5.8 BIOLOGICAL RESOURCES

5.8.1 AFFECTED ENVIRONMENT

This section describes the existing biological resources in the areas that may be affected by project construction and operation. It provides a description of the plant and wildlife communities characteristic of these areas, including rare and unique species and habitats, and summarizes the plant community acreages in the areas of potential project impact. The relationship of potentially affected areas to surrounding habitat areas and wilderness areas is also provided. In addition, the presence of wildlife corridors and their relative importance are described.

A brief description of special interest species known to occur or that could occur on or in the general vicinity of the project site is also provided. More detailed descriptions of plant communities and special interest plant and wildlife species are provided in the Cadiz Groundwater Storage and Dry-Year Supply Program Environmental Planning Technical Report: Biological Resources (Report No. 1164, November 1999).

Plant Communities

A plant community or vegetative association is "…an assemblage of interacting plant species characterized by the presence of one or more dominant species…" (Holland 1986, Ornduff 1974). General plant communities may exhibit localized variability in composition, as they do in the project area. The native and non-native plant communities identified in the area of the four project alternatives include Mojave creosote bush scrub, Mojave wash scrub, stabilized and partially stabilized desert dunes, stabilized and partially stabilized desert sand fields, and agriculture. Each of these is described in detail in the Biological Resources Technical Report.

Plant community locations for each alternative are shown in Figure 5.8-1.

The following descriptions characterize the general locations, by the geographic features shown in Figure 5.8-1, of the native and non-native plant communities in the project area for the three alternatives. The elevational range for the Eastern and Eastern/Canal alternatives is approximately 590 to 940 feet above mean sea level (amsl). The elevational range for the Western and Combination Alternatives is approximately 590 to 1,520 feet amsl.

Mojave Creosote Bush Scrub

Mojave creosote bush scrub is the dominant plant community associated with each project alternative. It occurs throughout most of the project area for the conveyance pipeline for each alternative, the proposed spreading basin area, the wellfield, the Cadiz Pumping Plant and the staging areas. On the project site, this plant community is characterized by an open canopy of creosote bush (*Larrea tridentata*) and burrobush (*Ambrosia dumosa*), with a sparse understory of forget-me-not (*Cryptantha* spp.), woolly plantain (*Plantago ovata*) and Devil's lantern (*Oenothera deltoides*). Less common, but highly visible, species in this community on the project site include silver cholla (*Opuntia echinocarpa*), pencil cholla (*Opuntia ramosissima*), brittlebush (*Encelia farinosa*) and desert milkweed (*Asclepias erosa*). In general, Mojave creosote bush scrub is more disturbed where the alignment parallels Cadiz-Rice Road and in the spreading basin and wellfield area.

Biological soil crusts (cryptogamic soils) include a specialized community or microhabitat within Mojave creosote bush scrub. It contains bacteria, algae, lichens and mosses and acts as a living mulch by retaining soil moisture. It also discourages the growth of annuals and resists weeds, wind and

water erosion. The distribution of biological soil crust ranges from sparse to dense; the extent of cover is similar for each alternative.

Mojave Wash Scrub

Mojave wash scrub occurs in washes in the project area for each alternative. These washes have coarse, sandy to gravelly bottoms and lack biological soil crusts. On the project site, the species characteristic of this plant community include smoke tree (*Psorothamnus spinosus*), cheesebush (*Hymenoclea salsola*), sweetbush (*Bebbia juncea*) and rayless encelia (*Encelia frutescens*). The quality of Mojave wash scrub is generally equivalent for each project alternative. However, the density of smoke trees in the washes is greater for the Western and Combination alternatives than for the Eastern and Eastern/Canal alternatives. The most extensive and biologically diverse wash (Schulyler Wash) occurs in the wellfield area. This is the only wash on the project site where catclaw (*Acacia greggii*) and desert willow (*Chilopsis linearis* ssp. *arcuata*) occur. Washes that do not contain tree-like vegetation were mapped as a different plant community, Mojave creosote bush scrub. Numerous washes occur throughout the conveyance alignment for each project alternative. A limited number of these washes supports tree-like vegetation (e.g., smoke tree) characteristic of this plant community. This plant community is considered threatened by the California Department of Fish and Game (CDFG) and is described in further detail in the discussion of Special Interest Species and Habitats, later in this section.

