion rates of pollutants in the region. Primary factors affecting pollutant dispersion are wind speed and direction, atmospheric stability, temperature, the presence or absence of inversions, and topography.

For the purposes of this EID, air quality was examined at the regional (i.e., air basin) level because attainment status is determined at this level.

3.1.1.2 Environmental Setting

Climate

The climate in the region is continental desert, of extreme aridity, and is characterized by hot and humid summers and moderate winters. Annual precipitation of the area is approximately 4 inches, with the majority of rainfall events occurring during fall and winter months. The annual average maximum temperature is 88 degrees Fahrenheit (°F) (31°C) and the average minimum temperature is 55°F (13°C) (Western Regional Climate Center [WRCC] 2009).

Criteria Pollutants

Air quality in a given location is determined by the concentration of various pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the EPA for criteria pollutants, including: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal to or less than 10 microns in diameter (PM_{10}) and 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb) (Figure 3-1). NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare.

Ozone (O_3). The majority of ground-level (or terrestrial) O_3 is formed as a result of complex photochemicals (e.g., volatile organic compounds [VOCs]), nitrogen oxides (NO_x), and oxygen.

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method
Ozone (O_3)	1 Hour	0.090 ppm (180 µg/m^3)	Ultraviolet Photometry	0.12 ppm (235 µg/m^3)	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)[7]		
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—	—	—
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	—	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m^3)		—		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	—	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		—	—	—
Lead[8]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	—
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption

1 California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter – PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than ozone, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one. National 1-hour ozone standard was revoked on June 30, 2005.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the U.S. EPA.

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within "a reasonable time" after the implementation plan is approved by the U.S. EPA.

7 New federal 8-hour ozone standards were promulgated by the USEPA on May 27, 2008.

8 The ARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

9 Measured at 150 9th Street, El Centro, CA.

10 Measured at 1029 Ethel Street, Calexico High School, Calexico, CA.

11 Measured at 900 Grant Street, Calexico, CA.

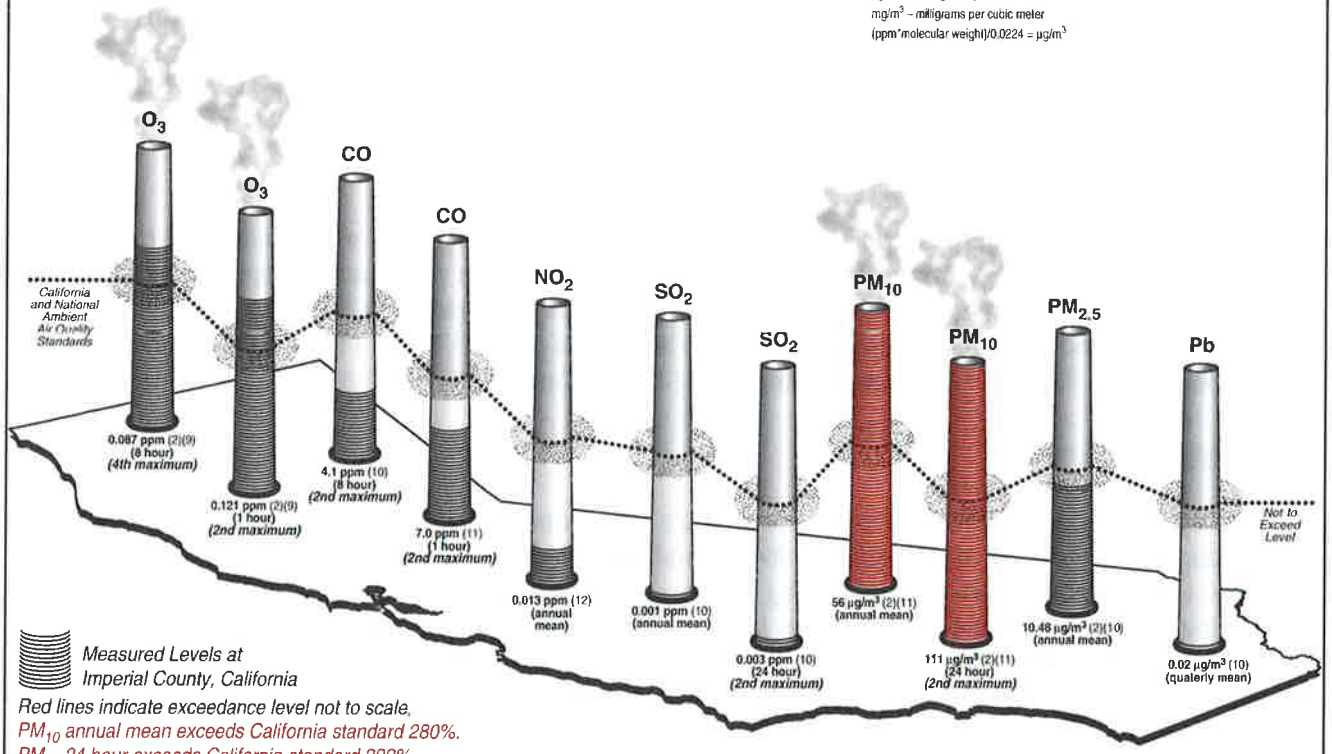
12 Measured at Calexico – East, Calexico, CA.

ppm – parts per million by volume (micromoles of pollutant per mole of gas)

µg/m^3 – micrograms per cubic meter

mg/m^3 – milligrams per cubic meter

(ppm*molecular weight)/0.0224 = µg/m^3



Red lines indicate exceedance level not to scale.
PM_{10} annual mean exceeds California standard 280%.
PM_{10} 24 hour exceeds California standard 222%.

Sources: CARB 2008; USEPA 2008a.

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California and National Ambient Air Quality Standards and Measured Emission Levels (2008) Imperial County, California

FIGURE 3-1

O_3 is a highly reactive gas that damages lung tissue, reduces lung function, and sensitizes the lung to other irritants. Although stratospheric O_3 shields the earth from damaging ultraviolet radiation, terrestrial O_3 is a highly damaging air pollutant and is the primary source of smog.

Carbon Monoxide (CO). CO is a colorless, odorless, poisonous gas produced by incomplete burning of carbon in fuel. The health threat from CO is most serious for those who suffer from cardiovascular disease, particularly those with angina and peripheral vascular disease.

Nitrogen Dioxide (NO_2). NO_2 is a highly reactive gas that can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Repeated exposure to high concentrations of NO_2 may cause acute respiratory disease in children. Because NO_2 is an important precursor in the formation of O_3 or smog, control of NO_2 emissions is an important component of overall pollution reduction strategies. The two primary sources of NO_2 in the US are fuel combustion and transportation.

Sulfur Dioxide (SO_2). SO_2 is emitted primarily from stationary source coal and oil combustion, steel mills, refineries, pulp and paper mills, and from non-ferrous smelters. High concentrations of SO_2 may aggravate existing respiratory and cardiovascular disease; asthmatics and those with emphysema or bronchitis are the most sensitive to SO_2 exposure. SO_2 also contributes to acid rain, which can lead to the acidification of lakes and streams and damage to trees.

Particulate Matter (PM_{10} and $PM_{2.5}$). Particulate matter is a mixture of tiny particles that vary greatly in shape, size, and chemical composition, and can be comprised of metals, soot, soil, and dust. PM_{10} includes larger, coarse particles, whereas $PM_{2.5}$ includes smaller, fine particles. Sources of coarse particles include crushing or grinding operations, and fugitive dust generated from travel on paved or unpaved roads. Sources of fine particles include all types of combustion activities (e.g., motor vehicles, power plants, wood burning) and certain industrial processes. Exposure to PM_{10} and $PM_{2.5}$ levels exceeding current standards can result in increased lung- and heart-related respiratory illness. The USEPA has concluded that finer particles are more likely to contribute to health problems than those greater than 10 microns in diameter. Both PM_{10} and $PM_{2.5}$ are monitored and regulated.

Airborne Lead (Pb). Airborne lead can be inhaled directly or ingested indirectly by consuming lead-contaminated food, water, or non-food materials such as dust or soil; fetuses, infants, and children are most sensitive to Pb exposure. Pb has been identified as a factor in high blood pressure and heart disease. Exposure to Pb has declined dramatically in the last 10 years as a result of the reduction of Pb in gasoline and paint, and the elimination of Pb from soldered cans.

Regulatory Framework

Air quality impacts are assessed by comparing impacts to baseline air quality levels and applicable ambient air quality standards. Federal and state air quality standards have been established for various pollutants. Standards are levels of air quality considered safe from a

regulatory perspective, including an adequate margin of safety, to protect public health and welfare.

The Clean Air Act (CAA) was enacted in 1970 and amended in 1977 and 1990 [42 USC 7506 (c)]. The CAA Amendments of 1990 place most of the responsibility to achieve compliance with NAAQS on individual states. The EPA requires each state to prepare a State Implementation Plan (SIP). A SIP is a compilation of goals, strategies, schedules, and enforcement actions that will lead the state into compliance with all NAAQS. Areas not in compliance with a standard can be declared non-attainment areas by the EPA or the appropriate state or local agency. In order to reach attainment, NAAQS may not be exceeded more than once per year. A non-attainment area can reach attainment when NAAQS have been met for a period of 10 consecutive years. During this time period, the area is in transitional attainment, also termed maintenance.

Local Air Quality

Agricultural burning degrades local air quality, particularly for PM_{10}.

The Community of Palo Verde is located within the Salton Sea Air Basin, which covers all of Imperial County and parts of western Riverside County. In Imperial County, the Salton Sea Air Basin is under the jurisdiction of the Imperial County Air Pollution Control District (APCD). Although the Imperial County APCD has jurisdiction over the air basin, it does not have jurisdiction over all activities contributing to the health of the air basin (e.g., activities outside the US). Industrial and mobile sources of emissions in the Palo Verde Valley are few, thus limiting exceedances of federal and state air quality standards. Due to the low average population density in the Palo Verde area, air pollution from vehicular activity is relatively low. Particulate matter (PM) is a major air pollutant that is generated by wind blowing dry soils, particularly during the late fall, and during dust storms of winter and early spring. Agricultural burning and cultivation practices contribute most of the airborne dust in the Palo Verde area. Some agricultural practices that generate dust are regulated, including leaving cultivated fields vacant and open to blowing winds, burning of crop residues to clear fields for new cultivation, and crop dusting for fertilization and pest control. Additionally, with the exception of State Highway 78, Sunset Way, and portions of Fourth Street, Clark Way, and Desert View Street, roads in Palo Verde are not paved. However, due to low traffic volumes these unpaved roads do not generate substantial amounts of dust and thus are not likely to contribute substantially to local air quality degradation.

The Imperial County APCD has adopted rules specifying pollutant emission levels and ambient air quality standards and operates and maintains air quality monitoring stations in Brawley,

Calexico, El Centro, Niland, and Westmoreland (EPA 2009b). Imperial County is designated as a federal non-attainment area for PM_{10}, $PM_{2.5}$ and 8-hour O_3 (EPA 2009a; 2009b), and a State Ambient Air Quality Standards non-attainment area for 8-hour O_3 and PM_{10}, and is unlisted for $PM_{2.5}$ (CalEPA 2006b).

3.1.2 Noise

Definition of Resource

Noise is defined as unwanted sound or, more specifically, as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Human responses to noise vary depending on the type and characteristics of the noise, the distance between the noise source and the receptor, receptor sensitivity, and time of day.

Due to wide variations in sound levels, sound is measured in decibels (dB), which are based on a logarithmic scale (e.g., a 10-dB increase corresponds to a 100-percent increase in perceived sound). Under most conditions, a 3-dB change is necessary for noise increase to be noticeable to humans. Sound measurement is further refined by using an A-weighted decibel scale (dBA) that emphasizes the range of sound frequencies that are most audible to the human ear (between 1,000 and 8,000 cycles per second).

The day-night average sound level (L_{dn}) is the energy-averaged sound level measured over a 24-hour period, with a 10-dB penalty added to noise events occurring between 10:00 p.m. and 7:00 a.m. The 10-dB penalty is intended to compensate for generally lower background noise and increased annoyance associated with noise events occurring during the quieter nighttime hours. L_{dn} is the preferred noise metric of the US Department of Housing and Urban Development, US Department of Transportation, Federal Aviation Administration, EPA, Veterans Administration, and US Department of Defense.

Environmental Setting

The noise environment in the Community of Palo Verde is generally low due to the low population density and is characteristic of a low-density rural environment. Local vehicular traffic is the primary generator of noise in the project area. Regional traffic noise is associated with State Highway 78, which runs east-west across Imperial County from Blythe to Oceanside.

3.1.3 Odor

The Community of Palo Verde consists of residential housing, a small commercial center, a fire station, post office, community hall, church, sheriff's substation, gas station, and a water filtration plant. There are no major odor sources in the project area.

3.2 Water Resources

3.2.1 Definition of Resource

Water resources considered in this analysis include surface water and drainage, groundwater, and water quality in the project area, in the US-Mexico border area surrounding the Community of Palo Verde, the Colorado River and associated waterways. Surface water resources comprise lakes, rivers, and streams and are important for a variety of economic, ecological, recreational, and human health reasons. Groundwater comprises the subsurface hydrologic resources of the physical environment and is an essential resource in many areas; groundwater is commonly used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition.

3.2.2 Environmental Setting

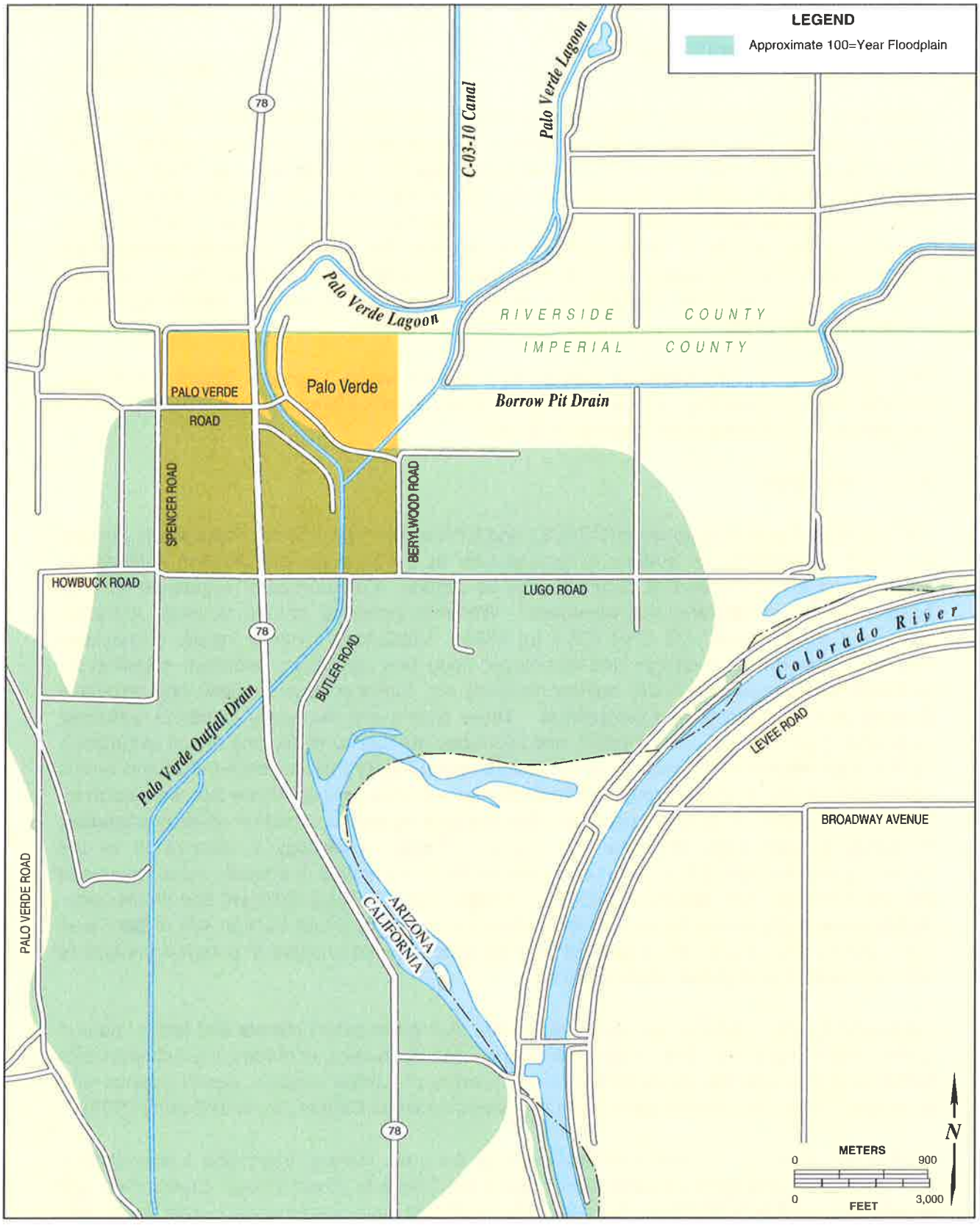
3.2.2.1 Groundwater

The primary source of groundwater recharge is percolation from crop irrigation and irrigation canals sourced from the Colorado River. Recharge by underflow from tributary areas is small by comparison and direct recharge from rainfall is very minor. The Palo Verde Valley has very shallow groundwater depths, and historically was found throughout the valley at a depth of approximately 5 feet. Water works projects occurring primarily in the 1960s, including the dredging of the Palo Verde Lagoon, provided a drain mechanism for groundwater and lowered groundwater levels to approximately 10 feet, where they exist currently. The height of water in the Palo Verde Lagoon generally is equal to or slightly lower than groundwater levels in the surrounding area (PVID 2010). Perched groundwater conditions (where aquifer levels are above the regional water table) are known to occur in some areas of Palo Verde Valley, including in the vicinity of the Community of Palo Verde. Groundwater is generally unconfined in the Palo Verde region; however, some confined zones exist in the more than 7,000 feet of alluvial sediments that form the aquifers in area.