Stabilized and Partially Stabilized Desert Dunes and Desert Sand Fields

Stabilized and partially stabilized desert dunes and desert sand fields are the second most common plant community in the project area. These two communities were combined due to the difficulty of distinguishing between them in the field. Desert dunes and sand fields have sandy substrates and accordingly do not form the biological soil crusts. These communities occur in all of the conveyance pipeline alignments, but not in the spreading basins or wellfield area. They occur east and west of the Kilbeck Hills and the Iron Mountains. These two communities form sand-influenced creosote bush scrub communities interspersed with Mojave creosote bush scrub. On the project site, these two communities have a slightly lower density of creosote bush than the Mojave creosote bush scrub community. Species characteristic of this community in the project area include big galletta (*Pleuraphis rigida*), Devil's lantern, burrobush, sandpaper plant (*Petalonyx thurberi*) and desert sand verbena (*Abronia villosa*). This plant community is considered threatened by the CDFG and is described in further detail in the discussion of Special Interest Species and Habitats, later in this section.

Agriculture Fields

Agricultural fields occur in the western portion of the project wellfield. Agricultural areas where the wells and their associated pipelines will be located include plantings of grapes, oranges, minneolas and lemons.

Open Water

Open water is a project-created habitat type that occurs at the north end of the project. There are currently two pilot spreading basins comprising 2.5 acres each. These basins are being used to test and evaluate percolation rates and groundwater movement for project planning purposes. If the project is adopted, then these basins will be incorporated into the project spreading basins. One of these areas had standing water in it at one point during field surveys in mid-May 1999. At other times, both of these basins have been dry. When these basins hold water, they have the potential to

provide habitat for wildlife. However, if the Cadiz Project does not proceed, this area would be abandoned and no permanent open water would be present. Therefore, open water is not identified as an existing habitat later in Table 5.8-1.

Wildlife Communities

The following descriptions characterize the general locations, by the geographic features shown previously in Figure 5.8-1, of the wildlife communities in the project area.

Due to the harsh environmental factors associated with desert ecosystems, only a relatively low diversity of native wildlife has adapted to these conditions. In addition, most forms of wildlife occupying desert ecosystems are generally sparsely distributed due to the scarcity of, and competition for, critical resources. Typically, wildlife species inhabiting desert regions are specifically adapted to conditions that would generally prohibit most wildlife use. However, two man-made habitats have been created in the project area: agriculture and open-water. These habitats typically provide resources for a variety of wildlife that are often either non-native species, migratory species or species adapted to or tolerant of non-native vegetation and disturbed habitats, but may also meet specialized habitat or resource requirements of certain special interest wildlife species.

The plant community in the project area that appears to support the greatest diversity and density of native wildlife is Mojave wash scrub. Due to the relatively greater diversity and more varied structure of vegetation typically occurring in these washes, this habitat is expected to provide superior cover and foraging resources for wildlife compared to other habitats in the project area. Washes typically provide important habitat for resident, nesting birds and temporary waystations for migratory birds. Their banks are used by burrowing invertebrates, reptiles and mammals. The washes vary considerably in the extent and diversity of vegetation they support, and, therefore, in their significance to wildlife. Schulyler Wash, on the east side of the project wellfields, is considered the most significant Mojave wash scrub habitat in the project area in terms of wildlife habitat. Due to disturbance, many of the washes are of lower quality where the alignment parallels Cadiz-Rice Road. Generally, in areas away from human disturbance, the overall quality and importance of the Mojave wash scrub habitat to wildlife is considered approximately equivalent among all of the alternatives. Examples of wildlife species observed or expected in this habitat in the project area include zebra-tailed lizard (*Callisaurus draconoides*), mourning dove (*Zenaida macroura*), lesser nighthawk (*Chordeiles acutipennis*), Say's phoebe (*Sayornis saya*), verdin (*Auriparus flaviceps*), house finch (*Carpodacus mexicanus*), black-tailed jackrabbit (*Lepus californicus*), desert wood rat (*Neotoma lepida*) and antelope ground squirrel (*Ammospermophilus leucurus*).

Mojave creosote bush scrub is predominant in the project area, but this habitat supports lower densities and a lower diversity of wildlife species than Mojave wash scrub. Mojave creosote bush scrub varies in the structure and amount of available cover for wildlife. This habitat, with a variety of smaller shrub species and grasses, would support a more diverse wildlife community than habitats lacking this component. Examples of wildlife species observed or expected in the Mojave creosote bush scrub habitat in the project area include western whiptail (*Cnemidophorus tigris*), side-blotched lizard (*Uta stansburiana*), greater roadrunner (*Geococcyx californianus*), horned lark (*Eremophila alpestris*), Costa's hummingbird (*Calypte costae*), cactus wren (*Campylorhynchus brunneicapillus*), black-throated sparrow (*Amphispiza bilineata*), round-tailed ground squirrel (*Spermophilus tereticaudus*), Merriam's kangaroo rat (*Dipodomys merriami*) and kit fox (*Vulpes macrotis*). Although the Mojave creosote bush scrub on the West Alternative was generally considered to have a greater diversity in comparison to this community in the other project alternatives, these differences were not considered substantial in terms of wildlife habitat value.

The stabilized and partially stabilized desert dunes and desert sand fields generally supported the least diverse and smallest densities of wildlife in the project area because these areas provided relatively limited resources for wildlife. This was especially true in areas with minimal vegetation. However, several highly specialized animals have adapted to this habitat. Examples of wildlife species observed or expected in desert dunes and sand field habitat include the desert horned lizard (*Phrynosoma platyrhinos*), sidewinder (*Crotalus cerastes*), long-nosed snake (*Rhinocheilus lecontei*) and desert kangaroo rat (*Dipodomys deserti)*. Although there are some differences in the plant diversity and structure of this habitat within each of the alternatives, the differences between the alternatives were considered minimal in terms of value as wildlife habitat.

Special Interest Species and Habitats

Lists of special interest plant and wildlife species that were observed or were expected to occur in the project area are provided in Tables 5.8-1 and 5.8-2. These tables also provide information regarding the presence of suitable habitat for these species in the project area.

Special interest species are defined as those species that have been afforded special recognition by federal, state or local resource conservation agencies, organizations and/or jurisdictions, and include species listed as rare, threatened and endangered by resource conservation agencies. In some cases, unlisted species that are considered of special interest by the scientific community, local resource agencies, or knowledgeable experts are also included. The special status of these species is generally due to limited, declining and/or threatened population sizes. For the purposes of this EIR/EIS, special interest plant and wildlife species include those listed as threatened or endangered by the United States Fish and Wildlife Service (USFWS) or the CDFG, federal species of concern (FSC), California Species of Special Concern (CSC), CDFG Special Status Plants, BLM Special Plants and plants included in the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (1994).

Plant Species

Table 5.8-1 identifies the special interest plant species that occur or are expected to have the potential to occur in the project area and for which surveys were conducted. Although previous surveys and review of the California Natural Diversity Data Base (CNDDB) records indicate that the area has supported sensitive species (Tierra Madre Consultants 1995 and 1998, Spaulding and Twitchell 1978, Scogin 1947), ribbed cryptantha (*Cryptantha costata*) was the only special interest plant species identified within the area of potential impact. This species was common in areas of windblown and stabilized sand for all project alternatives.

Although rainfall was low during the 1998 to 1999 season, the remainder of the special interest annual plant species shown in Table 5.8-1 have minimal or moderate likelihood to occur within project construction and operations areas. Special interest perennial plant species not observed in the field are unlikely to occur.

TABLE 5.8-1
SPECIAL INTEREST PLANT SPECIES OBSERVED OR EXPECTED ON THE CADIZ PROJECT SITE

Species	Status[1]	Suitable Habitat/Soils[2]	Flowering Period	Occurrence (P&D Surveys)	Occurrence (Other Surveys)	Likelihood of Occurrence in an Optimal Rainfall Year[3]
Cynanchum utahense Utah vine milkweed (perennial herb)	CNPS 4	MCBS/ dry, sandy, or gravelly	April-June	Absent. Suitable habitat occurs within the project area for all alternatives.	Surveys were conducted for this species by Tierra Madre Consultants in 1995 and 1998 in the vicinity of the project area. This species was not found.	Unlikely
Matelea parvifolia Spearleaf (perennial herb)	CNPS 2	MCBS/ dry, rocky	March-May	Absent. All alignments except southern transmission line below elevational range of plant.	Surveys were conducted for this species by Tierra Madre Consultants in 1995 and 1998 in the vicinity of the project area. This species was not found.	Unlikely
Cryptantha costata Ribbed cryptantha (annual herb)	CNPS 4	MCBS/ Sandy	February-May	Occurs, common in areas of stabilized and windblown sand within the project area for all alignments.	Surveys by Tierra Madre Consultants in 1995 identified this plant as common west of the west alignment near the southwest margin of Cadiz Dry Lake.	Expected
Cryptantha holoptera Winged cryptantha (annual herb)	CNPS 4	MCBS/ sandy to rocky	March-April	Absent. Suitable habitat occurs within the project area for all alignments.	Surveys were conducted for this species by Tierra Madre Consultants in 1995 and 1998 in the vicinity of the project area. This species was not found.	Minimal
Echinocereus engelmannii var. *howei* * Howe's hedgehog cactus (perennial shrub)	FSC, CNPS 1B	MCBS	April-May	Absent. All alignments except southern transmission line below elevational range of plant.	--	Unlikely
Escobaria vivipara var. *alversonii* * Foxtail cactus (perennial shrub)	CNPS 1B	MCBS/ sandy or rocky	May-June	Absent. Suitable habitat occurs within the project area for all alignments.	California Natural Diversity Data Base (CNDDB) records indicate one plant was found in 1995 on a rocky outcrop south of the Iron Mountains east of the Colorado River Aqueduct (CRA), approximately 1 mile south of the southern terminus of the west and combination alignments and 0.5 mile west of the southern transmission line. Surveys were conducted for this species by Tierra Madre Consultants in 1995 and 1998 in the vicinity of the project area. This species was not found.	Unlikely