The Palo Verde County Water District (PVCWD) is responsible for supplying water to residents of the Community of Palo Verde for domestic purposes. The PVCWD operates two deep-water wells (the North and South wells), which extract groundwater from the basin. These wells extract approximately 45,000 gallons per day (gpd) of fairly good quality water, which is then treated and distributed to the Community (Imperial County 2008). The water is stored in two 120,000-gallon tanks located 2 miles south of Palo Verde, elevated to 20-feet above ground level, which provide water via gravity flow to the Community. Water pressure is suitable for all general purposes, including fire flow at all hydrants (Imperial County 2004).

3.2.2.2 Surface Water

The Community of Palo Verde is localized around the Palo Verde Lagoon, a slow-flowing freshwater channel (Figure 3-2). The Colorado River, located approximately 6 miles east and 2.5 miles southeast of the Community of Palo Verde, is the main source of surface water in the



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Hydrologic Resources in the Vicinity of the Proposed Project

FIGURE 3-2

region and much of Southern California. Water is diverted from the Colorado River at the Palo Verde Diversion Dam, located approximately 25 miles north of the Community of Palo Verde, and flows to a 150-mile system of open drains/canals that include the Palo Verde Lagoon. Water from these drains is discharged into the Palo Verde Outfall Drain, which flows south to the Cibola National Wildlife Refuge (NWR), where it rejoins the Colorado River. The Palo Verde Irrigation District (PVID) is responsible for maintaining this system of drains/canals, which supplies water to approximately 9,000 acres of agricultural land in Palo Verde Valley. Currently, the PVID has an unlimited allocation for water as long as it is used to benefit agriculture (Imperial County 2008).

The Community of Palo Verde is drained by the Palo Verde Lagoon. Informal drainages channel water towards the Lagoon; however, limited paved surfaces and scant rainfall reduce the need for formal stormwater drainage channels.

3.2.2.3 Wetlands

The US Army Corps of Engineers (USACE) and EPA define wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR 328.3 [b] 1984). Wetlands provide a variety of functions including groundwater recharge and discharge; flood flow alteration; sediment stabilization; sediment and toxicant retention; nutrient removal and transformation; aquatic and terrestrial diversity and abundance; and uniqueness. Three criteria are necessary to define wetlands: vegetation (hydrophytes), soils (hydric), and hydrology (frequency of flooding or soil saturation). Hydrophytic vegetation is classified by the estimated probability of occurrence in wetland versus upland (non-wetland) areas throughout its distribution. Hydric soils are those that are saturated, flooded, or ponded for sufficient periods during the growing season and that develop anaerobic conditions in their upper horizons (i.e., layers). Wetland hydrology is determined by the frequency and duration of inundation and soil saturation; permanent or periodic water inundation and soil saturation are considered significant forces in wetland establishment and proliferation. Jurisdictional wetlands are those subject to regulatory authority under Section 404 of the Clean Water Act (CWA). EO 11990, *Protection of Wetlands*, requires analysis of potential impacts to wetlands related to proposed federal actions.

In Imperial County, wetlands are extremely limited due to the desert climate and lack of natural surface water resources. Due to their limited area and diminishing acreages, the occurrence of sensitive plants, and the ability to support a diversity of wildlife species, desert riparian and freshwater marsh habitats are considered sensitive in Imperial County (Imperial County 2008).

According to National Wetland Inventory maps for the area, riverine, freshwater forested/shrub and freshwater emergent wetlands occur along the Colorado River (United States Fish and Wildlife Service [USFWS] 2010). No designated wetlands have been mapped within the project area associated with the Palo Verde Lagoon; however, wetland vegetation exists along undeveloped portions of the Lagoon.

3.2.2.4 Floodplains

Floodplains are belts of low, level ground present on one or both sides of a stream channel that are subject to either periodic or infrequent inundation by floodwater. For the purposes of this EID, 100- and 500-year floodplains that have been mapped by the Federal Emergency Management Agency (FEMA) as occurring along the Palo Verde Lagoon within the project area were examined.

Inundation dangers associated with floodplains have prompted legislation that largely limits development in these areas. For example, EO 11988, *Floodplains Management*, requires actions to minimize flood risks and impacts. Under this order, development alternatives must be considered, and building requirements must be in accordance with specific federal, state, and local floodplain regulations.

Flooding is a hazard within Palo Verde and surrounding areas. Flooding hazards are greatest on either side of the Palo Verde Lagoon and in the southern portion of the Community (refer to Figure 3-2). The area adjacent to the Palo Verde Lagoon and farmlands to the south of the Community are considered to be a natural floodplain; this area is mapped as *Zone A* on FEMA Flood Insurance Rate Map (FIRM) panels 06025C-0300C (FEMA 2008). *Zone A* represents areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies (because detailed hydraulic analyses have not been preformed, no Base Flood Elevations or flood depths are known). Most of the potential flood areas around the Palo Verde Lagoon are developed with single-family homes. Additionally, the PVID canals and laterals are open channels; however, flow levels are controlled and hazards from significant flooding from these sources are minimal.

3.2.2.5 Water Quality

Palo Verde is built around the Palo Verde Lagoon and Outfall Drain, which run through the middle of the Community and are part of the Palo Verde Valley's system of agricultural drains. Irrigation water from the PVID sustains agriculture in the area, and large parcels of valley land are used to grow crops such as melons, cotton, alfalfa, and various vegetables. , The lagoon was historically used for contact water recreation such as boating, swimming, and water-skiing. However, swimming and other recreational activities are now prohibited in the lagoon given the high level of contamination.

Water quality in the project area is considered impaired due to natural background sources and dysfunctional septic systems.

The State Water Resources Control Board's (SWRCB's) 303(d) list of impaired water bodies identifies Palo Verde Outfall Drain as "water quality limited" because bacteria concentrations violate water quality objectives that protect the following beneficial uses: contact and non-contact water recreation (REC I and REC II); warm freshwater habitat; wildlife habitat; and preservation of rare, threatened, or endangered species. *E-coli* and other fecal coliform bacteria are associated with human and animal fecal waste, and indicate the likelihood of the presence of infectious pathogens. The main sources of pathogens as indicated by *e-coli* and other fecal coliform bacteria in the Palo Verde Agricultural Drain are natural background sources and dysfunctional septic systems. Natural sources of pathogens appear to play a significant role, but their actual contribution, and contributions from other non-point sources of pollution in general have not been fully characterized. Studies indicate the probable main sources of pathogens are waterfowl (96.9 percent), mammals (2.3 percent), septic systems (0.4 percent) and songbirds (0.4 percent) (SWRCB 2003).

3.3 Public Health and Safety

3.3.1 Definition of Resource

Public health and safety can be affected by any material that, because of its quantity, concentration, or physical, chemical, or biological characteristics, poses a considerable present or potential hazard to human health or safety, or to the environment. For the purpose of this EA Public Health and Safety issues were analyzed for the Community of Palo Verde and Imperial County.

3.3.2 Public Health

There is currently no wastewater treatment system in the Community of Palo Verde. Households in the Community rely on septic systems for their wastewater disposal needs and many of these systems are failing. Additionally, many of the septic systems do not meet the Palo Verde and Imperial County required setback distances of 50 to 100 feet from the adjacent Palo Verde Lagoon. Sewage systems are regulated by the Imperial County Public Health Department's Liquid Waste Program (Imperial County 2007).

Public health concerns usually focus on fecal-associated pathogens; however, warm waters also harbor other free-living organisms that may cause serious illness in humans. Pathogens pose a health hazard for humans. *E-coli*, enterococci, and fecal coliform are associated with human and animal fecal waste, and high concentrations of these bacteria indicate a high likelihood of infectious diseases in the water. Symptoms of water-borne pathogens include gastroenteritis, dehydration, headache, vomiting, and fever. Bacterial indicators in the Palo Verde Outfall Drain and Palo Verde Lagoon are present at levels that violate quantitative water quality objectives established by the Colorado River Basin Regional Water Quality Control Board (RWQCB). These violations indicate that Palo Verde Lagoon and Outfall Drain beneficial uses are impaired (Colorado River Basin RWQCB 2003). The probable main source of pathogens to Palo Verde Outfall Drain is waterfowl (96.9 percent). Other sources include

mammals (2.3 percent), septic systems (0.4 percent), and songbirds (0.4 percent) (SWRCB 2003).

Occurrence rates for selected gastrointestinal diseases and Hepatitis A in Imperial County for 2009 are greater than rates for the State of California as a whole (California Department of Public Health 2009). All of these diseases can be contracted through contact with contaminated water; therefore, it is possible that water quality in Imperial County, including the Community of Palo Verde, could affect the number of cases of these diseases observed in the project area. Table 3-1 shows disease rates per 100,000 individuals for Imperial County and the State of California.

Table 3-1. Rates of Gastrointestinal Diseases and Hepatitis A in Imperial County and the State of California

	Hepatitis A		Campylobacteriosis		Salmonellosis		Shigellosis	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
County	6	3.3	17	9.5	42	23.4	20	11.2
State	268	0.7	5,877	15.3	4,835	12.6	1,033	2.7

Notes:
Rates are per 100,000 individuals and were calculated using 2009 California Department of Finance population projections (California Department of Finance 2009).
Source: California Department of Public Health 2009.

3.3.3 Public Safety

Hazardous materials may include any solid, liquid, contained gaseous, or semisolid material, or any combination of materials that pose a substantial present or potential hazard to human health or the environment. Typical hazardous materials include combustible fuels, radioactive materials, and biohazardous material (i.e., biological material capable of causing disease in humans), and pesticides and herbicides. Improper use, storage, transport, or disposal of these materials may result in harm to humans, degradation of surface or ground water, air pollution, fire, or explosion. Numerous local, state, and federal laws regulate the storage, handling, disposal, and transportation of hazardous materials; the primary purpose of these laws is to protect public health and the environment. In Imperial County, the California Department of Toxic Substances Control (DTSC) serves as the Certified Unified Program Agency (CUPA), managing regulation and permitting of businesses that handle hazardous materials (Imperial County 2007).

Pesticides are regularly used for agricultural purposes in adjacent agricultural operations. The use of pesticides in agricultural operations is a large source of hazardous materials usage since the Community and project area is surrounded by agricultural operations. The Community does not have direct authority over the use of pesticides. The Imperial County Agricultural Commissioner and staff enforce state laws and regulations pertaining to pesticide use at the local level. Incidences of severe mosquito infestation are fairly common due to ideal breeding grounds in the Palo Verde Lagoon. Abatement crews from the Imperial County Public Health

Department, Environmental Health & Consumer Protection Services Vector Control Program treat larvae with larvecides and with adults with adulticide fogging (Imperial County 1998, 2007).

3.4 Surface Resources

3.4.1 Geological Resources

3.4.1.1 Definition of Resource

Geological resources typically consist of surface and subsurface materials and their inherent properties. Principal geologic factors affecting the ability to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), soil stability, and topography.

The term *soil*, in general, refers to unconsolidated materials overlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability for the ground to support man-made structures and facilities. Soils typically are described in terms of their complex type, slope, physical characteristics, and relative compatibility or constraining properties with regard to particular construction activities and types of land use.

Topography is the change in elevation over the surface of a land area. An area's topography is influenced by many factors, including human activity, underlying geologic material, seismic activity, climatic conditions, and erosion. A discussion of topography typically encompasses a description of surface elevations, slope, and distinct physiographic features (e.g., mountains) and their influence on human activities.

For the purposes of this EID, geological resources were examined for the Palo Verde Valley.

3.4.1.2 Environmental Setting

The geology of the project area is dominated by a north-trending depression known as the Colorado River Trough. This Trough was formed by historical floods of the Colorado River and by millions of years of regional faulting, downwarping, and sediment infilling. Prior to the construction of Hoover Dam, the floodplain of the Colorado was considerably wider than the current meandering course of the river. There are several indications that the Colorado River has changed course in the area, but normally, it has been contained by terraces along its floodplain. This floodplain is about 9 miles wide in the Palo Verde Valley.

The project area is located in the Palo Verde Valley on the northern border of Imperial County, just south of Riverside County. The Palo Verde Valley is 29 miles long and 15 miles across at its widest point (US Department of Agriculture [USDA] 1974 as sourced by Colorado River Basin RWQCB 2003). The Valley is bound on the north by the Big Maria Mountains, on the west by Palo Verde Mesa, and on the south and east by the Colorado River.

According to existing U.S. Geological Survey elevation data, the elevation in the Palo Verde project area is generally between 232 and 233 feet above sea level. The project area drops significantly at the banks of the lagoon (10- to 20-foot drops). The decline across the project is approximately 0.02 percent (BECC 2011).

The nearest active fault is the San Andreas Fault, located near the Salton Sea, approximately 60 miles southwest of the Blythe area. Several faults are also located about 100 miles to the northwest in the Mojave Desert. In October 1999, two earthquakes of 4.4 and 4.7 magnitude occurred along a couple of these Mojave Desert faults. Major local tectonic activities associated with earthquakes in the Palo Verde area, however, are believed to have ended more than one million years ago.

Soils

The Palo Verde Valley floor is comprised of alluvium. Soils are generally level, moderately to well-drained sandy loams and loamy sands. Soil associations in the Palo Verde Valley include Rositas-Gilman, Cibola-Ripley-Indio, and Imperial-Holtville Meloland. Soil types in the vicinity of the project area are primarily Indio very fine sandy loam. Other soils in Palo Verde include Holtville silty clay, Gilman silty clay loam, Imperial silty clay, and Holtville silty clay (Natural Resources Conservation Service [NRCS] 2010). Soil erosion is not a serious concern in this area, although limited areas next to river bluffs and canyons are subject to erosion hazards (BECC 2011).

Salinity control is the major soils management concern. Average annual precipitation in the valley is usually less than 4 inches while evapotranspiration totals about 48 inches per year (USDA 1974 as sourced by Colorado River Basin RWQCB 2003). More than 1 ton of salt is left in the land with every acre-foot of irrigation water, and the accumulation of salt in the root zone can cause soils to become too saline for crop growth.

3.4.2 Biological Resources

3.4.2.1 Definition of Resource

Biological resources include native or naturalized plants and animals and the habitats in which they occur. Sensitive plant and wildlife species are subject to regulations under the authority of the USFWS and the California Department of Fish and Game (CDFG). Federal lists of species officially listed or proposed as threatened or endangered are subject to permit restrictions regulated under Sections 7 and 10(a) of the Endangered Species Act (ESA). For the purposes of this EID, biological resources within the project area, Imperial County, and the southern Palo Verde Valley were examined.

3.4.2.2 Environmental Setting

Flora

The Colorado River once flowed unimpeded for 1,700 miles from the southern Rocky Mountains through the eastern Great Basin and into the Gulf of California. Marshes, riparian forests, and backwaters were present along the entire Lower Colorado River, including the Palo Verde Valley. By 1890 most of the large cottonwood-willow stands and mesquite bosques had been cut down for the local steamboat trade, and by 1927 substantial areas were under cultivation (SWRCB 2003). Currently, the Palo Verde Valley, in which the Community of Palo Verde is located, contains a range of biotic communities. The predominant plant community in the Valley is cultivated/ruderal, and is associated with agricultural and other human activities. Outside of the Valley, the Sonoran Desert remains largely undeveloped.

Banks along the Palo Verde Lagoon are dominated by non-native species, such as the invasive common reed.

Most of the natural vegetation in the Palo Verde Valley has been replaced by cropland and low levels of urban and rural development. Native vegetation and sensitive biological resources exist along the Colorado River, the Palo Verde Lagoon, and the Palo Verde Drain that support riparian vegetation; however, the Palo Verde Lagoon and the Palo Verde Drain have been degraded by nutrients and heavy metals from sewage; nutrients, silt, selenium, and pesticides from agricultural drainage; and invasive non-native species. Agricultural activities and other human disturbance have encouraged the spread of opportunistic plant species. Weedy vegetation tends to dominate ruderal areas, such as roadsides, borders of cultivated fields, and canal riparian/levee areas, and includes plant species such as cheeseweed, shepherds purse, white horse-nettle, saltbush, saltcedar, Russian thistle, and Bermuda grass. Riparian habitats are dominated by non-native species such as saltcedar, common reed, and cattail (SWRCB 2003). At the southern end of the Valley is the Cibola NWR which provides a variety of riparian, marsh, and riverine habitats. Major invasive species removal projects to enhance natural riparian habitat have been undertaken by the USFWS at the Cibola NWR (USFWS 2010).

Fauna

The Palo Verde Valley and surrounding region host a variety of species. Due to the cultivated/ruderal nature within the Valley, common species are those that have adapted to high levels of human disturbance and water quality degradation; however, due to the low population densities and large areas of undeveloped Sonoran Desert surrounding the Palo Verde Valley, other wildlife sightings are not uncommon. Freshwater fish are found in rivers and canals, and are dominated by introduced species including the threadfin shad, mosquito fish, red shiner, California killifish, largemouth bass, and white and channel catfish (Imperial County 2008).

The Cibola NWR, located 7 miles south of Palo Verde, provides important habitat to migrating birds and other sensitive species.

Imperial County is located in one of the most important flyway corridors in the western hemisphere for migrant waterfowl, shorebirds, and songbirds. Generally, the greatest numbers and diversity of birds are found during the spring and fall months. Approximately 378 species of birds have been identified in Imperial County. The Cibola NWR, located approximately 7 miles south of the Community of Palo Verde and downstream from the Palo Verde Lagoon, provides habitat to over 288 species of birds. The Cibola NWR also provides habitat to various reptiles, fish, and large mammal species such as desert mule deer, bobcat and coyotes (USFWS 2010). Additionally, a variety of resident and migrant bat species are found in the area, particularly near agricultural canals and other waterways. The California leaf-nosed bat, Townsend's western big-eared bat, and the California mastiff bat are all listed as "Species of Special Concern" by the CDFG and have the potential to occur near the project area.