TABLE 5.8-1
SPECIAL INTEREST PLANT SPECIES OBSERVED OR EXPECTED ON THE CADIZ PROJECT SITE (Continued)

Species	Status[1]	Suitable Habitat/Soils[2]	Flowering Period	Occurrence (P&D Surveys)	Occurrence (Other Surveys)	Likelihood of Occurrence in an Optimal Rainfall Year[3]
Ferocactus cylindraceus var. *cylindraceus* California barrel cactus (perennial)	--	MCBS/ Gravelly, rocky, or sandy	May-June	Absent. Suitable habitat occurs within the project area for all alignments.	--	Unlikely
Opuntia basilaris var. *brachyclada* * Short-joint beavertail (perennial shrub)	FSC, CNPS 1B	MCBS	April-June	Absent. All alignments except southern trans-mission line below elevational range of plant.	--	Unlikely
Astragalus insularis var. *harwoodii* Sand-flat locoweed (annual herb)	CNPS 2	DeDns	January-May	Absent. Suitable habitat occurs within the project area for all alignments.	--	Minimal
Astragalus lentiginosus var. *borreganus* Borrego milkvetch (annual herb)	CNPS 4	MCBS/ Sandy	February-May	Absent. Suitable habitat occurs within the project area for all alignments.	Surveys by Tierra Madre Consultants in 1995 identified this plant west of the southern end of the west alignment, near the Iron Mountain Pumping Plant and near the southwest margin of Cadiz Dry Lake. These locations are outside of the project alignments.	Moderate
Arctomecon merriamii * White bear poppy (perennial herb)	FSC, CNPS 1B	MCBS/ Rocky	April-May	Absent. All alignments except southern trans-mission line below elevational range of plant.	--	Unlikely
Monardella robisonii * Robison's monardella (perennial herb)	FSC, CNPS 1B	--	April-October	Absent. Suitable habitat occurs within the project area for all alignments.	--	Unlikely
Salvia greatae * Orocopia sage (perennial shrub)	FSC, CNPS 1B	MCBS/ alluvial slopes	March-April	Absent. Suitable habitat occurs within the project area for all alignments.	CNDDB records indicate that Spaulding and Twitchell identified this plant in 1978 approximately 8 miles northwest of the proposed spreading basins, west of the Marble Mountains. Surveys were conducted for this species by Tierra Madre Consultants in 1995 and 1998 in the vicinity of the project area. This species was not found.	Unlikely

TABLE 5.8-1
SPECIAL INTEREST PLANT SPECIES OBSERVED OR EXPECTED ON THE CADIZ PROJECT SITE (Continued)