The project area consists of medium-density residential bordered by cultivated/ruderal areas in all directions. An approximately 30-acre area of disturbed shrub habitat occurs along the eastern border of the Community; however, this is bordered to the north, east, and south by agricultural development. Due to its proximity to the Palo Verde Lagoon riparian and open water habitat and forage opportunities provided by the Lagoon and agricultural properties, the area could provide habitat to a variety of bird species, including the burrowing owl; however, no burrowing owls have been observed in this area. One mile west of Palo Verde, cultivated land ends and gives-way to the Palo Verde Mountains Wilderness Area. Due to the proximity of the project area to the Palo Verde Mountains Wilderness Area and the Cibola NWR, it is likely that a variety of species utilize habitats and forage opportunities provided by the Palo Verde Lagoon, irrigation channels, and agricultural fields within and adjacent to the Community of Palo Verde.

Endangered or Threatened Species

Several plant and animal species have been found in the Palo Verde Valley, Imperial County, and throughout California that are federal- or state-listed as threatened, endangered, candidate for protection, or species of concern. All animal species listed under the ESA or by the CDFG that occur in Imperial County are presented in Table 3-2.

Table 3-2. Special Status Animal Species Occurring in Imperial County

Common Name	Scientific Name	State Status	Federal Status
Amphibians			
Colorado river toad	*Bufo alvarius*	Species of Concern	None
Couch's spadefoot	*Scaphiopus couchii*	Species of Concern	None
Lowland leopard frog	*Rana yavapaiensis*	Species of Concern	None
Birds			
White-faced ibis	*Plegadis chihi*	Species of Concern	None
Cooper's hawk	*Accipiter cooperii*	Species of Concern	None
Ferruginous hawk	*Buteo regalis*	Species of Concern	None
Merlin	*Falco columbarius*	Species of Concern	None
Prairie falcon	*Falco mexicanus*	Species of Concern	None
California black rail	*Laterallus jamaicensis coturniculus*	Threatened	None
Yuma clapper rail	*Rallus longirostis yumanensis*	Threatened	Endangered
Mountain plover	*Charadrius montanus*	Species of Concern	None
Gull-billed tern	*Sterna nilotica*	Species of Concern	None
Black skimmer	*Rynchops niger*	Species of Concern	None
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	Endangered	Candidate
Elf owl	*Micrathene whitneyi*	Endangered	None
Burrowing owl	*Athene cunicularia*	Species of Concern	None
Short-eared owl	*Asio flammeus*	Species of Concern	None
Gila woodpecker	*Melanerpes uropygialis*	Endangered	None
Gilded flicker	*Colaptes chrysoides*	Endangered	None
Vermilion flycatcher	*Pyrocephalus rubinus*	Species of Concern	None
Brown-crested flycatcher	*Myiarchus tyrannulus*	Species of Concern	None
Crissal thrasher	*Toxostoma crissale*	Species of Concern	None
Le Conte's thrasher	*Toxostoma lecontei*	Species of Concern	None
Arizona Bell's vireo	*Vireo bellii arizonae*	Endangered	None
Least Bell's vireo	*Vireo bellii pusillus*	Endangered	Endangered
Sonoran yellow warbler	*Dendroica petechia sonorana*	Species of Concern	None
Yellow warbler	*Dendroica petechia brewsteri*	Species of Concern	None
Yellow-breasted chat	*Icteria virens*	Species of Concern	None
Summer tanager	*Piranga rubra*	Species of Concern	None
Gray-headed junco	*Junco hyemalis caniceps*	Species of Concern	None

Table 3-2. Special Status Animal Species Occurring in Imperial County (Continued)

Common Name	Scientific Name	State Status	Federal Status
Fish			
Colorado squawfish	*Ptychocheilus lucius*	Endangered	Endangered
Razorback sucker	*Xyrauchen texanus*	Endangered	Endangered
Desert pupfish	*Cyprinodon macularius*	Endangered	Endangered
Mammals			
California leaf-nosed bat	*Macrotus californicus*	Species of Concern	None
Arizona myotis	*Myotis occultus*	Species of Concern	None
Townsend's big-eared bat	*Corynorhinus townsendii*	Species of Concern	None
Pallid bat	*Antrozous pallidus*	Species of Concern	None
Western mastiff bat	*Eumops perotis californicus*	Species of Concern	None
Big free-tailed bat	*Nyctinomops macrotis*	Species of Concern	None
Pallid San Diego pocket mouse	*Chaetodipus fallax pallidus*	Species of Concern	None
Southern grasshopper mouse	*Onychomys torridus ramona*	Species of Concern	None
Yuma hispid cotton rat	*Sigmodon hispidus eremicus*	Species of Concern	None
Colorado River cotton rat	*Sigmodon arizonae plenus*	Species of Concern	None
American badger	*Taxidea taxus*	Species of Concern	None
Yuma mountain lion	*Puma concolor browni*	Species of Concern	None
Peninsular bighorn sheep	*Ovis canadensis nelsoni dps*	Threatened	Endangered
Reptiles			
Desert tortoise	*Gopherus agassizii*	Threatened	Threatened
Barefoot banded gecko	*Coleonyx switaki*	Threatened	None
Flat-tailed horned lizard	*Phrynosoma mcallii*	None	Proposed Threatened

Source: CDFG 2009; 2010c.

There are 38 plant species of concern in Imperial County. Three species are state-listed as endangered: San Diego button-celery, Algodones Dunes sunflower, and Peirson's milk-vetch (CDFG 2010b). All state- and federal-listed plants found in the County are listed in Table 3-3.

Table 3-3. Threatened, Endangered, and Rare Plant Species Occurring in Imperial County

Common Name	Scientific Name	State Status	Federal Status	California Native Plant Society (CNPS) List
San Diego button-celery	*Eryngium aristulatum* var. *parishii*	Endangered	Endangered	1B
Peirson's pincushion	*Chaenactic carphoclinia* var. *peirsonii*	None	None	1B
Algodones Dunes sunflower	*Helianthus niveus* ssp. *tephrodes*	Endangered	None	1B
Mexican hulsea	*Hulsea mexicana*	None	None	2
Brown turbans	*Malperia tenuis*	None	None	2
Giant spanish-needle	*Palafoxia arida* var. *gigantean*	None	None	1B
Mecca-aster	*Xylorhiza cognata*	None	None	1B
Orcutt's woody-aster	*Xylorhiza orcuttii*	None	None	1B
Elephant tree	*Bursera microphylla*	None	None	2
Munz's cholla	*Opuntia munzii*	None	None	1B
Bitter rubberweed	*Hymenoxys odorata*	None	None	2
Wiggins's cholla	*Opuntia wigginsii*	None	None	3
Saguaro	*Carnegiea gigantea*	None	None	2
Crown-of-thorns	*Koeberlinia spinosa* ssp. *tenuispina*	None	None	2
Glandular ditaxis	*Ditaxis claryana*	None	None	2
Abrams's spurge	*Chamaesyce abramsiana*	None	None	2
Flat-seeded spurge	*Chamaesyce platysperma*	None	None	1B
Wiggin's croton	*Croton wigginsii*	Rare	None	2
Harwood's milk-vetch	*Astragalus insularis* var. *harwoodii*	None	None	2
Peirson's milk-vetch	*Astragalus magdalenae* var. *peirsonii*	Endangered	Threatened	1B
Fairyduster	*Calliandra eriophylla*	None	None	2
Pygmy lotus	*Lotus haydonii*	None	None	1B
Mountain Springs bush lupine	*Lupinus excubitus* var. *medius*	None	None	1B
Coves's cassia	*Senna covesii*	None	None	2
Mud nama	*Nama stenocarpum*	None	None	2
Sand food	*Pholisma sonorae*	None	None	1B
Rock nettle	*Eucnide rupestris*	None	None	2
Hairy stickleaf	*Mentzelia hirsutissima*	None	None	2
Creamy blazing star	*Mentzelia tridentata*	None	None	1B
Curly herissantia	*Herissantia crispa*	None	None	2
Chaparral sand-verbena	*Abronia villosa* var. *aurita*	None	None	1B
Slender woolly-heads	*Nemacaulis denudata* var. *gracilis*	None	None	2
Slender-leaved ipomopsis	*Ipomopsis tenuifolia*	None	None	2
Baja California ipomopsis	*Ipomopsis effusa*	None	None	2
Las Animas colubrina	*Colubrina californica*	None	None	2
Crucifixion thorn	*Castela emoryi*	None	None	2
Parish's desert-thorn	*Lycium parishii*	None	None	2
Desert spike-moss	*Selaginella eremophila*	None	None	2

Notes: 1B – Plants rare, threatened, or endangered in California and elsewhere
2 – Plants rare, threatened, or endangered in California but more common elsewhere
3 – Plants about which more information are needed by CNPS.
Source: CDFG 2010b.

In the direct vicinity of the project area (less than 2 miles), the California Natural Diversity Database (CNDDB) notes several special status species (Table 3-4 and Figure 3-3). The water of the Palo Verde Lagoon and Palo Verde Drain provide habitat for the razorback sucker, a federal and state endangered species. Additionally, the Yuma clapper rail, a state endangered and federally threatened species, has been identified in the vicinity of the Palo Verde Lagoon and is known to visit the Ciboloa NWR (CDFG 2010a).

Table 3-4. Threatened, Endangered, and Rare Species in the Palo Verde Vicinity (within 2-mile radius)

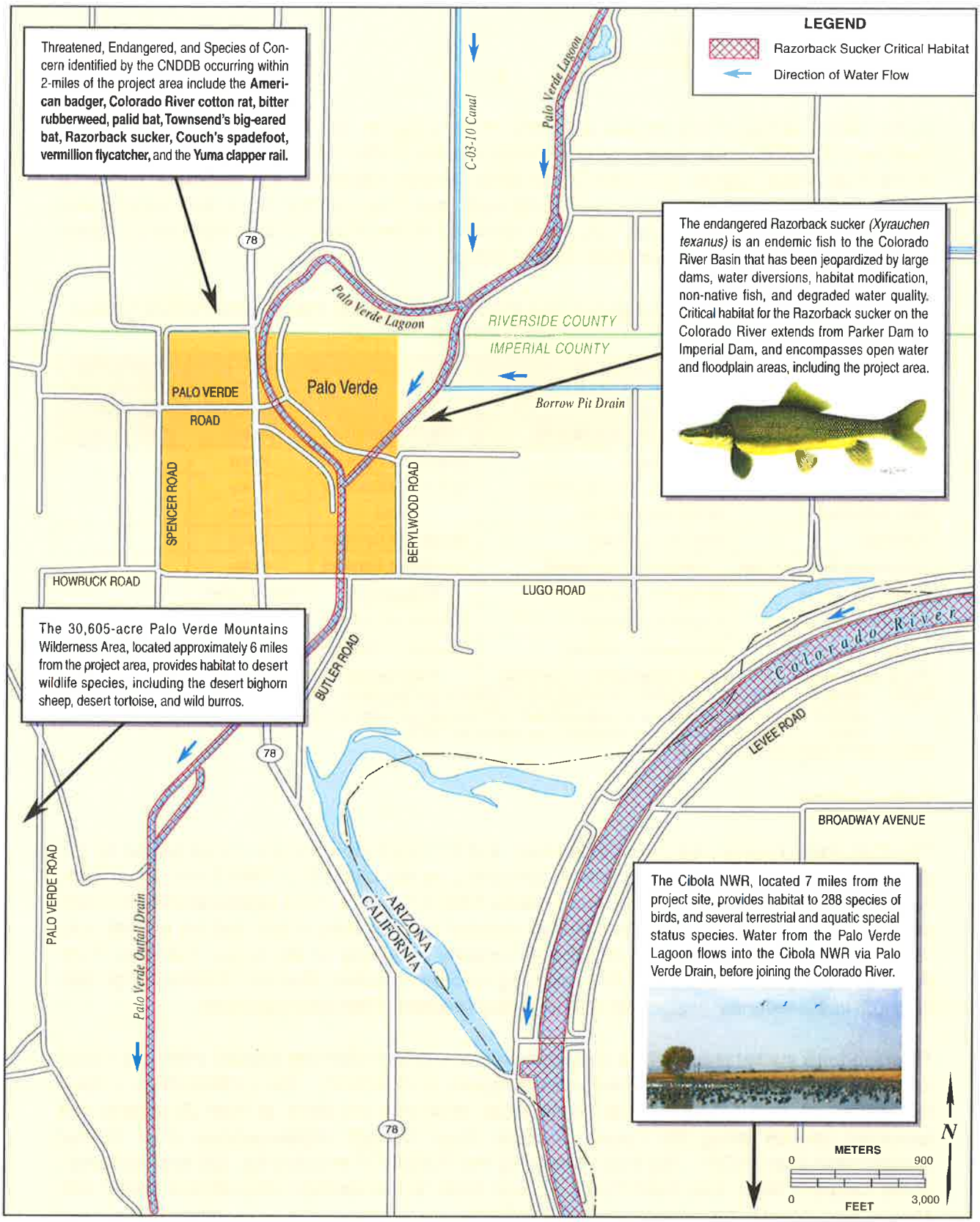
Common Name	Scientific Name	State Status	Federal Status	California Native Plant Society (CNPS) List
American badger	*Taxidea taxus*	Species of Concern	None	
Colorado River cotton rat	*Sigmodon arizonae plenus*	Species of Concern	None	
Bitter rubberweed	*Hymenoxys odorata*	None	None	2
Pallid bat	*Antrozous pallidus*	Species of Concern	None	
Townsend's big-eared bat	*Corynorhinus townsendii*	Species of Concern	None	
Razorback sucker	*Xyrauchen texanus*	Endangered	Endangered	
Couch's spadefoot	*Scaphiopus couchii*	Species of Concern	None	
Vermilion flycatcher	*Pyrocephalus rubinus*	Species of Concern	None	
Yuma clapper rail	*Rallus longirostris yumanensis*	Endangered	Threatened	

Notes: CNPS 1B – Plants rare, threatened, or endangered in California and elsewhere
CNPS 2 – Plants rare, threatened, or endangered in California but more common elsewhere
CNPS 3 – Plants about which more information are needed by CNPS.
Source: CDFG 2009; 2010a; 2010b; 2010c.

Critical Habitat

The Palo Verde Lagoon, the Palo Verde Drain, and the Colorado River are critical habitat for the endangered razorback sucker. A survey conducted by the USFWS in 1995 found populations at Cibola NWR's High Levee Pond, and Imperial NWR's Farmers Pond (approximately 25 miles south of the project site). These populations resulted from stocking efforts and are not naturally recruited fish. Limited stocking efforts are currently underway in the Lower Colorado River Basin by the USFWS. The USFWS is releasing razorback suckers that are 12 inches or greater in length in the federally designated critical habitat reaches of the Colorado River.

The razorback sucker is one of the recommended priority and planning species under the Lower Colorado River Multi-Species Conservation Program (LCRMSCP). The LCRMSCP is a long-term (50-year) multi-species habitat conservation effort that will cover at least 26 aquatic and terrestrial species along the Lower Colorado River through implementation of a Habitat Conservation Plan (HCP). The area covered by the LCRMSCP includes the 100-year floodplain of the Colorado River from Lee's Ferry, Arizona south to the southern international border with Mexico, and includes the project area (CDFG 2000).



BECC

Biological Resources in the Palo Verde Region

FIGURE 3-3

Of the 26 species covered in the LCRMSCP, 6 are currently listed under the Federal ESA. The program addresses the ecological requirements of mammals, birds, fish, amphibians, and reptiles, as well as invertebrates and plants.

Implementation of the LCRMSCP will create at least 8,132 acres of new habitat (5,940 acres of cottonwood-willow, 1,320 acres of honey mesquite, 512 acres of marsh, and 360 acres of backwater) and produce 660,000 sub-adult razorback suckers and 620,000 bonytail chubs to augment the existing populations of these fish in the Lower Colorado River. The LCRMSCP may also participate in the recovery programs for these fish by funding other appropriate activities in lieu of stocking. In addition, the program has a substantial research and monitoring component. The program also establishes a $25 million fund to support projects implemented by land use managers to protect and maintain existing habitat for covered species.

A total of 21,000 acres of Critical Habitat have been designated by the USFWS for the Peirson's milk-vetch in the Algodones Dunes within the Imperial Sand Dunes Recreation Area in Imperial County (Federal Register 2004). In addition, Critical Habitat has been designated for the peninsular bighorn sheep within the Painted Gorge Area of the Coyote Mountains in Imperial County (USFWS 2001). Both these areas are more than 15 miles from the project area in Palo Verde.

3.5 Socioeconomics

3.5.1 Definition of Resource

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population, and economic activity. Human population is affected by regional birth and death rates as well as net in- or out-migration. Economic activity typically comprises employment, personal income, and industrial growth. Impacts on these two fundamental socioeconomic indicators can also influence other components such as housing availability and provision of public services.

3.5.2 Environmental Setting

3.5.2.1 Imperial County

As of December 2009, Imperial County had a total labor force of approximately 75,303, with an unemployment rate of approximately 27.7 percent, or 20,890 persons (US Bureau of Labor Statistics 2009). Due to the County's significant seasonal agricultural economy, greater than typical seasonal variations in unemployment occur, resulting in consistently high unemployment rates. According to the US Bureau of Economic Analysis (US BEA), the main source of employment in Imperial County in 2007 was state and local governments (21.3 percent of total employment). The next greatest sources of employment were retail trade (13.3 percent), health care and social assistance (6.0 percent), farm employment (5.4 percent), and accommodation and food services (5.4 percent) (US BEA 2007).

The Palo Verde Valley has a higher percentage of poverty than many regions in California. In Imperial County, the estimated 2008 median household income was $41,757. About 9 percent of households earned less than $10,000 per year, and approximately 22 percent of households earned between $10,000 and $25,000 per year (US Census Bureau 2008).

3.5.2.2 Community of Palo Verde

According to the 2010 Decennial Census, the population of the Palo Verde Census Defined Place (CDP) was 171 (US Census Bureau 2011). The Palo Verde CDP is limited to the Community of Palo Verde, which, according to the Southern California Association of Governments (SCAG), had a population of 297 persons in 2003 and 298 persons in 2005. The 2010 population of Palo Verde is 171, a reduction of approximately 27.5 percent from 2000 levels (SCAG 2009; US Census Bureau 2011). This reduction in population was in part due to the loss of housing units in the 2007 tornado, which could not be rebuilt, as discussed in Section 3.7, *Land Use*, below. According to the SCAG, the population of the Community of Palo Verde is projected to increase to approximately 371 by 2020 and to approximately 411 by 2035 (SCAG 2009). Population estimates and percentage increase over 2000 population levels are summarized in Table 3-5 below.

Table 3-5. Population Trends in Palo Verde, California

	2000	2010	2020[1]	2035[1]
Total Population	236	171	371	411
Percent Increase from 2000	--	-27.5%	57.2%	74.2%

[1] Projection.
Sources: SCAG 2009; US Census Bureau 2000; 2011.

3.6 Cultural Resources

3.6.1 Definition of Resource

Cultural resources represent and document activities, accomplishments, and traditions of previous civilizations and link current and former inhabitants of an area. Depending on their conditions and historic use, these resources may provide insight to living conditions in previous civilizations and may retain cultural and religious significance to modern groups.

Archaeological resources comprise areas where prehistoric or historic activity measurably altered the earth or deposits of physical remains (e.g., arrowheads, bottles) discovered therein. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic significance. Traditional cultural resources can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Americans or other groups consider essential for the persistence of traditional culture.

3.6.2 Environmental Setting

The Colorado River Gold Rush of 1861 spurred steamboat trade along the Lower Colorado River, leading to cutting of large amounts of cottonwoods, willows, and mesquites. Most of the large cottonwood-willow stands and mesquite bosques had been cut down by 1890. In the next few years, non-native fish were introduced and streams were altered (U.S. Bureau of Reclamation 1996 as sourced by SWRCB 2003).

In the late 1870s, Thomas Blythe secured title to a block of land comprising roughly the northern third of the Palo Verde Valley. Blythe cultivated some land with water that was diverted from the Colorado River by gravity. But the almost annual flood damage inflicted by the Colorado River necessitated the formation of the Palo Verde Joint Levee District, which was organized in 1917 and sold bonds to build a levee to protect the valley.

By 1927, about 95,000 acres of farmland were irrigated along the mainstem of the Lower Colorado River between Cottonwood Basin and the International Boundary, most of which was in the Imperial Valley, leading to a reduction in riparian habitat. Boulder Dam (now Hoover Dam) was completed in 1935, drastically and suddenly changing water flow of the river, and eliminating the tremendous floods that characterized the ecosystem and limited permanent habitation of the Palo Verde Valley (U.S. Bureau of Reclamation 1996 as sourced by SWRCB 2003).

There are no properties in or near Palo Verde that are listed as a California Historical Landmark (California State Parks 2010). No properties in the Palo Verde vicinity are listed on the National Register of Historic Places (NRHP) (National Park Service 2010). The closest NRHP-listed sites are in Blythe (Archeological sites CA-RIV-504, CA-RIV-773, and the Blythe Intaglios). The Palo Verde Lagoon Bridge (Fourth Street Bridge), county bridge 58C-0192, is approximately 36 meters in length and was constructed in 1950 (Ortiz 2010). An update of the statewide historic bridge inventory was completed in 2006, and evaluated most of the state highway and local roadway bridges constructed prior to 1960, like the Palo Verde Lagoon Bridge in Imperial County. The Palo Verde Lagoon Bridge was found ineligible for NRHP listing (CalTrans 2009).

A cultural resource records search for the Palo Verde, CA area was conducted for the proposed project in May 2010 through the South Coastal Information Center (SCIC) within the California Historical Resource Information System. Results of this records search determined that there are no previously recorded prehistoric or historic archaeological sites within the Community of Palo Verde. A total of 8 cultural resource surveys and investigations have occurred in the vicinity of Palo Verde, 7 of which encompassed the entire developed area of the Palo Verde Community (SCIC 2010).

3.7 Land Use and Infrastructure

3.7.1 Definition of Resource

Land use can be separated into two major categories: natural and human-modified. Natural land uses include topography, vegetation, and animal habitats. Human-modified land uses can be classified as residential, commercial, industrial, communications and utilities, agricultural, institutional, recreational, and other developed areas. Land use is regulated by management plans, policies, regulations, and ordinances that determine the type and extent of land use allowable in specific areas and protect specially designated or environmentally sensitive areas.

For the purposes of this EID, land use focuses on Imperial County and the Community of Palo Verde, California.

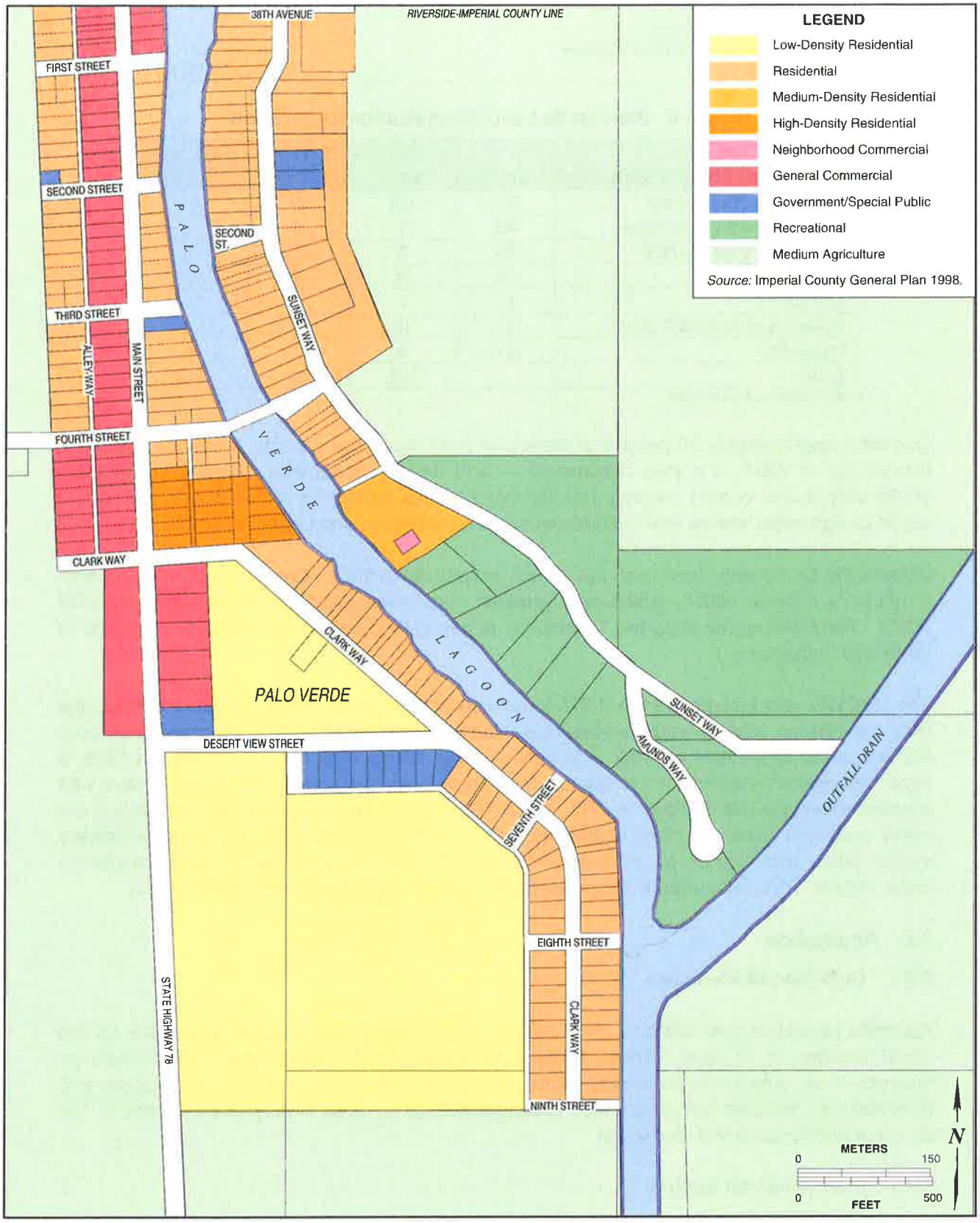
3.7.2 Environmental Setting

The Community of Palo Verde – which has a current population of approximately 171– is located in the US-Mexico border region, approximately 50 miles north of the international boundary. Land use in the Palo Verde Valley is characterized as agricultural and residential uses (Figure 3-4). The population of the Community of Palo Verde has generally declined and has undergone little development during the past 20 years (Imperial County 2004).

The Community of Palo Verde consists of mostly residential housing and includes two recreational vehicle (RV) parks. Palo Verde also contains a small commercial center, fire station, post office, community hall, church, and sheriff's substation. Palo Verde County Water District (PVCWD) owns and operates an existing water filtration plant and potable water supply system. Households in the Community currently rely on septic systems for their wastewater disposal needs and many of these systems are failing. Additionally, many of the septic systems do not meet the Palo Verde and Imperial County required setback distances of 50 to 100 feet from the adjacent Palo Verde Lagoon.

Agricultural land uses surround the project area and primarily cultivate melons, cotton, alfalfa and produce vegetables.

There are seven different zoning classifications in Palo Verde: *low-density residential* (R1), *medium-density residential* (R3), *high-density residential* (R4), *commercial* (C2), *agricultural* (A2), *government/special public* (GS) and *recreation* (S1). Table 3-6 displays the land density information for Palo Verde.



BECC

Land Use
Palo Verde, California

FIGURE 3-4

Table 3-6. Palo Verde Land Classification Information

Zoning Classification	Identifier	No. of Lots	No. Vacant	Land Area (Acres)
Low-Density Residential	R1	158	27	147
Medium-Density Residential	R3	1	0	3
High-Density Residential	R4	3	1	3
Commercial	C2	34	16	12
Agricultural	A2	7	5	570
Government/Special Public	GS	10	6	2
Recreation	S1	9	3	9
Total		**222**	**58**	**747**

Source: Imperial County 2004

Currently, approximately 30 percent of the lots in Palo Verde are vacant. A tornado struck the Community in 2007 — a rare occurrence — and destroyed numerous homes in the area, contributing to the current vacancy rate as many homes cannot be rebuilt due to the current septic design requirements and absent a wastewater collection and treatment facility.

Outside the Community, land uses are almost entirely agricultural. Crop production in the area is primarily melons, cotton, alfalfa, and produce vegetables (Colorado River Basin RWQCB 2003). Farmland surrounding the Community is generally classified as Prime or Farmland of Statewide Importance.

The PVCWD was incorporated in 1962 to provide potable water service to area. When the District's existing potable water system was initially constructed in 1983, it consisted of wells and a pipeline distribution network. Delivery of water to residents began in 1984. In 1988, a sand filter system was installed to reduce iron and manganese, and a chlorination system was installed to provide disinfection. In 2000, two 120,000-gallon storage tanks were installed at the water treatment plant. Further improvements were made to refurbish and replace delivery system pipes, including an outfall drain and State Route 78 crossing, and to install residential water meters. PVCWD currently supplies potable water to 162 residences (BECC 2011).

3.8 Aesthetics

3.8.1 Definition of Resource

Aesthetic resources are defined as the natural and manufactured features that make up the visual qualities of an area. These features form the overall impressions that an observer receives of an area or its landscape character. Landforms, water surfaces, vegetation, and manufactured features are considered characteristic of an area if they are inherent to the structure and function of a landscape.

3.8.2 Environmental Setting

The project area is a residential community with wide dirt streets that accommodates very low levels of neighborhood traffic. Architecture is characteristic of typical residential development,

containing a mixture of moderate-sized single-family housing units. The buildings adjacent to State Highway 78 that comprise the commercial enterprises are primarily single-story structures of about 3,000-sf. Many of the buildings in the project area were constructed before 1980, with few newer structures developed during the 1990s. The Palo Verde Lagoon has some riparian habitat, which provides a relatively lush natural aesthetic in the center of the Community. The project area is surrounded by agricultural fields to the north, east, south, and west.

3.9 Waste Management

3.9.1 Definition of Resource

Waste management refers primarily to solid and hazardous wastes. Solid waste includes household trash and garbage, construction and demolition debris, commercial refuse, sludge, ash, discarded appliances and vehicles, manure, landscape clippings, and other discarded wastes. Hazardous waste is liquid, solid, contained gas, or sludge waste material with properties that make it dangerous or potentially harmful to human health or the environment. Hazardous waste can include by-products of manufacturing processes or simply discarded commercial products, such as cleaning fluids or pesticides. Numerous local, state, and federal laws regulate the storage, handling, disposal, and transportation of hazardous wastes; the primary purpose of these laws is to protect public health and the environment.

3.9.2 Environmental Setting

The Environmental Health & Consumer Protection Services section of the Imperial County Public Health Department serves as the designated solid waste Local Enforcement Agency implementing federal and state laws and regulations for safe and proper handling of solid waste (Imperial County 2007). Solid waste generated within Palo Verde is collected by Blythe Sanitation, a private firm; however, most residents haul their refuse to the Imperial County, Palo Verde Landfill. Collected waste is then disposed of at the Palo Verde Landfill located on Bureau of Land Management (BLM) property in Imperial County. Burning of refuse is permitted in the Community, but is rarely practiced (Imperial County 2004). The existing rate of disposal from Palo Verde is estimated at a half ton per day (Imperial County 1998). The landfill is a Class III landfill and is located approximately 3 miles southeast of the Community.

In Imperial County, the California DTSC serves as the CUPA, managing regulation and permitting of businesses that handle hazardous waste. The California Department of Health Services Medical Waste Management Program permits and inspects all medical wastes. Imperial County Environmental Health & Consumer Protection Services participates on the Imperial County Hazardous Emergency Assistance Team providing health and safety expertise in the containment and cleanup of accidental hazardous waste spills (Imperial County 2007). There are no hazardous waste contamination sites in need of cleanup or response listed within or near the Community of Palo Verde (DTSC 2010).

3.10 Transportation

3.10.1 Definition of Resource

Transportation and circulation refer to the movement of vehicles throughout a road and highway network. Primary roads are principal arterials, such as major interstates, designed to move traffic and not necessarily to provide access to all adjacent areas. Secondary roads are arterials such as rural routes and major surface streets which provide access to residential and commercial areas, hospitals, and schools.

3.10.2 Environmental Setting

Regional access to the Community of Palo Verde includes State Highway 78, which runs east-west, across Imperial County from Blythe to Oceanside. In addition, Interstate 10 (I-10), located 10 miles north of Palo Verde, is a major east-west route extending from Los Angeles to Phoenix, Arizona. I-10 does not cross the international border.

There are two primarily north-south streets in Palo Verde: Main Street (State Highway 78) in the western portion of the Community, and Sunset Way on the eastern side of the Palo Verde Lagoon. Cross streets are numbered (First through Ninth), and are generally aligned east-west. The majority of streets in the Community are unpaved. There are no curbs, gutters, or sidewalks in the Community. Fourth Street, also called Palo Verde Drive, provides the only access across the Palo Verde Lagoon to the residential area along Sunset Way. The eastern portion of Fourth Street, including the bridge, is paved and in generally good condition. The bridge was constructed in 1950 and is approximately 118 feet long and 35 feet wide. The inventory rating of the bridge is 35,935 pounds (lb) (16.3 metric tons) and an operating rating of 50,044 lbs (22.7 metric tons). A 2008 Bridge Inspection Report indicated that the bridge is aging and experiencing cracking, and recommended the replacement of several deck planks and backfilling the northeast wing wall (CalTrans 2008). CalTrans has no current plans to improve or repair the bridge (CalTrans 2010).

3.11 Energy

3.11.1 Definition of Resource

Energy resources refer to the availability of existing energy supplies, such as electricity and natural gas, and energy consumption in the project area.

3.11.2 Environmental Setting

The Community of Palo Verde is not a large energy consumer. Sustainable energy is not a prevalent technology in the Community, although solar-powered technology would be a viable resource due to the climate of the area.

Electricity is provided to the Community of Palo Verde and the project area by Southern California Edison (SCE). Current electrical infrastructure in the Community maintains capacity to allow for projected future growth (Imperial County 2004).

There is no natural gas delivery to Palo Verde. A number of residents have propane tanks supplied by AmeriGas, Ferrellgas, or Suburban Propane, all located in Parker, Arizona (Imperial County 2004).

3.12 Environmental Justice and Protection of Children

3.12.1 Definition of Resource

In 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, was issued to focus attention of federal agencies on human health and environmental conditions in minority and low-income communities and to ensure that disproportionately high and adverse human health or environmental effects on these communities are identified and addressed.

Because children may suffer disproportionately from environmental health risks and safety risks, EO 13045, *Protection of Children from Environmental Health and Safety Risks*, was introduced in 1997 to prioritize the identification and assessment of environmental health risks and safety risks that may affect children and to ensure that federal agencies' policies, programs, activities, and standards address environmental health risks and safety risks to children.

For the purposes of this EID, Environmental Justice and the Protection of Children were examined for Imperial County and the Community of Palo Verde.

3.12.2 Environmental Setting

3.12.2.1 Minority and Low-Income Populations

Based on 2010 *Decennial Census* data (Table 3-7), 27.5 percent of the total population in Palo Verde CDP is classified of a minority background, a majority of whom are *Hispanic* (19.3 percent of the Community's total population) (US Census Bureau 2011). By comparison, minority populations respectively comprise 80.4, 77.1, and 44.7 percent of the total populations of Imperial County, the State of California, and the nation (US Census Bureau 2011).