Species	Status[1]	Suitable Habitat/Soils[2]	Flowering Period	Occurrence (P&D Surveys)	Occurrence (Other Surveys)	Likelihood of Occurrence in an Optimal Rainfall Year[3]
Sphaeralcea rusbyi var. *eremicola* * Rusby's desert-mallow (perennial herb)	FSC, CNPS 1B	MCBS	May-June	Absent. The project site is below the elevational range of this species.	--	Unlikely
Gilia maculata Little San Bernardino Mountains gilia (annual herb)	FSC, CNPS 1B	DeDns, MCBS	April-May	Absent. Suitable habitat occurs within the project area for all alignments.	--	Minimal
Linanthus arenicola Sand linanthus* (annual herb)	CNPS 2	DeDns, MCBS/ Sandy	March-April	Absent. Suitable habitat occurs within the project area for all alignments.	Surveys were conducted for this species by Tierra Madre Consultants in 1995 and 1998 in the vicinity of the project area. This species was not found.	Minimal
Colubrina californica Las animas colubrina (perennial shrub)	CNPS 4	MCBS	April-May	Absent. Suitable habitat occurs within the project area for all alignments.	Surveys were conducted for this species by Tierra Madre Consultants in 1995 and 1998 in the vicinity of the project area. This species was not found.	Unlikely
Penstemon albomarginatus * White-margined beardtongue (perennial herb)	FSC, CNPS 1B	DeDns (stabilized), MCBS/ Sandy	March-May	Absent. The project site is below the elevational range of this species.	CNDDB records indicate that Scogin observed this species in 1941 approximately 4 miles northeast of the spreading basins, east of the Marble Mountains. Surveys were conducted for this species by Tierra Madre Consultants in 1995 and 1998 in the vicinity of the project area. This species was not found.	Unlikely
Penstemon stephensii * Stephens's beardtongue (perennial herb)	FSC, CNPS 1B	MCBS/ Carbonate, rocky	April-June	Absent. The project site is below the elevational range of this species.	--	Unlikely
Castela emoryi * Crucifixion thorn (perennial shrub)	CNPS 2	MCBS/ dry, gravelly washes, slopes, plains	June-July	Absent. Suitable habitat occurs within the project area for all alignments.	Surveys were conducted for this species by Tierra Madre Consultants in 1995 and 1998 in the vicinity of the project area. This species was not found.	Unlikely
Physalis lobata * Lobed ground-cherry (perennial herb)	CNPS 2	MCBS / Decomposed granitic	September-January	Absent. The project site is below the elevational range of this species.	Surveys were conducted for this species by Tierra Madre Consultants in 1995 and 1998 in the vicinity of the project area. This species was not found.	Unlikely

TABLE 5.8-1
SPECIAL INTEREST PLANT SPECIES OBSERVED OR EXPECTED ON THE CADIZ PROJECT SITE (Continued)

Species	Status[1]	Suitable Habitat/Soils[2]	Flowering Period	Occurrence (P&D Surveys)	Occurrence (Other Surveys)	Likelihood of Occurrence in an Optimal Rainfall Year[3]
Androstephium breviflorum * Small-flowered androstephium (perennial herb)	CNPS 2	MCBS	March-April	Absent. Suitable habitat occurs within the project area for all alignments.	CNDDB records indicate plants observed in 1995 approximately one mile north of Highway 62 and 1.5 mile west of the CRA. This location is approximately 3.25 miles southwest of the southern terminus of the west and combination alignments and 3 miles west of the southern transmission line.	Unlikely

LEGEND

[1] Federal and California Native Plant Society (CNPS) Status Definitions:

FSC	Federal Species of Concern
CNPS List 1B	Plants rare, threatened or endangered in California and elsewhere
CNPS List 2	Plants rare, threatened or endangered in California, but more common elsewhere
CNPS List 4	Plants of limited distribution; a watch list

[2] Plant Community Abbreviations (for suitable habitat occurring on the project site):

MCBS	Mojave Creosote Bush Scrub
DeDns	Stabilized or partially stabilized desert dunes or desert sand fields

[3] Expected Occurrence in an Optimal Rainfall Year:

Unlikely: this plant is a perennial species or the project site is below the elevational range of the species.
Minimal: suitable habitat occurs within the project area, but this annual plant has not been observed during previous surveys in the project vicinity.
Moderate: an annual species that has been observed in the vicinity of the project area during previous surveys.
Expected: this plant was observed within the project area during 1999 field surveys.

* Focused surveys were conducted for these species. General surveys were conducted for the remainder of the species in this table.

TABLE 5.8-2
SPECIAL INTEREST WILDLIFE SPECIES OBSERVED
OR EXPECTED ON THE PROJECT SITE

Species	Status (a)	Suitable Habitat	Occurrence
Reptiles			
Desert tortoise *Gopherus agassizii*	FT,ST	Mojave creosote bush scrub, occasionally rocky areas	Sign observed along the transmission line on the Western and Combination Alternatives, the Eastern and Eastern/Canal Alternatives and along the common area for all Alternatives.
Common chuckwalla *Sauromalus obesus*	FSC	Rocky slopes	Sign observed along the transmission line on the Western and Combination Alternatives. Juvenile near Kilbeck Hills on Eastern, Eastern/Canal and Combination Alternatives.
Rosy boa *Lichanura trivirgata*	FSC	Rocky slopes	Absent, although suitable habitat occurs along the transmission lien on the Western and Combination Alternatives and along Cadiz Road near the Ship Mountains.
Banded gila monster *Heloderma suspectum cinctum*	CSC	Mojave creosote bush scrub	Absent from all project alternatives.
Mojave fringe-toed lizard *Uma scoparia*	CSC	Stabilized or partially stabilized desert dunes or desert sand fields	Observed in sandy habitats in the project area for all alternatives, but not in spreading basin area or along the transmission line on the Western and Combination Alternatives.
Birds			
Northern harrier *Circus cyaneus*	CSC	Open habitats	Observed on the Western and Combination Alternatives.
Sharp-shinned hawk *Accipiter striatus*	CSC	Agriculture, Mojave wash scrub	Observed foraging over agriculture in the well field.
Cooper's hawk *Accipiter cooperii*	CSC	Agriculture, Mojave wash scrub	Absent, although suitable foraging habitat occurs along the conveyance pipeline alignments for all alternatives and agriculture areas in the well field.
Swainson's hawk *Buteo swainsoni*	ST	Agriculture, open habitats	Absent, although suitable foraging habitat occurs in the project area for all alternatives.
Ferruginous hawk *Buteo regalis*	FSC,CSC	Agriculture, open habitats	Observed foraging over agricultural areas in the well fields.
Golden eagle *Aquila chrysaetos*	CSC	Mojave creosote bush scrub, rocky cliffs	Observed foraging over the Western and Combination Alternatives.

TABLE 5.8-2
SPECIAL INTEREST WILDLIFE SPECIES OBSERVED
OR EXPECTED ON THE PROJECT SITE (Continued)

Species	Status (a)	Suitable Habitat	Occurrence
Melin *Falco columbarius*	CSC	Agriculture	Absent, although suitable foraging habitat occurs within the agricultural areas in the well fields.
Prairie falcon *Falco mexicanus*	CSC	Agriculture and rocky cliffs	Observed foraging over the Western Alternative, in the vicinity of the Iron Mountain Pumping Plant (Eastern and Eastern/Canal Alternatives) and in the common area for all alternatives.
Mountain plover *Charadrius montanus*	FC	Agriculture	Absent. No suitable habitat within the project alternatives.
Western burrowing owl *Speotyto cunicularia hypuges*	CSC,FSC	Agriculture, open Mojave creosote bush scrub	Observed along Cadiz Road north of Chubbuck (all alternatives), on the Western Alternative for the conveyance pipeline and in the spreading basins.
Long-eared owl *Asio otus*	CSC	Mojave wash scrub	Observed on the Western and Combination Alternatives.
Black-tailed gnatcatcher *Polioptila melanura*	SA	Mojave creosote bush scrub, Mojave wash scrub	Observed in Mojave wash scrub at multiple locations on all project alternatives.
Crissal thrasher *Toxostoma crissale*	CSC	Mojave wash scrub	Absent. No suitable habitat occurs within the project alternatives.
LeConte's thrasher *Toxostoma lecontei*	CSC	Mojave creosote bush scrub, Mojave wash scrub	Observed primarily in Schulyler Wash at the northern end of the project and along the Western Alternative.
Loggerhead shrike *Lanius ludovicianus*	CSC,FSC	Open habitats	Observed along Cadiz Road north of Chubbuck (all alternatives) and in the vicinity of Schulyler Wash.
Yellow warbler *Dendroica petechia*	CSC	All habitats	Several migrants observed in washes on all project alternatives.
Mammals			
California leaf-nosed bat *Macrotus californicus*	FSC,CSC	Roosts in rock crevices, mines and buildings	None were observed on any project alternative.
Arizona myotis *Myotis occultus*	FSC,CSC	Roosts in crevices, mines, buildings, other miscellaneous habitat	None were observed on any project alternative.
Long-legged myotis *Myotis volans*	FSC	Roosts in crevices, mines, buildings, other miscellaneous habitat	None were observed on any project alternative.
Fringed myotis *Myotis thysanodes*	FSC,CSC	Roosts in crevices, mines, buildings, other miscellaneous habitat	None were observed on any project alternative.

TABLE 5.8-2
SPECIAL INTEREST WILDLIFE SPECIES OBSERVED
OR EXPECTED ON THE PROJECT SITE (Continued)