Table 3-7. Population Totals and Percentages of Totals by Race for the Palo Verde CDP, Imperial County, State of California, and the US

	Palo Verde CDP	Imperial County	State of California	United States
Total Population	**171**	**174,528**	**37,253,956**	**308,745,538**
Minority Population[1]	**47 (27.5%)**	**150,607 (80.4%)**	**28,704,523 (77.1%)**	**138,013,051 (44.7%)**
Hispanic/Latino[2]	33 (19.3%)	140,271 (76.8%)	14,013,719 (37.6%)	50,477,594 (16.3%)
Asian-American	1 (0.6%)	2,843 (1.6%)	4,861,007 (13.0%)	17,320,856 (5.6%)
African-American	2 (1.2%)	5,773 (3.3%)	2,299,072 (6.2%)	42,020,743 (12.1%)
Native American/Alaska Native	0 (0.0%)	3,059 (1.8%)	362,801 (1.0%)	5,220,579 (1.7%)
Native Hawaiian/Pacific Islander	0 (<0.0%)	165 (0.1%)	144,386 (0.4%)	1,225,195 (0.1%)
Other/Multi-Racial[3]	11 (6.4%)	835 (0.5%)	7,023,538 (18.9%)	21,748,084 (7.0%)
Non-Minority Population[4]	**124 (72.5%)**	**23,927 (13.7%)**	**8,549,433 (22.9%)**	**170,732,487 (55.3%)**

Notes:
[1] Minorities are persons classified by the US Census Bureau as Hispanic/Latino, Asian-American, African-American, Native American, Alaska Native, Native Hawaiian, Pacific Islander, Other Race, or Multi-Racial.
[2] Hispanic/Latinos are persons of any racial background with a Hispanic/Latino cultural heritage.
[3] Other/Multi-Racial includes persons of two or more races and persons of races not categorized above.
[4] Non-Minority Population includes persons who are White, European-American, and/or Middle Eastern.
Sources: US Census Bureau 2011.

According to 2000 *Decennial Census* and 2008 *American Community Survey* data (Table 3-8), the percentage of the population in the Palo Verde CDP below the poverty level was 55.9 percent (US Census Bureau 1999). This is substantially higher than Imperial County (22.9 percent), the State of California (13.3 percent) and the nation (13.2 percent) (US Census Bureau 2008).

Table 3-8. Population Totals and Percentages of Totals Below Poverty Level for the Palo Verde CDP, Imperial County, State of California, and the US

	Palo Verde CDP[1]	Imperial County[2]	State of California[2]	United States[2]
Total Population	236	163,972	36,756,666	304,059,728
Individuals below poverty level	**132 (55.9%)**	**37,550 (22.9%)**	**4,888,637 (13.3%)**	**40,135,884 (13.2%)**

Notes: Poverty data from the 2010 Decennial Census were not available at time of writing
[1] Data are from the *2000 Decennial Census (1999 Poverty Data)*.
[2] Data are from the *2008 American Community Survey*.
Sources: US Census Bureau 1999, 2008.

3.12.2.2 Protection of Children

According to 2010 *Decennial Census* data (Table 3-9), the percentage of the population in the Community of Palo Verde under age 18 was 14.6 percent. This is less than Imperial County (29.3 percent), the State of California (21.9 percent) and the nation (21.2 percent) (US Census Bureau 2011).

Table 3-9. Population Totals and Percentages of Totals under Age 18 for Palo Verde, Imperial County, State of California, and the US

	Palo Verde[1]	Imperial County[2]	State of California	United States
Total Population	171	174,528	37,253,959	308,745,538
Population under 18	**25 (14.6%)**	**51,098 (29.3%)**	**9,295,040 (21.9%)**	**74,181,467 (21.2%)**

Sources: US Census Bureau 2011.

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4.0 ENVIRONMENTAL CONSEQUENCES

This EID analyzes the direct, indirect, and cumulative (see Section 4.13) impacts associated with the proposed wastewater collection and treatment system in the project area. As stated previously, the project would be designed to construct wastewater infrastructure, including pipelines and a wastewater treatment plant (WWTP) within the Community of Palo Verde. This section describes the scientific and analytic bases for comparisons between the Preferred Alternative and the No Action Alternative and identifies the probable consequences (i.e., impacts, effects), both beneficial and adverse, of each alternative on selected environmental resources as presented in Section 3.0. The approach to analysis for each resource area is presented in the discussion of the Preferred Alternative. The same approach was also used for the No Action Alternative; therefore, the approaches to analysis are not repeated.

4.1 Air Resources

4.1.1 Air Quality

4.1.1.1 Approach to Analysis

The 1990 Amendments to the Clean Air Act (CAA) require that federal agency activities conform to the State Implementation Plan (SIP) with respect to achieving and maintaining attainment of National Ambient Air Quality Standards (NAAQS) and addressing air quality impacts. Provisions in the General Conformity Rule allow for exemptions from performing a conformity determination only if total emissions of individual *non-attainment* area pollutants resulting from a proposed action fall below the significant (*de minimis*) threshold values. Imperial County has provided *de minimis* levels in their California Environmental Quality Act (CEQA) Air Quality Handbook (Tables 4-1 and 4-2) (Imperial County 2008). The levels provided by Imperial County are less than federal conformity limits, so emissions below the CEQA thresholds will be below the federal conformity threshold levels.

Table 4-1. Imperial County Construction Emission Thresholds

Pollutant	Significance Threshold
NO_X	100 lbs/day
PM_{10}	150 lbs/day
CO	550 lbs/day
ROG	75 lbs/day

Table 4-2. Imperial County Operational Emission Thresholds

Pollutant	Tier I	Tier II
Oxides of Nitrogen (NO_X) and Reactive Organic Gases (ROG)	Less than 55 pounds per day (lbs/day)	55 lbs/day and greater
Particulate Matter (PM_{10}) and Oxides of Sulfur (SO_X)	Less than 150 lbs/day	150 lbs/day and greater
Carbon Monoxide (CO)	Less than 550 lbs/day	550 lbs/day and greater
Level of Significance	Less than Significant	Significant Impact

Evaluation of impacts to air quality is based on the potential for its degradation resulting from implementation of any of the alternatives, including No Action. Potentially adverse impacts to air quality also include contributing to or worsening of the *non-attainment* status. Potential impacts may result from temporary constructed-related emissions and/or long-term changes in operational emissions.

4.1.1.2 Environmental Consequences

Imperial County is designated as a federal *non-attainment* area for particulate matter equal to or less than 10 microns in diameter (PM_{10}), particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$) and 8-hour ozone (O_3) (United States Environmental Protection Agency [EPA] 2009a; 2009b). Imperial County is a State Ambient Air Quality Standards *non-attainment* area for 8-hour O_3, PM_{10}, and is unlisted for $PM_{2.5}$ (California Environmental Protection Agency [CalEPA] 2010). Therefore, General Conformity is applicable to actions causing emissions of these pollutants.

Short-Term

Short-term pollutant emissions associated with the proposed construction activities would include fugitive dust emissions during ground disturbance and related site preparation activities, and combustion emissions from vehicles and heavy-duty equipment.

As described in Section 2.0, the Preferred Alternative (Alternative 1) involves the installation of 12,735 linear feet of wastewater collection pipeline and a pond WWTP that would be designed in a four-cell arrangement with two additional aerated cells. The full area occupied by each pond cell would be 190 feet long and 50 feet wide and a total depth of 13 feet, for a total footprint of 9,500 square-feet per cell. This area would include berm construction and a 5-foot over-excavation area surrounding the cell for soil scarifying and stabilization, as recommended in the geotechnical report. The ponds would be lined. Additionally, two percolation basins would be required, each approximately 135 feet long, 100 feet wide, and 6 feet deep, for a total footprint of 27,000 sf. The entire WWTP would be anticipated to occupy approximately 11 acres. Construction impacts associated with the proposed wastewater collection pipeline and ground-breaking for the WWTP installation would include short-term, localized fugitive dust emissions generated during ground disturbance, site preparation activities, and combustion emissions from vehicles and heavy-duty equipment. Installation of these facilities would require substantial ground disturbance and soil stockpiling, with the potential to generate fugitive dust emissions. Construction would occur within and adjacent to the boundaries of Palo Verde. Impacts from construction would be short-term and would be minimized through dust control and standard engineering practices required by Imperial County. Specifically, measures to minimize PM_{10} emissions during construction include the stabilization of disturbed and material storage areas (watering, dust suppressants, tarps, etc.), stabilization of on-site and off-site unpaved roads, and a maximum speed of 15 miles per hour (mph) for all construction vehicles on any unpaved surface at the construction site (refer to Appendix B for a complete list of Best Management Practices (BMPs) to be implemented during construction). Many of the roadways in Palo Verde are not paved and would require stabilization and speed reduction practices to

limit associated PM_{10} emissions. Based on the URBEMIS2007 emission model using the maximum estimated acreage that could be disturbed including sewer line installation, a projected total of approximately 0.26 tons of dust would be generated during construction. Based on light industrial construction profiles, combustion emissions associated with construction-related vehicles and equipment would be 1.38 tons of nitrogen oxides (NO_x), 0.71 tons of carbon monoxide (CO), and 0.19 tons of reactive organic gas (ROG) (Appendix A). Short-term emissions and associated degradations to air quality in the region would be less than significant.

Based on the worst-case construction scenario and a conservative 90-day construction schedule, short-term emissions would be well below significance levels (Table 4-3). Therefore, construction emissions from the Preferred Alternative would be less than significant.

Table 4-3. Worst-Case Construction Impacts

Pollutant	Annual Estimated Emissions (tons/year)	Daily Estimated Emissions (lbs/day)*	Construction Significance Threshold
NO_x	1.38	30.7	100 lbs/day
SO_x	< 0.005	< 0.11	Not provided
PM_{10}	0.26	6.2	150 lbs/day
CO	0.71	15.7	550 lbs/day
ROG	0.19	4.2	75 lbs/day

* Assuming a conservative 90-day construction schedule.

Operational Emissions

Criteria pollutant emissions from the WWTP processes are expected to be negligible. The majority of criteria pollutants generated would be related to the off-site combustion of natural gas for the generation of industrial and utility electric power; however, the pump stations and WWTP aerator would include solar panels to help limit dependence on grid power and reduce operation and maintenance costs. Additional electrical supply and controls would include a cross-over connection for potential future power supply from an anticipated solar park near the water treatment plant in Palo Verde.

Emissions from off-site utility electric power generation associated with the WWTP, under worst case conditions where no solar panels are utilized, would likely occur in other airsheds and given the complexity of the electrical grid system, specific area impacts are difficult to predict. Electrical generation may include non-polluting sources such as solar, wind, or nuclear power. Operational emissions were calculated using an emission calculator developed by the Leonardo Academy Inc. (Leonardo Academy 2011) with funding from EPA and the Wisconsin Department of Natural Resources. Emission factors for California are:

- NO_x = 0.000236 pounds per kilowatt-hour (lbs/kWh)
- Sulfur dioxide (SO_2) = 0.000144 lbs/kWh

The PM_{10} emission factor was taken from the California Air Resources Board:

- PM_{10} = 0.000040 lbs/kWh

The CO and ROG emission factors were estimated by taking natural gas combustion emission factors from EPA AP-42 Table 1.4-1 and 1.4-2 and calculating emissions based on a ratio of the CO and ROG emission factors to the NO_x emission factor.

- CO emission factor ratio to NO_x is 0.6 based on Low NO_x burners, so the estimated emission factor = 0.00014 lbs/kWh
- ROG emission factor ratio to NO_x is 0.039 based on Low NO_x burners, so the estimated emission factor = 9.27E-06 lbs/kWh

For calculation purposes, it was assumed the WWTP would not use solar panels and would consume a maximum of 100,000 kWh/year. It was also assumed that one pump station would consume a maximum of 7,000 kWh/year with 20 percent of the energy being generated from solar power.

Under the Preferred Alternative, long-term emissions would occur related to the one pump station and the operation of the pond WWTP. The majority of long-term operational emissions associated with the Preferred Alternative would relate to the off-site combustion of natural gas for the generation of industrial and utility electric power, and would occur in unspecified air basins. Estimated emissions for this alternative would be 20 lbs/year of NO_x and 13 lbs/year of SO_2, 3.4 lbs/yr of PM_{10}, 12 lbs/yr of CO, and 0.8 lbs/yr of ROG.

Under the Preferred Alternative, emissions associated with precursor pollutants for O_3 (NO_x and ROG) would be well below the significance thresholds under the General Conformity Rule, therefore a General Conformity analysis is not required. Direct impacts associated with construction of the Preferred Alternative would be less than significant (Table 4-4). Therefore, no long-term air quality impacts associated with direct operation of wastewater collection and treatment systems would occur.

Table 4-4. Operational Emissions

Pollutant	Alternative 1		Tier I Limit (lbs/day)
	Annual Estimated Emissions (tons/year)	Daily Estimated Emissions (lbs/day)	
NO_x	20	0.05	< 55
SO_x	13	0.03	< 150
PM_{10}	3.4	0.009	< 150
CO	12	0.03	< 550
ROG	0.8	0.002	< 55

Under the No Action Alternative, the proposed wastewater collection and treatment system would not be constructed in the proposed project area. Therefore, air quality would remain as described in Section 3.1.1, *Air Quality.*

4.1.2 Noise

4.1.2.1 Approach to Analysis

Noise impact analysis typically evaluates potential changes in existing conditions that could result from implementation of a proposed action. Potential changes may be beneficial if they reduce the number of sensitive receptors exposed to unacceptable noise levels. Conversely, changes may be detrimental if they result in increased exposure to unacceptable noise levels. An increase in noise levels due to introduction of a new noise source can create an impact on the surrounding environment. The human reaction to various levels of noise is highly subjective, and varies from person to person. This analysis addresses increased noise levels in the immediate project area.

4.1.2.2 Environmental Consequences

Short-Term

Implementation of the Preferred Alternative would involve construction of wastewater collection pipeline systems, including trenching, soil movement, pipe laying, and other similar construction activities over an 8- to 12-month period. Noise would occur during the construction of the pipelines and WWTP; however, such impacts would be short-term and would occur largely along existing roadways adjacent to farmland, which is not considered a sensitive receptor. Noise generation during construction would be characteristic of use of equipment detailed in Table 4-5 (which identifies typical noise levels from use of such equipment).

Table 4-5. Construction Equipment and Associated Noise Levels

Equipment Type	Noise Level (dBA)
Whacker Packer (jumping jack)	<90
Jackhammer	<86
Trencher	<86
Excavator	<90
Front loader	<90
Backhoe	<90
Compactor	<90
Cement mixer	<86
Bulldozer	<86
Dump truck	<86
Tank truck	<86
Asphalt truck	<86
Asphalt spreader	<86

During construction, implementation of the Preferred Alternative would result in noise levels that are higher than existing ambient levels. However, construction noise generated during implementation of the Preferred Alternative would be short-term and temporary and would be reduced through BMPs – such as the use of equipment sound mufflers and restriction of construction activity to normal working hours. The project would be required to comply with Imperial County Noise Element standards, which apply to noise measured at the nearest sensitive receptor (adjacent residences). County standards would require construction equipment operation to be limited to the hours of 7 a.m. to 7 p.m. Monday through Friday, and 9 a.m. to 5 p.m. Saturday. No commercial construction operations are permitted on Sunday or holidays (Imperial County 2008). Therefore, short-term noise impacts would be reduced to less than significant levels.

Long-Term

Long-term operational noise of the aerated facultative pond WWTP under the Preferred Alternative would generate noise associated with the operation of WWTP machinery. Noise generated from aeration equipment and fans are the greatest source of noise associated with pond-type treatment systems. A noise buffer required for WWTPs range from 250 to 1,000 feet from sensitive receptors (residential properties), depending on the noise controls included in the WWTP design (BECC 2011). Under the Preferred Alternative the pond WWTP would be constructed in northeastern Palo Verde, approximately 1,000 feet east of the northern terminus of Sunset Way and adjacent residences, which would reduce impacts associated with noise to less than significant. Long-term noise generation from the proposed pump station would produce a 'humming' noise for between two to three hours a day. The pump would be located at the bottom of a wet well, enclosed in a manhole approximately 10 to 20 feet below ground surface (bgs). Resulting noise generation would therefore be less than significant.

The Community of Palo Verde does not currently have policies with regard to noise; however, it operates under the goal to "provide an acceptable noise environment for existing and future residents in the Palo Verde Community area" (Imperial County 2004). At the state level, Title 24 specifies that combined indoor noise for multi-family and new single-family living spaces shall not exceed 45 A-weighted decibel scale (dBA) Community Noise Equivalent Level (CNEL). This standard must be implemented when the outdoor noise level exceeds 60 dBA CNEL. Once operational, the wastewater collection system (pipelines) would be buried and would not generate noticeable noise emissions. Noise generated by the WWTP proposed under the Preferred Alternative would be reduced through the incorporation of noise reducing engineering and design (i.e., building enclosure) and placement away from residential receptors. Therefore, under implementation of the Preferred Alternative, no long-term direct or indirect operational noise would occur and would therefore result in less than significant impacts to noise.

Under the No Action Alternative, no construction activity would occur under this alternative, and no changes to the existing noise environment would occur. Therefore, no direct or indirect short-term or long-term noise-generating activity or associated impacts would occur, and conditions would remain as described in Section 3.1.2, *Noise*.

4.1.3 Odor

4.1.3.1 Approach to Analysis

Determination of significance for potential odor impacts to the environment is based on the potential for odor to result from any action taken within the area of concern. Potentially adverse odor impacts to the environment may include contribution of a new odor or worsening of the existing level of odor within the area of concern and impacts to public health. The following sections discuss potential environmental consequences of the evaluated alternatives.

4.1.3.2 Environmental Consequences

Long-term implementation of the proposed wastewater collection system would not generate odors, as odors would be contained within the pipeline system underground; however, short-term odor impacts would potentially occur during the abandonment of existing septic systems. Septic system abandonment would occur in accordance with Imperial County procedures which include either removing the septic tank completely or abandoning the tank in place. The abandonment of existing septic systems would result in a long-term decrease in odors in the project area, through the elimination of wastewater leaks and overflows.

The proposed WWTP has the potential to generate odors. Hydrogen sulfide and ammonia-based compounds are common odor pollutants from WWTPs. Under the Preferred Alternative the pond WWTP would be constructed to the northeast of Palo Verde, approximately 1,000 feet east of Sunset Way and adjacent residences[1]. Despite this buffer, the potential for odors to occur within Palo Verde exists under the Preferred Alternative. Winds in Palo Verde tend to be from the west or southwest, which would generally direct odors away from residential areas and to the east of the proposed WWTP; however easterly winds do occur and would occasionally direct odors towards residential areas.

Under the Preferred Alternative, the sulfide and sulfate inflow to the proposed WWTP is expected to be negligible and hydrogen sulfide generation is not expected to be an issue. Ammonia inflow to the proposed WWTP is expected to be 70 milligrams per liter (mg/l). The EPA Water9 emission model was used to estimate potential ammonia emissions from the proposed WWTP. Ammonia emissions were predicted to be below detection levels and no ammonia odor issues are anticipated. In addition, the location and engineering design of the WWTPs proposed under the Preferred Alternative would reduce or contain odors to less than significant levels.

Therefore, under implementation of the Preferred Alternative odor would be less noticeable or remain the same as under current conditions. The removal of septic systems would eliminate the overflow or leak of untreated treated wastewater into the environment, thereby eliminating associated odors. Therefore, impacts to odor would be negligible or slightly beneficial.

[1] The 1,000 foot setback is per USEPA, *Principles of Design and Operations of Wastewater Treatment Pond Systems for Plant Operators, Engineers and Managers* (USEPA 2011).

Under the No Action Alternative, the leak and overflow of untreated wastewater from failing septic systems to the proposed project area would continue to be released into the environment, contributing to odor. Therefore, current conditions would remain unchanged from those described in Section 3.1.3, *Odor,* and occasional impacts to odor would continue.

4.2 Water Resources

4.2.1 Groundwater

4.2.1.1 Approach to Analysis

Determination of the significance of potential impacts on groundwater is based on water availability, quality, and use and associated regulations such as the Clean Water Act (CWA). An impact on groundwater resources would be significant if it would:

1) Reduce water availability to or interfere with the supply of existing users
2) Create or contribute to overdraft of groundwater basins or exceed safe annual yield of water supply sources
3) Adversely affect water quality or endanger public health by creating or worsening adverse health hazard conditions

4.2.1.2 Environmental Consequences

Under implementation of the Preferred Alternative a wastewater collection and treatment system would replace the use of septic systems in Palo Verde. Under the Preferred Alternative, failing septic systems in Palo Verde would be properly abandoned, which would potentially improve groundwater quality. Leaking septic systems can damage water quality, and proper removal would ensure that no future contamination from septic sources would occur.

Groundwater within the Palo Verde Valley, including the project site, occurs at approximately 10 feet bgs. Construction of the proposed wastewater collection and treatment system would occur at or below existing groundwater levels. Excavation trenches for the 4-inch-diameter sewer service lines would range from 4.0 to 8.0 feet in depth and trenches for the 8-inch-diameter gravity sewer pipe would range from 5.0 to 12.0 feet in depth. Therefore, dewatering to remove groundwater from subsurface construction areas would be necessary during the installation of the wastewater collection and pump components. Dewatering would involve the short-term, localized removal of groundwater around a subsurface construction area. Dewatering during construction would not result in any short-term or long-term impacts to groundwater resources.

Implementation of the Preferred Alternative would involve the construction of a pond WWTP, which would use percolation/evaporation ponds for treated wastewater discharge. To provide sufficient capacity, the two percolation/evaporation ponds would each be approximately 135 feet long by 100 feet wide by 6 feet deep. A minimum of 4.0 feet from the bottom of the percolation/evaporation ponds to groundwater is required to ensure proper function of the ponds (BECC 2011). Due to the shallow depth to groundwater, the percolation/evaporation ponds would be elevated with appropriate fill material to ensure that the minimum of 4.0 feet is maintained between the percolation/evaporation ponds and groundwater levels. Additionally, an

under drain beneath the percolation/evaporation ponds would be installed to prevent groundwater from coming to the surface. Once constructed, the pond WWTP would provide groundwater recharge through the associated percolation ponds. Due to the shallow depth of groundwater, recharge from the percolation/evaporation ponds would occur quickly. A limited increase in impermeable surface area would occur as a result of the WWTP structure; however due to the minor contribution of rainfall and the relatively undeveloped nature of the project area, such increase would not affect groundwater recharge rates. Since land effluent discharges would occur under the Preferred Alternative, which would potentially affect groundwater, the Palo Verde County Water District (PVCWD) would be required to file a Report of Waste Discharge with the State Water Resources Control Board (SWRCB) to obtain waste discharge requirements (WDRs) Form 200.

Compared to the groundwater recharge associated with irrigation, the Preferred Alternative would not substantially alter groundwater recharge and impacts would therefore be less than significant.

Under implementation of the No Action Alternative, conditions would remain as described in Section 3.2, *Water Resources*, and potentially adverse impacts to groundwater quality would continue.

4.2.2 Surface Water

4.2.2.1 Approach to Analysis

Determination of the significance of potential impacts on surface water resources is based on water availability, quality, and use and associated regulations such as the CWA. An impact on surface water resources would be significant if it would:

1) Reduce water availability to or interfere with the supply of existing users
2) Create or contribute to overdraft of reservoirs or exceed safe annual yield of water supply sources
3) Alter surface water volumes or watercourses, thereby affecting habitat, vegetation, and wildlife
4) Adversely affect surface water quality or endanger public health by creating or worsening adverse health hazard conditions.

4.2.2.2 Environmental Consequences

Short-Term

Short-term impacts to surface water could result from run-off related to construction of the proposed wastewater collection and treatment system. Ground-disturbing activities associated with the Preferred Alternative would involve new construction of a wastewater collection and treatment system. Site preparation activities (e.g., grading, trenching) and construction would result in temporary exposure and compaction of soils, affecting surface water drainage flow patterns and percolation rates. Increases in surface water runoff could result in increased sediment loading to the Palo Verde Lagoon and other canals/drainage ways during periods of

precipitation. Precipitation events in the Palo Verde region are minor and infrequent and would not be expected to result in substantial runoff; however, a Storm Water Pollution Prevention Plan (SWPPP) would be developed for the proposed project.

Construction within the Palo Verde Lagoon could potentially occur as a result of installation of the force main across Lagoon itself. If the force main were attached to the bridge deck or was directionally bored beneath the Lagoon, impacts to water quality related to construction activities could occur due to proximity to the Lagoon; however, no construction within the Lagoon or on the Lagoon banks would be expected. In addition, implementation of BMPs, including adherence to the SWPPP, would limit the effects of construction adjacent to and/or beneath the Palo Verde Lagoon. For any construction occurring within the Palo Verde Lagoon, a CWA Section 404 Permit application would be submitted to and obtained from the US Army Corps of Engineers (USACE) prior to commencement of any construction activities within jurisdictional waters. With implementation of measures determined by and in compliance with USACE requirements, impacts to surface water resources would be reduced to less than significant. In addition, during construction phases, application of BMPs including development and implementation of a SWPPP, silt fencing, and suspension of construction activities during rainy periods would mitigate the effects of increased surface water runoff and sedimentation.

Long-Term

Under implementation of the Preferred Alternative a wastewater collection and treatment system would replace the use of septic systems in Palo Verde. Further, it would eliminate sewage leaks caused by inadequate infrastructure through the development of appropriate wastewater collection infrastructure, thereby reducing the potential for untreated or poorly treated wastewater to enter the environment (e.g., surface water). The 2003 SWRCB report identifies "plans for a wastewater treatment plant in the community of Palo Verde ... as the best method for managing bacteria in Palo Verde Outfall Drain" (Colorado River Basin RWQCB 2003). Removal of leaking septic systems and implementation of the Preferred Alternative would result in improved water quality conditions in the Palo Verde Lagoon through the reduction of untreated waste and associated pathogens (i.e., e-coli and fecal coliform).

Implementation of the Preferred Alternative would involve the discharge of treated wastewater into percolation/evaporation ponds (land effluent discharge), where treated wastewater would enter the groundwater or evaporate. For land effluent discharges, PVCWD would be required to file a Report of Waste Discharge with the Colorado River RWQCB to obtain waste discharge requirements (WDRs). Required permitting would also include an industrial stormwater permit. The Colorado River Basin RWQCB would potentially waive the requirement to obtain WDRs for discharges to land or may determine that a proposed discharge can be permitted more effectively through enrollment in a general National Pollutant Discharge Elimination System (NPDES) permit or general WDRs. Implementation of the Preferred Alternative would not result in long-term impacts to surface water resources.

Under implementation of the No Action Alternative, new infrastructure for the collection and treatment of wastewater would not be constructed. Therefore, under implementation of the No

Action Alternative, conditions would remain unchanged from those described in Section 3.2, *Water Resources,* and poor surface water quality conditions would continue.

4.2.3 Wetlands

4.2.3.1 Approach to Analysis

Determination of the significance of potential impacts to wetlands in the US is based on their presence or absence in the areas that would be impacted. Executive Order (EO) 11990, *Protection of Wetlands*, and the CWA define the federal government's regulatory authority over wetlands in the US. An impact on wetlands would be considered significant if it would result in the net loss of wetland area or negatively affect a wetland's capacity for groundwater recharge and discharge, flood-flow alteration, sediment stabilization, sediment and toxicant retention, nutrient removal and transformation, or aquatic and terrestrial diversity and abundance.

4.2.3.2 Environmental Consequences

Under implementation of the Preferred Alternative a wastewater collection and treatment system would replace the use of septic systems in Palo Verde. No designated wetlands are located within the proposed project area, and no direct impacts to wetlands would occur; however, indirect impacts could occur from siltation to wetlands located along the Palo Verde Drain. Ground-disturbing activities associated with construction of the Preferred Alternative, particularly trenching and/or excavation, may temporarily result in increased sedimentation into the Palo Verde Lagoon and the Palo Verde Drain; however, application of BMPs including development and implementation of a SWPPP, silt fencing, and suspension of construction activities during rainy periods would mitigate the effects of increased sedimentation. Further, sedimentation would likely settle out of the flow prior to reaching the Cibola National Wildlife Refuge (NWR) or Colorado River. Thus, no short-term or long-term changes to wetlands are anticipated as a result of the Preferred Alternative.

Under the No Action Alternative, a wastewater collection and treatment system would not be constructed. Given that conditions with regard to wetlands would remain unchanged from those described in Section 3.2, *Water Resources*, no impacts to wetlands would occur from implementation of the No Action Alternative.

4.2.4 Floodplains

4.2.4.1 Approach to Analysis

Determination of the significance of potential impacts to floodplains is based on their presence or absence in areas that would be impacted by project implementation. An impact on floodplains would be considered significant in the US if it would negatively affect a floodplain's capacity for flood and sediment storage or flood water conveyance per EO 11988, *Floodplains Management*.

4.2.4.2 Environmental Consequences

Under the Preferred Alternative construction would comprise installation of wastewater collection lines, with collected wastewater conveyed to a proposed new WWTP. The wastewater collection system would be constructed largely within the Federal Emergency Management Agency (FEMA) 100-year floodplain, which occurs along the banks of the Palo Verde Lagoon for the length of the Community, as well as areas of southern Palo Verde (Figure 4-1). Pipeline segments would be buried at depth and would not be affected by potential flood events. Watertight manhole covers would be used for all manholes occurring within the 100-year floodplain and wherever the manhole tops may be flooded by street runoff or high water. Pump stations would be located at the bottom of the 'wet well' enclosed in a manhole approximately 10 to 20 feet bgs. The pump stations would be waterproofed with sealing lids/hatches to prevent water from flowing into the pump station and therefore no impacts to flooding would occur related to the wastewater collection system.

The WWTP site for the Preferred Alternative would be located outside the FEMA 100-year flood boundary, so no direct impacts to structures would occur during a flood event; however, a rise in groundwater conditions could temporarily affect the function of the percolation/evaporation ponds. Similar to the existing Ripley WWTP 10 miles to the north, the pond WWTP under the Preferred Alternative would include installation of an under drain beneath the percolation/evaporation ponds to prevent groundwater from coming to the surface. Impacts would be temporary and less than significant.

Under the No Action Alternative, a wastewater collection and treatment system would not be constructed. Therefore, there would be no activities that result in either direct or indirect impacts to floodplains. Conditions would remain as described in Section 3.2, *Water Resources.*

4.3 Public Health and Safety

4.3.1 Approach to Analysis

Public health and safety is comprised of the conditions, risks, and preventative measures associated with a facility or project and their ability to potentially affect the health and safety of facility personnel or the general public. Some conditions, such as facility occupational environment, may only potentially affect facility personnel. Other conditions, such as access to potentially hazardous areas within a facility and discharge of potentially hazardous wastewater from a facility, have the potential to affect the general public. A project is considered to have an adverse impact on public health and safety if it is likely to result in harmful conditions for facility personnel or the general public.

BECC

FEMA 100-Year Floodplains in Palo Verde

FIGURE
4-1

4.3.2 Environmental Consequences

Implementation of the Preferred Alternative is intended to eliminate sewage leaching and leaks caused by failing septic systems through the development of appropriate wastewater collection and treatment infrastructure, and thereby reducing the potential for untreated wastewater to enter the environment. The high levels of pathogens currently found in the Palo Verde Lagoon would be reduced upon implementation of any of the Preferred Alternative. As a result, risks to public health (e.g., water-borne pathogens) resulting from the use or contact with the Palo Verde Lagoon would be reduced. Further, potential contamination of well water resulting from leaking septic systems would be eliminated. Therefore, implementation of the Preferred Alternative would result in beneficial public health and safety impacts because it would reduce exposure of the human population to pathogens found in untreated water.

Under the No Action Alternative, the wastewater collection and treatment systems would not be constructed in the proposed project area. Public health and safety conditions would remain as described in Section 3.3, *Public Health and Safety*.

4.4 Surface Resources

4.4.1 Topography

4.4.1.1 Approach to Analysis

Determination of the significance of potential impacts to topography is based on the presence or absence of unique geologic features, landscapes, or landforms in areas that would be impacted by project implementation. An impact on topography would be considered significant if it would negatively affect unique geological features, landscapes or landforms.

4.4.1.2 Environmental Consequences

Implementation of the Preferred Alternative would include trenching, soil movement, pipe-laying, and other construction activities within the Community of Palo Verde. The wastewater collection system would be constructed within Palo Verde in areas that have been previously disturbed (i.e., roadways, limited areas of agricultural land). The topography of the project area is relatively level and no topographic features exist to inhibit project implementation; no unique or sensitive landforms or topographic features occur in the project vicinity. Therefore, there would be no impacts to topography.

Under implementation of the No Action Alternative, no wastewater collection or treatment systems would be constructed in the proposed project area, no ground-disturbing or excavating activities would occur and topographical conditions would remain as described in Section 3.4, *Surface Resources*. No impacts would occur.

4.4.2 Soils and Geology

4.4.2.1 Approach to Analysis

Geologic, seismic, or soils impacts are assessed relative to public and human occupancy of structures. Potential impacts may include failure of manufactured slopes (i.e., landslides, shear zones, sloughing), differential settlement due to improper fill or subsidence, and ground rupture, ground shaking or liquefaction due to improper siting or non-compliance with seismic building codes.

4.4.2.2 Environmental Consequences

Construction proposed under the Preferred Alternative would involve trenching, excavation, ground clearing, and associated soil disturbance and stockpiling. During the construction of the proposed wastewater collection system, excavation trenches for the 4-inch-diameter sewer service lines would range from 4.0 to 8.0 feet in depth and 3.0 to 6.0 feet in width. Trenches for the 8-inch-diameter gravity sewer pipe would range from 5.0 to 12.0 feet in depth and 6.0 to 13.0 feet in width. Soils in the project area are not considered to be expansive and are suitable for the installation of utility pipelines. During the course of project development, soils would be exposed or non-compacted and the potential for wind- and/or water-driven soil erosion would arise. In order to minimize such potential impacts, BMPs such as watering exposed soils and covering stockpiled soils (refer to Appendix B) would be implemented during construction.

Under the Preferred Alternative the proposed pond WWTP would be constructed on currently undeveloped land in the northeast portion of Palo Verde. The WWTP would have a total footprint of approximately 11 acres, which would involve construction of an access road from Sunset Way, ground clearing, soil importation, and earth movement. The approximately 1,000-ft-long roadway that would connect the WWTP to Sunset Way would be partially constructed on land that is currently designated as Farmland of Local Importance (unirrigated and uncultivated lands with prime and statewide soils). The land where the WWTP would be sited is designated as Farmland of Local Importance (California Department of Conservation [CDC] 2006). However, the site is zoned *low-density residential* (R1) and is therefore intended for development of single-family homes and related compatible or accessory uses. Substantial fill activities would occur during construction of the pond WWTP, particularly during construction of the four aerated cells which would be 190 feet long by 50 feet wide by 13 feet deep, resulting in a total of 494,000 cubic feet of water capacity. In addition, due to shallow groundwater depths, the percolation ponds would be built-up above existing ground level and contained behind earthen dikes. However, since soil disturbance would be occurring mostly on non-prime soils, erosion would be lessened through BMPs, and provisions to prevent soil erosion would be incorporated into the SWPPP to be implemented prior to construction, impacts to soils under this alternative would be less than significant.

No known active faults are located in the Palo Verde area and major tectonic activities associated with earthquakes are believed to have ended more than 1 million years ago. Consequently, the potential for seismic activity and ground rupture is low. Further, the proposed

facilities would be constructed in accordance with the California State Building Code (Title 24 of the California Administrative Code), which contains specifications to minimize adverse effects due to ground shaking from earthquakes and liquefaction. With the implementation of building and construction standards, impacts to the proposed facilities resulting from geologic hazards are expected to be less than significant. Since construction would be occurring in previously disturbed or developed areas, excavation trenches would not substantially affect soils, geology, or seismicity, potential impacts under the Preferred Alternative would be less than significant.

Under implementation of the No Action Alternative, no wastewater collection or treatment system would be constructed in the proposed project area, and no new improvements would be affected by ground-disturbing activities; therefore, geological and soil conditions would remain as described in Section 3.4, *Surface Resources*.