Species	Status (a)	Suitable Habitat	Occurrence
Cave myotus *Myotis velifer*	FSC,CSC	Roosts in rock cliffs, crevices, mines and buildings	None were observed on any project alternative.
Spotted bat *Euderma maculatum*	FSC,CSC	Roosts in rock crevices, mines and buildings	None were observed on any project alternative.
Townsend's big-eared bat *Chorynorhinus townsendii*	FSC,CSC	Roosts in rock crevices, mines and buildings	None were observed on any project alternative.
Pallid bat *Antrozous pallidus*	CSC	Roosts in crevices, mines, buildings, other miscellaneous habitat	Night roost found in adjacent railroad trestle north of Kilbeck. Hills on Eastern, Eastern/Canal and Combination Alternatives.
Pocketed free-tail bat *Nyctinomops femorosaccus*	CSC	Roosts in crevices, mines, buildings, other miscellaneous habitat	None were observed on any project alternative.
Big free-tail bat *Nyctinomops macrotis*	CSC	Roost in rock cliffs, crevices, mines and buildings	None were observed on any project alternative.
Western mastiff bat *Eumops perotis*	FSC,CSC	Roost in crevices, mines, buildings, other miscellaneous habitat	Foraging individuals were observed at Iron Mountain, Kilbeck Hills and near Ship Mountains (all alternatives)
American badger *Taxidea taxus*	CSC	Mojave creosote bush scrub, rocky slopes and Mojave wash scrub	Potential badger dens were observed along the4 Western Alternatives. Suitable habitat occurs within the project alternatives.
Yuma mountain lion *Felus concoloor browni*	FSC,CSC	Rocky slopes	Absent, although suitable habitat occurs within the project alternatives.
Nelson's bighorn sheep *Ovis canadensis nelsoni*	SA	Rocky slopes	Absent, although potentially suitable habitat occurs in the vicinity of the transmission line on the Western Combination Alternatives.

[a] Status Definitions

Federal

FE Federal Endangered
FT Federal Threatened
FSC Federal Species of Concern
FC Federal Candidate for Endangered or Threatened Listing

State

SE State Endangered
ST State Threatened
SA Special Animal (Fully Protected)
CSC California Species of Special Concern

Wildlife Species

Table 5.8-2, provided earlier, identifies the special interest wildlife species that were detected or were expected to potentially occur in the project area and for which focused or general surveys were conducted. Species that were detected during the surveys include those actually observed as well as those determined to be present by other evidence such as vocalizations, scat, tracks and burrows. A total of fourteen special interest wildlife species were detected during the field surveys. These were desert tortoise (*Gopherus agassizii*), chuckwalla (*Sauromalus obesus*), Mojave fringe-toed lizard (*Uma scoparia)*, northern harrier (*Circus cyaneus)*, sharp-shinned hawk (*Accipiter striatus*), ferruginous hawk (*Buteo regalis)*, golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), burrowing owl (*Speotyto cunicularia hypugea*), long-eared owl *(Asio otus*), black-tailed gnatcatcher (*Polioptila melanura),* LeConte's thrasher (*Toxostoma lecontei*), loggerhead shrike (*Lanius ludovicianus*) and yellow warbler (*Dendroica petechia*).

Desert tortoise sign was observed in very low densities on each of the project alternatives, primarily in Mojave creosote bush scrub, as shown in Figure 5.8-2. However, this animal is relatively more common on the Western and Combination alternatives due to the greater abundance of sign located on the alignment for these Alternatives, than on the Eastern Alternative. Desert tortoise sign observed along the Eastern and Eastern/Canal alternatives included one active burrow and one cover site, one set of tracks and eleven scat. The majority of the sign for these Alternatives was located between 2,000 and 3,000 feet east of the Iron Mountain Pumping Plant. Six active burrows, four carcasses and eleven scat were observed in the Western Alternative. Six active burrows, five carcasses and eleven scat were observed on the Combination Alternative. The majority of the sign observed on the Western and Combination alternatives were along the transmission line. The Cadiz Project area is designated as Category III lands for desert tortoise by the CDCA Plan as amended. The public land management goal for Category III lands is to limit declines of desert tortoise populations to the extent possible using mitigation measures.

Mojave fringe-toed lizards were observed on all project alternatives in areas of stabilized or partially stabilized desert dunes or desert sand fields. Forty-one fringe-toed lizards were located along the Western Alternative, with the majority of these in the vicinity of the Kilbeck Hills. Twelve were observed along the Combination Alternative, with the majority west of the Iron Mountains. Eighteen fringe-toed lizards were observed along the Eastern and Eastern/Canal alternatives, primarily east of the Iron Mountains.

Several special interest bird species were recorded in the project alternatives during field surveys. One northern harrier was observed on the Eastern Alternative, near the southern end of the Kilbeck Hills. Two sharp-shinned hawks and two ferruginous hawks were observed over the agricultural property at the north end of the project area. One adult golden eagle was observed along the west conveyance pipeline alignment, east of the Iron Mountains. Individual prairie falcons were also observed over the west conveyance pipeline alignment, west of the Iron Mountains, and on numerous occasions in the vicinity of the east portal, just east of the Iron Mountain Pumping Plant.

Burrowing owls were found at several locations within the project alternatives, generally in areas of open Mojave creosote bush scrub. These include three in the spreading basins, five along Cadiz-Rice Road between Chubbuck and the vicinity of the Ship Mountains, and one on the west conveyance pipeline alignment, west of the Iron Mountains. One long-eared owl was observed in a wash containing smoke trees along the Western Alternative conveyance facility, west of the Iron Mountains.