4.4.3 Vegetation, Terrestrial, and Aquatic Wildlife

4.4.3.1 Approach to Analysis

Determination of potential impacts to biological resources is based on the following:

1) The importance (i.e., legal, commercial, recreation, ecological or scientific) of the resource
2) The proportion of the resource that would be affected relative to its occurrence in the region
3) The sensitivity of the resource to proposed activities
4) The duration of ecological ramifications

Impacts on vegetation, terrestrial, and aquatic wildlife are considered significant if species or habitats are adversely affected over relatively large areas or if disturbances cause reductions in population size, distribution, or viability. Potential physical impacts such as habitat loss, noise, and impacts on surface water were evaluated to assess potential impacts to biological resources.

4.4.3.2 Environmental Consequences

Short-Term

Implementation of the Preferred Alternative would result in construction of a wastewater collection and treatment system to replace aging and failing septic systems in Palo Verde. Construction activities would be temporary and would occur primarily along existing roadways and previously disturbed areas, including agricultural fields. Trenching to install pipelines would occur along previously disturbed areas within Palo Verde. The impact of most concern regarding wildlife would be indirect noise and dust related to construction on agricultural land and residential areas. However, this impact would be temporary, and would no longer be an issue once implementation of the wastewater collection and treatment system is accomplished. Therefore, species that use agricultural land or residential areas have a low potential for being impacted by the project.

Under the Preferred Alternative the pond WWTP would consist of an approximately 11-acre footprint and would require the construction of an access road. The pond WWTP would be sited within an approximately 30-acre site directly east of the Community of Palo Verde that contains disturbed natural vegetation. Vegetation consists of interspersed shrub communities, of which approximately 10 acres are heavily disturbed by a network of informal trails. Proximity to the Community of Palo Verde and the trail system reduce habitat quality; however, the area currently provides potential habitat to a variety of bird species.

Construction associated with the proposed bridge crossing on Fourth Street would potentially result in impacts to aquatic and riparian habitats and species within the Palo Verde Lagoon. Two engineering options are feasible for the crossing of the Palo Verde Lagoon, including: 1) attaching the force main to the existing bridge deck; and, 2) directionally boring the force main beneath the Palo Verde Lagoon. If the force main was attached to the bridge deck or directionally bored beneath the Lagoon short-term construction impacts to habitat and species related to construction activities, similar to those discussed above, would occur due to proximity to the Lagoon. Under these options, no construction within the Lagoon or on the Lagoon banks would occur, and implementation of BMPs and adherence to the SWPPP would limit the effects of construction adjacent to and/or beneath the Palo Verde Lagoon. Therefore, short-term impacts would be less than significant.

If the No Action Alternative were selected, no improvements to the wastewater collection or treatment system would be constructed in the proposed project area; therefore, there would be no activities that result in ground-disturbance and either direct or indirect impacts to habitat or vegetation, terrestrial, and aquatic wildlife. Conditions would remain unchanged from those described in Section 3.4, *Surface Resources.*

Long Term

Abandonment and replacement of septic systems would eliminate sewage leaks caused by failing septic systems through the development of appropriate wastewater collection infrastructure, thereby reducing the potential for untreated wastewater to enter the environment. A decrease in pathogens entering the water and increased monitoring of wastewater discharge would improve water quality. The NPDES water quality standards are designed to protect habitat and human uses through the implementation of effluent discharge limits for fecal coliform, ammonia, chlorine, and water temperature. Although there is no indication that current pathogen levels are affecting wildlife (SWRCB 2003), improvements to water quality over existing conditions would constitute an incremental beneficial impact to biological resources.

4.4.4 Threatened and Endangered Species

4.4.4.1 Approach to Analysis

Impacts on threatened and endangered species are significant if species or habitats of concern as regulated under the ESA are adversely affected over relatively large areas or if disturbances cause reductions in population size or distribution. Potential physical impacts such as habitat

loss, noise, and impacts on surface water were evaluated to assess potential impacts to biological resources.

4.4.4.2 Environmental Consequences

Special Status Wildlife

Implementation of the Preferred Alternative would construct a wastewater collection and treatment system in Palo Verde to replace aging and failing septic systems, thereby reducing the potential for untreated wastewater to enter the environment. Trenching to install pipelines would occur along previously disturbed areas within Palo Verde. The short-term project impact of most concern regarding wildlife, including special status wildlife, would be indirect noise and dust related to construction on agricultural land and residential areas. This impact would be temporary, and would no longer be an issue after construction is completed. Special status wildlife would most often utilize habitats within the Community during night-time hours.

Under the Preferred Alternative the pond WWTP would consist of an approximately 11-acre footprint and would require construction of an access road. The pond WWTP would be sited in an area that contains disturbed natural vegetation. Approximately 30 acres directly east of the Community of Palo Verde contain interspersed shrub communities, of which approximately 10 acres are heavily disturbed by a network of informal trails. Proximity to the Community of Palo Verde and the trail system reduce habitat quality; however, the area potentially provides habitat to special status bird species including burrowing owl, willow flycatcher, southwestern willow flycatcher, Arizona Bell's vireo, least Bell's vireo and vermillion flycatcher. Development of the WWTP and access road would eliminate a minimum of 100,000 sf (2.3 acres) of shrub community and further reduce the habitat value of the area. Due to the potential for occurrence and use of the existing habitat by special status bird species, agency coordination would be required prior to development. Per consultation with USFWS, CDFG, and Imperial County, measures such as a pre-disturbance survey and / or Migratory Bird Treaty Act biological monitoring may be required. With implementation of measures determined by and in compliance with agency requirements, impacts would be reduced to less than significant.

Critical Habitat

Federally designated Critical Habitat for the endangered razorback sucker is located within the project area. The Critical Habitat encompasses open water and floodplain areas, and includes critical habitat components of water (quantity and quality), physical habitat (spawning, nursery, corridors), and biological environment (food supply, predation, competition). Habitats required by adult razorback suckers in rivers include deep runs, eddies, backwaters, and flooded off-channel environments in spring; runs and pools often in shallow water associated with submerged sandbars in summer; and low-velocity runs, pools, and eddies in winter. Spawning in rivers occurs over bars of cobble, gravel, and sand substrates during spring runoff at widely ranging flows and water temperatures (typically greater than 57.2 °F [14.0 °C]). Spawning also occurs in reservoirs over rocky shoals and shorelines. Young require nursery environments with quiet, warm, shallow water such as tributary mouths, backwaters, or inundated floodplain habitats in rivers, and coves or shorelines in reservoirs. Critical habitat components for the

razorback sucker include areas within the 100-year floodplain, which would include southern portions of the project area (CDFG 2000).

Critical habitat components could be affected by temporary noise and sedimentation impacts associated construction within the 100-year floodplain and adjacent to the Palo Verde Lagoon. However, proposed construction would be short-term, and high levels of sedimentation and impaired water quality currently exist in the Lagoon. Endangered Species Act Section 7 Consultation with the USFWS would be required prior to implementation of the Preferred Alternative. With implementation of measures determined by USFWS and in compliance with USFWS requirements, impacts to Critical Habitat would be reduced to less than significant.

If the No Action Alternative were selected, the wastewater collection and treatment system would not be constructed in the proposed project area; therefore, there would be no activities that result in ground-disturbance and either direct or indirect impacts to habitat or threatened or endangered species. Conditions would remain unchanged from those described in Section 3.4, *Surface Resources.*

4.5 Cultural Resources and Historic Properties

4.5.1 Approach to Analysis

Cultural resources are subject to review under both federal and state laws and regulations. Section 106 of the National Historic Preservation Act (NHPA) of 1966 empowers the Advisory Council on Historic Preservation to comment on federally initiated, licensed or permitted projects affecting cultural sites listed or eligible for inclusion on the National Register of Historic Places (NRHP). Once cultural resources have been identified, significance evaluation is the process by which resources are assessed relative to significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Only cultural resources determined to be significant (i.e., eligible for the NRHP) are protected under the NHPA.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur from the following:

1) Physically altering, damaging or destroying all or part of a resource
2) Altering the characteristics of the surrounding environment that contribute to resource significance
3) Introducing visual, audible or atmospheric elements that are out of character with the property or alter its setting
4) Neglecting the resource to the extent that it is deteriorated or destroyed

Indirect impacts primarily result from the effects of project-induced population increases and the resultant need to develop new housing areas, utilities services, and other support functions necessary to accommodate population growth. These activities and the subsequent use of the facilities can disturb or destroy cultural resources.

The regulations (36 CFR 800) implementing Section 106 of the NHPA of 1966 (as amended) require identification of all cultural properties within the areas of potential effect that meet the criteria for inclusion in the NRHP and to afford the Advisory Council on Historic Preservation an opportunity to comment on those actions that affect them.

4.5.2 Environmental Consequences

This cultural resources assessment has been conducted to assist with the identification of cultural properties that appear to qualify for listing on the *National Register of Historic Places* and that may be affected by proposed project alternatives.

This cultural resources evaluation considers the effects of the proposed wastewater collection and treatment system that would be constructed. Since no documented resources were identified during archival research and the area has been previously surveyed, it is unlikely that cultural resources would be encountered during the proposed project. Construction activities associated with the Preferred Alternative would occur primarily in previously disturbed areas (e.g., along existing roadways, and disturbed areas) and areas that have previously been surveyed. Therefore, no impacts to cultural resources are anticipated under implementation of the Preferred Alternative. Nevertheless, the possibility of encountering previously undiscovered cultural resources exists; therefore, should cultural or archaeological resources be encountered during project construction, construction activity would cease until a qualified archaeologist performed an assessment of the resources uncovered and a determination of any required conservation and/or related efforts (e.g., further investigation) is made.

The Preferred Alternative would not directly or indirectly affect cultural resources through construction, water discharge, vibration, or other physical impacts. Therefore, cultural resources would not be affected by the Preferred Alternative and potential impacts would be less than significant.

Under implementation of the No Action Alternative, improvements to the wastewater collection and water distribution system would not be constructed in the proposed project area. Since no construction and associated ground-disturbing activities would occur, no impacts to cultural resources would occur and conditions would remain as described in Section 3.5, *Cultural Resources and Historic Properties*.

4.6 Land Use

4.6.1 Approach to Analysis

Significance of potential land use impacts is based on the level of land use sensitivity in areas affected by a proposed action. In general, land use impacts would be significant if they would:

1) Be inconsistent or in noncompliance with applicable land use plans or policies
2) Preclude the viability of existing land use
3) Preclude continued use or occupation of an area

4) Be incompatible with adjacent or vicinity land use to the extent that public health or safety is threatened

4.6.2 Environmental Consequences

The nature of the proposed project – improvements to a municipal infrastructure system designed to service existing population – would not be consistent and compatible with existing land use in Palo Verde and general improvements associated with urban planning; however, under the Preferred Alternative, the wastewater collection and WWTP project would occur pursuant to an Imperial County General Plan Amendment for the Palo Verde Community Area Plan. The current parcel, Assessor Parcel Number (APN) 006-220-056, is zoned Residential (R-1) and has a land use designation of Medium Agriculture. In order to comply with the Imperial County General Plan and zoning ordinance, the proposed project would require a rezone of the subject parcel to Government/Special Public (G-S). Additionally, a minor subdivision or a Parcel Map Waiver from Imperial County would be required to create a separate legal parcel for the Waste Water Treatment Plant site. Resolution of land use and zoning consistency issues would be required prior to construction, and upon resolution, impacts would be less than significant.

The Preferred Alternative would also require acquisition of land and/or rights-of-way. Portions of each wastewater collection system include pipe installation in State Highway 78, which would require coordination with the California Department of Transportation (Caltrans). Installation of the WWTP would require land acquisition, as the Community of Palo Verde owns limited land for siting of the plant. Prior to construction, coordination with the Palo Verde Irrigation District (PVID) would occur, including obtaining encroachment permit(s) for all water, sewer, stormwater, and any other underground utilities that would encroach upon existing and proposed PVID right-of-ways. Southern California Edison (SCE) has overhead transmission lines and both overhead and underground distribution lines in the project area. Coordination with SCE would occur prior to construction to avoid disturbance and to minimize power disruption to these facilities.

The Preferred Alternative is intended to develop appropriate wastewater collection and treatment infrastructure, thereby reducing the potential for untreated or poorly treated wastewater to enter the environment. Implementation of the Preferred Alternative would allow for the redevelopment of properties that were destroyed in the 2007 tornado. These properties previously utilized septic systems that were within the 50- to 100-foot buffer area adjacent to the Palo Verde Lagoon, and therefore were prohibited from reconstruction. The proposed project would therefore be beneficial by improving the quality of land use by permitting in-fill development of existing parcels of record, and potentially reducing vacant properties within Palo Verde.

Under implementation of the No Action Alternative, a wastewater collection and treatment system would not be constructed in the proposed project area. Therefore, there would be no land use changes. Conditions would remain unchanged from those described in Section 3.6, *Land Use.*

4.7 Aesthetics

4.7.1 Approach to Analysis

Aesthetic resources include natural and human-made features that give a particular environment its visual character. A project is considered to have an adverse impact on the aesthetic environment if it is inconsistent with the existing visual character of an area or if it obstructs the view of a visual resource that is considered to be of importance to the public (e.g., a mountain range).

4.7.2 Environmental Consequences

Construction activities under the Preferred Alternative would be temporary and limited to existing roadways and previously disturbed areas. The Preferred Alternative would result in higher levels of short-term surface disturbance associated with the greater footprint and excavation of percolation/evaporation ponds. These impacts, however, would be short-term and would not result in a significant impact to aesthetics.

Under the Preferred Alternative, some project components (e.g., pipelines) would be buried with visual exposure occurring at manholes, pump station(s) and the WWTP facilities. Implementation of the Preferred Alternative would result in the construction of a WWTP which would consist of an aerated facultative pond with percolation/evaporation ponds. The WWTP pond would consist of a four-cell arrangement with two aerated cells. Each cell would be approximately 190 feet long by 50 feet wide and a total depth of 13 feet. Two percolation basins, approximately 135 feet long by 100 feet wide by 6 feet deep, would also be constructed. This substantial footprint would change the existing setting of the proposed project site, which is currently disturbed but undeveloped. However, the pond WWTP would have a minimal vertical component, which would limit impacts to aesthetics to residents along the northern portions of Sunset Way and would not be visible from elsewhere in the Community. In addition, surrounding land uses are agricultural and do not constitute visually sensitive receptors. Therefore, under implementation of the Preferred Alternative, impacts to aesthetics would be less than significant.

Under implementation of the No Action Alternative, a wastewater collection and treatment system would not be constructed in the proposed project area. There would therefore be no changes to the aesthetic environment from those described in Section 3.7, *Aesthetics*.

4.8 Socioeconomics

4.8.1 Approach to Analysis

Significance of population and expenditure impacts are assessed in terms of their direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts varies depending on the location of a proposed action; for example, an action that creates 20 employment positions may be unnoticed in an urban area but may have significant impacts in a more rural region. If potential socioeconomic impacts

would result in substantial shifts in population trends, or adversely affect regional spending and earning patterns, they would be considered significant.

4.8.2 Environmental Consequences

Implementation of the Preferred Alternative is intended to eliminate sewage leaks caused by inadequate infrastructure through the development of appropriate wastewater collection and treatment infrastructure, thereby reducing the potential for untreated wastewater to enter the environment and improving the water quality of the Palo Verde Lagoon. For project development, construction crews would likely be hired from the available pool of workers in Palo Verde, Blythe, and nearby communities, resulting in an increase in short-term construction employment. Completion of the wastewater collection system would also allow for the redevelopment of properties that are abandoned or vacant as a result of the 2007 tornado, and that are currently undevelopable due to inadequate Lagoon setbacks. Construction and development activities would provide temporary employment and economic activity in Palo Verde.

Maintenance and upkeep of the WWTP proposed under the Preferred Alternative would be conducted by existing PVCWD staff; thus, no long-term employment would be generated. Increased utility costs for Palo Verde residents may result from implementation of the Preferred Alternative. The increased costs would be based on numerous factors including the total project construction costs, project financing, potential governmental assistance, and future billing structure. Due to the higher than average poverty rate of the project area, increased utility costs have the potential to adversely affect residents and businesses; however, with potential cost increases unknown, and with the potential to offset some of these costs through government or other programs, the full impact to socioeconomics is difficult to quantify. It is anticipated that adverse but less than significant impacts to socioeconomics would occur.

Under the No Action Alternative, the wastewater collection and treatment systems would not be constructed in the proposed project area. Socioeconomic conditions would remain as described in Section 3.8, *Socioeconomics*.

4.9 Waste Management

4.9.1 Approach to Analysis

Hazardous waste has properties that make it dangerous or potentially harmful to human health or the environment. The universe of hazardous wastes is large and diverse. Hazardous wastes can be liquids, solids, contained gases, or sludges. They can be the by-products of manufacturing processes or simply discarded commercial products, like cleaning fluids or pesticides. Impacts associated with hazardous materials and wastes would be significant if the storage, use, or disposal of hazardous substances substantially increases the human health risk or environmental exposure.

4.9.2 Environmental Consequences

Upon implementation of the Preferred Alternative, waste conveyed to the wastewater treatment system would be contained within the system until fully treated. No hazardous chemicals would be utilized or stored in the WWTP operation. The ponds would need to be drained and waste sludge (bio-solids) removed two to four times per year. Depending of WWTP final design, bio-solids would need to be removed from the grit screen either monthly, at worst, but likely quarterly. It is anticipated that bio-solids would either be land applied or disposed of at an appropriate landfill. Appropriate disposal of bio-solids would be determined in a Bio-Solids Management Plan, which would be developed as part of the final WWTP design and would be consistent with local, state, and federal regulations. Other hazardous waste that would potentially be created, disturbed, moved, or used as part of the Proposed Action would be treated or disposed of with the appropriate permit or agency in accordance with the Resource Conservation and Recovery Act 42 U.S.C. 6901- *Treatment, Storage, or Disposal of Hazardous Wastes*. In addition, no hazardous materials would be utilized in the operation of the proposed WWTP. The removal of septic systems would eliminate the discharge of untreated or partially treated wastewater into the environment. Therefore, long-term impacts from the implementation of the Preferred Alternative would be beneficial by improving the quality of waste management in Palo Verde.

Under the No Action Alternative, the wastewater collection and treatment system would not be constructed in the proposed project area. Conditions would remain as described in Section 3.9, *Waste Management*. The leakage of untreated wastewater into the environment would continue, which would result in continued adverse impacts to waste management in Palo Verde.

4.10 Transportation

4.10.1 Approach to Analysis

Significance of potential transportation impacts is based on the level of anticipated disruption or improvement of current transportation patterns and systems; deterioration or improvement of existing levels of service; and changes in existing levels of transportation safety. Impacts (i.e., beneficial or adverse) may arise from physical changes to circulation (e.g., closing, rerouting, or creating roads), construction activity, introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes created by either direct or indirect workforce and population changes related to installation activities. Adverse impacts on roadway capacities would be significant if roads with no history of capacity exceedances were forced to operate at or above their full design capacity.

4.10.2 Environmental Consequences

Under the Preferred Alternative construction activities would occur along existing roadways. During construction, roadway access by residents or users of the proposed project area would be temporarily restricted. Short-term impacts regarding access would be minimized by the use of standard engineering and traffic management practices. Once operational, wastewater

treatment infrastructure would not impact vehicular traffic or other transportation methods. Access at the Fourth Street Bridge would be temporarily impacted during construction of the force main across the Palo Verde Lagoon. The inventory rating of the bridge is 35,935 pounds (lb) and an operating rating of 50,044 lbs. Due to the aging nature of the bridge, no construction equipment weighing greater than a maximum of 35,935 lbs would be able to cross the bridge. In addition, if a structural assessment concludes that the bridge is capable of supporting the proposed force main, the force main would be placed on top of the bridge on one of the existing walkways. Therefore, only short-term impacts to transportation associated with the Preferred Alternative would occur.

Under the No Action Alternative, a wastewater collection and treatment system would not be constructed in the proposed project area. Conditions would remain unchanged from those described in Section 3.10, *Transportation.* There would, therefore, be no changes to infrastructure.

4.11 Energy

4.11.1 Approach to Analysis

On 4 October 2009, EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, was issued to focus attention of US federal agencies to promote the establishment of an integrated system of development that promotes environmental sustainability by the federal government and emphasizes the reduction of greenhouse gas emissions.

In order to comply with EO 13514, the Preferred Alternative has been evaluated for its impact on the US federal government's goal to reduce greenhouse gas (GHG) emissions by reducing energy consumption through strategic sustainable development and energy efficient building design and material selection. The Preferred Alternative has been evaluated for its adherence to the order, as it pertains to identifying energy reduction opportunities.

4.11.2 Environmental Consequences

Energy would be provided to the proposed project primarily from off-site combustion of natural gas for the generation of industrial and utility electric power; however, the pump stations would be fitted with solar panels and the WWTP aerator would likely also be fitted with solar panels that would then be able to provide a secondary source of energy to reduce dependence on grid power, and operation and maintenance costs. Grid power electrical generation may include air non-polluting sources such as solar, wind, or nuclear power; however, power in the region is generally provided by combustion of natural gas. Anticipating potential future availability of renewable energy, electrical distribution supply and controls would include a cross-over connection should supply from an anticipated solar park near the water treatment plant in Palo Verde become available.

For this analysis, operational energy requirements of the WWTP were estimated under worst-case conditions where no solar panels are utilized, and it was assumed the WWTP would consume a maximum of 100,000 kWh/year. Additionally, each pump station would consume a maximum of 7,000 kWh/year with 20 percent of the energy being generated from solar power.

Under the Preferred Alternative, energy demand would occur from the one pump station and operation of the pond WWTP. The majority of long-term operational energy associated with the Preferred Alternative would relate to the off-site combustion of natural gas for the generation of industrial and utility electric power. However, the Preferred Alternative would not constitute a substantial increase in existing power use; therefore, there would be no significant impacts to energy resources. As part of project development, coordination with SCE would be required to ensure that sufficient infrastructure exists to support the proposed project. Increased energy use for pumping water and operation of the WWTP are the only operational sources of GHG emissions associated with the project. This would indirectly contribute to GHG emissions through increased power demand from an offsite utility provider (SCE). The wastewater collection pumps would incorporate renewable energy sources (approximately 20 percent of energy would be generated from solar power). Both construction and the operation of the proposed wastewater collection and treatment system would incrementally contribute to GHG emissions; however, given the limited construction and energy utilization of the Preferred Alternative, contributions would be considered less than significant.

Under the No Action Alternative, a wastewater collection and treatment system would not be constructed in the proposed project area and conditions would remain as described in Section 3.11, *Energy*. There would therefore be no changes to energy resources.

4.12 Environmental Justice and Protection of Children

4.12.1 Approach to Analysis

To comply with EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, ethnicity and poverty status in the vicinity of the project have been examined and compared to community, county, state and national data to determine if any minority or low-income communities could potentially be disproportionately affected by implementation of the Proposed Action.

Similarly, to comply with EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, the distribution of children and locations where numbers of children may be proportionally high in the vicinity of the project was determined to ensure that environmental health and safety risks to children are addressed.

4.12.2 Environmental Consequences

Implementation of the Preferred Alternative is intended to eliminate sewage leaks caused by inadequate infrastructure through the development of appropriate wastewater collection and treatment infrastructure, thereby reducing the potential for untreated wastewater to enter the

environment and improving the water quality of the Palo Verde Lagoon. As a result of project implementation under any alternative, risks to public health (e.g., water-borne pathogens) resulting from the leakage of untreated wastewater and interaction with Palo Verde Lagoon water would be reduced. No significant direct or indirect environmental impacts from either construction- or operations-related activities are anticipated to affect low-income populations, minority populations, or children in Palo Verde or the surrounding area. No significant short-term or long-term impacts are anticipated to occur; therefore, children and minority and low-income populations would not experience direct or indirect disproportionate impacts related to the Preferred Alternative. A beneficial effect of the construction of a wastewater collection system is that sewage leaks would no longer occur, resulting in fewer contaminants in local waterways than under current conditions. Therefore, implementation of the Preferred Alternative would result in beneficial impacts for children and low-income populations because it would reduce exposure of the human population to pathogens found in untreated water.

Under the No Action Alternative, the wastewater collection and treatment system would not be constructed in the proposed project area. Conditions would remain as described in Section 3.15, *Environmental Justice and Protection of Children*. Public health concerns related to the exposure to wastewater in the environment would continue in the project area, resulting in adverse impacts.

4.13 Cumulative Impacts

Cumulative impacts on environmental resources result from incremental impacts of the Proposed Action when combined with other past, present and reasonably foreseeable future projects in an affected area. Cumulative impacts can result from minor but collectively substantial actions undertaken over a period of time by various agencies (federal, state or local) or persons. In accordance with NEPA, cumulative impacts resulting from projects that are proposed, under construction, recently completed or anticipated to be implemented in the near future are discussed in this section.

No other projects are currently scheduled within Palo Verde; however, a solar power array has been discussed for development near the potable water plant at the southern margin of Palo Verde. This project is in the initial planning stage and no application has been submitted to Imperial County; the project is therefore not likely to be implemented until well after the construction of the Proposed Action is completed. Therefore, no cumulative impacts are anticipated in association with the development of the proposed future solar array project. Over the long term, implementation of the solar array would reduce energy use and associated GHG emissions and air quality impacts, and would result in a beneficial impact to the Palo Verde environment.

Implementation of the Proposed Action, if conducted simultaneously with other unforeseen planning improvements to Palo Verde, would have the potential to cumulatively impact air quality, water quality, and noise in the immediate area; however, impacts would be short-term and the use of BMPs would reduce impacts to less than significant levels. Long-term cumulative impacts associated with Proposed Action would be beneficial to water resources,

public health and safety, land use, socioeconomic conditions and environmental justice and protection of children.

4.14 Unavoidable Adverse Impacts

Implementation of the Preferred Alternative would result in temporary, minor adverse environmental impacts such as fugitive dust emissions, vehicle emissions, noise, traffic disruption, water quality degradation, and soil disturbance.

Unavoidable adverse impacts associated with the No Action Alternative include continuation of discharge of wastewater into the environment and the associated risk of contamination to surface water.

4.15 Relationship of Short-Term and Long-Term Productivity

In the short term, implementation of the Preferred Alternative would result in temporary, adverse impacts such as fugitive dust emissions, vehicle emissions, noise, traffic disruption, water quality degradation, and soil erosion. Long-term effects of the Preferred Alternative include efficient, controlled wastewater collection in the project area resulting in protection of water resources, improved public health, safety, and quality of life.

The No Action Alternative would result in adverse impacts to both short- and long-term productivity (i.e., the continuation of wastewater leakage into the environment and associated impacts on water quality and public health).

4.16 Irreversible and Irretrievable Commitments of Resources

Construction associated with the Preferred Alternative would occur primarily along existing roads and previously disturbed areas. No irreversible or irretrievable commitments of resources in the US pertaining to the Preferred Alternative would occur.

Table 4-6. Summary of Impacts for Fully Evaluated Resources

Resource	Preferred Alternative (Alternative 1)	No Action Alternative
Air Resources	Combustion emissions associated with construction vehicles and equipment would be minimal due to the short-term duration of proposed construction. Construction-related air quality and noise impacts would be minimal and temporary, and would not continue beyond the period of construction. The proposed pond WWTP would be in compliance with required setbacks and odors are anticipated to be minor. Therefore, implementation of the Preferred Alternative would result in ***no significant impacts*** to air resources.	Conditions would remain as described in *Section 3.1, Air Resources.*
Water Resources	Implementation of the Preferred Alternative would eliminate leaking of untreated wastewater into the environment, reducing the negative impacts to surface water resources. Groundwater recharge rates would not be affected and compliance with water quality discharge permits would ensure no degradation of groundwater quality would occur. The proposed pond WWTP would be constructed outside of floodplains and design features would protect infrastructure built within floodplains. No significant impacts to wetlands would occur. Therefore, Implementation of this alternative would provide ***beneficial impacts*** to water resources.	Conditions would remain as described in *Section 3.2, Water Resources.* Negative impacts would continue to occur through the leakage of untreated wastewater into the environment.
Public Health and Safety	The proposed improvements under the Preferred Alternative would eliminate the use of septic systems that currently result in the leakage of untreated wastewater into the environment. Therefore, implementation of the Preferred Alternative would provide ***beneficial impacts*** to public health and safety.	Conditions would remain as described in *Section 3.3, Public Health and Safety.* Negative impacts would continue to occur through the leakage of untreated wastewater into the environment.
Surface resources	The Preferred Alternative includes construction consisting of trenching for pipeline collection system, a pond WWTP, and pump systems. No significant landforms or areas of unique or sensitive resources would be impacted by construction. All construction would occur in previously disturbed areas. Impacts from potential development to Threatened and Endangered species or to sensitive species habitat would be less than significant with agency consultation and compliance with required measures. Implementation of the Preferred Alternative would result in ***less than significant impacts*** to existing surface resources.	Conditions would remain as described in *Section 3.4, Surface Resources.* Negative impacts would continue to occur through the leakage of untreated wastewater into the environment.
Cultural Resources and Historic Properties	The proposed improvements would occur in areas that have previously been disturbed and no cultural resources have been recorded as occurring in the project area. However, should cultural or historical resources be encountered during development, compliance with applicable cultural and historical resource regulations would be required. Therefore, the Preferred Alternative would result in ***less than significant impacts*** to cultural or historical resources.	Conditions would remain as described in *Section 3.5, Cultural Resources and Historic Properties.*
Land Use	The Preferred Alternative would require a General Plan Amendment and rezone of the subject parcel to Government/Special Public (G-S), as well as a minor subdivision or a Parcel Map Waiver from Imperial County. The proposed wastewater collection lines under the Preferred Alternative would occur within existing roads, alleys, and right-of-ways. The Preferred Alternative would provide a	Conditions would remain as described in *Section 3.6, Land Use.*

Table 4-6. Summary of Impacts for Fully Evaluated Resources

Resource	Preferred Alternative (Alternative 1)	No Action Alternative
	reliable and effective wastewater collection and treatment system, would eliminate sewage leaks to the environment, and would allow for the redevelopment of properties abandoned after the tornado. Therefore, the Preferred Alternative would result in ***beneficial impacts*** to the quality of land use in Palo Verde.	
Aesthetics	The improvements proposed under the Preferred Alternative would include a pump station and a pond WWTP northeast of the developed community. The WWTP would be visually obscured by existing vegetation and the project would therefore not result in significant impacts. Short-term impacts would be temporary and would not be significant. Therefore, implementation of the Preferred Alternative would result in ***less than significant impacts*** to aesthetic resources.	Conditions would remain as described in *Section 3.7, Aesthetics.*
Socioeconomics	The Preferred Alternative would result in temporary benefits to socioeconomics by creating some short-term construction jobs. No long-term employment would be generated. Therefore, ***no significant impacts*** to socioeconomics would occur.	Conditions would remain as described in *Section 3.8, Socioeconomics.*
Waste Management	The proposed pond WWTP would create hazardous waste associated with sewage sludge. Generated wastes would be disposed of according to federal and state regulations. ***No significant impacts*** would occur. Existing infrastructure would be improved such that inadvertent discharge of partially treated wastewater would no longer be released into the environment. Therefore, the Preferred Action would result in ***long-term beneficial impacts*** to waste management.	Conditions would remain as described in *Section 3.9, Waste Management.*
Transportation	Implementation of the Preferred Alternative would include construction access along existing roadways and previously disturbed areas. Due to the aged nature of the bridge, no construction equipment over 35,935lbs should cross the bridge. Some short-term access may be restricted during construction; however, impacts would be minimized using standard engineering and traffic management practices; therefore, the Preferred Alternative would result in ***less than significant impacts*** to transportation.	Conditions would remain as described in *Section 3.10, Transportation.*
Energy	Improvements proposed under the Preferred Alternative would result in an increase in energy required for pumping the water distribution system and operation of the pond WWTP. However, impacts to energy resources would be ***less than significant.***	Conditions would remain as described in *Section 3.11, Energy.*
Environmental Justice and Protection of Children	Implementation of the Preferred Alternative would improve public health by eliminating untreated wastewater leakage into the environment, improving the area for the entire population. Therefore, ***beneficial impacts*** would result from the Preferred Alternative.	Conditions would remain as described in *Section 3.12, Environmental Justice and Protection of Children.* Negative impacts would continue to occur through the leakage of untreated wastewater into the environment.

4.17 Conclusion

This EID has been prepared in accordance with NEPA requirements. The EID reviews potential impacts of proposed development of a wastewater collection and treatment system in the Community of Palo Verde, California on environmental resources and concludes that there are **no significant adverse impacts on the environment** resulting from the implementation of the Preferred Alternative.

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6.0 LIST OF ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
°C	degrees Celsius
°F	degrees Fahrenheit
°N	degrees north
°W	degrees west
ADF	Average daily flow
APCD	Air Pollution Control District
ARPA	Archaeological Resources Protection Act
asl	Above sea level
BECC	Border Environment Cooperation Commission
BEIF	Border Environment Infrastructure Fund
bgs	below ground surface
BLM	Bureau of Land Management
BMPs	Best Management Practices
CAA	Clean Air Act
CADOF	California Department of Finance
CDFG	California Department of Fish and Game
CalEPA	California Environmental Protection Agency
CDP	Census Defined Place
CEQ	Council on Environmental Quality
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cm	centimeters
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibel scale
DIP	ductile iron pipe
DTSC	Department of Toxic Substances Control
EID	Environmental Information Document
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
ft	feet
gpcd	gallons per capita per day

Acronym/Abbreviation	Definition
gpd	gallons per day
HCP	Habitat Conservation Plan
I10	Interstate 10
IBC	International Boundary Commission
IBEP	Integrated Border Environmental Plan
IBWC	International Boundary and Water Commission
IID	Imperial Irrigation District
in	inches
km	kilometer
km^2	square-kilometer
kWh	kilowatt-hour
L_{dn}	day-night average sound level
lbs	pounds
LCRMSCP	Lower Colorado River Multi-Species Conservation Program
m	meter
mi^2	square-mile
mph	miles per hour
NAAQS	National Ambient Air Quality Standards
NADB	North American Development Bank
NAFTA	North American Free Trade Agreement
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOM	Normas Oficiales Mexicanas (Mexican Federal Regulations)
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
O_3	ozone
Pb	lead
PER	Preliminary Engineering Report
PM_{10}	particulate matter equal to or less than 10 microns in diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
PVC	polyvinyl chloride
PVCWD	Palo Verde County Water District
PVID	Palo Verde Irrigation District
RBC	Rotating biological contactor
ROG	reactive organic gas
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board

Acronym/Abbreviation	Definition
SCAG	Southern California Association of Governments
SCE	Southern California Edison
sf	square foot
SHPO	State Historic Preservation Officer (or Office)
SIP	State Implementation Plan
SO_2	sulfur dioxide
SWRCB	State Water Resources Control Board
SWPPP	Storm Water Pollution Prevention Plan
tpy	tons per year
US BEA	United States Bureau of Economic Analysis
US	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UV	Ultraviolet
VOCs	volatile organic compounds
WDR	Waste discharge requirements
WWTP	Wastewater Treatment Plant

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7.0 LIST OF PREPARERS

This report was prepared for, and under the direction of, the Border Environmental Cooperation Commission by AMEC Earth & Environmental, Inc. Members of the professional staff are listed below:

Project Management

Aaron Goldschmidt, Program Manager
M.A. Geography

Rita Bright, Project Manager
B.A. Business Economics/Environmental Studies

Linn Zukor, Project Manager
B.A. Environmental Studies/ Geography

Technical Analysis

Benjamin Botkin
B.A. Environmental Studies

Production

Janice Depew
Word Processor

Deirdre Stites
Graphics Artist