Black-tailed gnatcatchers were observed in many locations within the project alternatives, primarily in Mojave wash scrub habitat with substantial smoke tree populations. The largest numbers of gnatcatchers were found in Schulyler Wash, on the east side of the project wellfield. LeConte's thrashers were observed during the field surveys on at least four locations. These included two locations in high quality Mojave wash scrub habitat (both in Schulyler Wash), one in Mojave creosote bush scrub habitat (spreading basins) and one in desert sand field habitat on the west side of the Kilbeck Hills.

Loggerhead shrikes were observed at several locations within the project alternatives, in both Mojave creosote bush scrub and Mojave wash scrub. Shrikes were located along Cadiz-Rice Road in the vicinity of the Ship Mountains and south of Chubbuck, on the north side of the Kilbeck Hills, in two locations within Schulyler Wash and in the project spreading basins. Yellow warblers were observed at several locations and on all of the project alternatives. This species was recorded only as a migrant, especially in areas with substantial Mojave wash scrub.

Special Interest Habitats

Special interest habitats or plant communities are either locally or regionally unique, relatively limited in distribution or are of particular value to wildlife species.

Special interest habitats in the project area include Mojave wash scrub and stabilized or partially-stabilized desert dunes or desert sand fields. These plant communities are considered sensitive by the CDFG. Mojave wash scrub occupies 10,000 to 50,000 acres worldwide and statewide, and stabilized and partially-stabilized desert sand dunes occupy 10,000 to 50,000 acres worldwide and 2,000 to 10,000 acres statewide. Stabilized and partially stabilized desert sand fields occupy 2,000 to 10,000 acres worldwide and statewide (Sawyer and Keeler-Wolf, 1995).

Wildlife Movement Corridors

General Information on Wildlife Movement Corridors

Wildlife movement corridors are areas which link together suitable wildlife habitat. Movement corridors provide a means for wildlife to travel between these areas, which is often essential for their survival for the following reasons: (1) movement between habitats increases out-breeding, thereby increasing genetic fitness and reducing potential detrimental effects of in-breeding; (2) corridors provide escape routes for wildlife populations when they are threatened by fire, predators and/or human disturbance; and (3) wildlife movement corridors effectively increase the available home range of wildlife as they forage for food, water, mates and nesting space. This final reason is particularly important because corridors may allow the presence of animals that require larger areas that might not be available within the specific habitat islands.

Wildlife movement corridors vary greatly in their overall significance. Studies on wildlife movement corridors suggest that major drainages, canyon bottoms and ridgetops, as well as areas that provide important resources for wildlife, are the most important for wildlife movement. In general, two types of corridors exist. Regional corridors allow for movement between large, often widely separated areas. These may connect national forests, mountain ranges or other major wildlife use areas. Local wildlife corridors allow dispersion between smaller, generally more adjacent areas, such as between canyons or ridges, or between important resource areas.

Schulyler Wash, which occurs southeast of the project spreading basins, is a likely stopping point for these and other wildlife that may be travelling between the Marble and Ship mountains. A larger

regional movement corridor connects the Ship Mountains to the Old Woman Mountains to the east. This corridor is outside of the project area.

Wildlife Movement Corridors on the Project Site

The BLM has designated several regional wildlife movement corridors connecting occupied bighorn sheep habitat on the project site or in the project vicinity (Northern and Eastern Colorado Desert Planning Area Map, Figure 5.8-3). A movement corridor connecting occupied bighorn sheep habitat between the Marble Mountains and the Ship Mountains to the southeast traverses the project spreading basin and wellfield areas. This corridor is bisected by the mainline of the BNSF, Historic Route 66 and other roads.

Another regional movement corridor connects occupied bighorn sheep habitat between the Old Woman Mountains and the Iron Mountains to the south. This corridor crosses Danby Dry Lake and the Eastern and Eastern/Canal alternatives. This corridor is bisected by the ARZC rail line and Cadiz Rice Road. A larger regional movement corridor connects the Iron Mountains and the Calumet Mountains to the west. This movement corridor crosses the Western and Combination alternatives. The power transmission line associated with the Western and Combination alternatives crosses suitable habitat at the southern edge of the Iron Mountains. However, evidence of sheep was not found during the survey of this area.

The Kilbeck Hills, located between the Eastern alternative, and the Western and Combination Alternatives water conveyance facilities alignments as shown on Figure 5.8-3, was not identified by the BLM as bighorn sheep habitat. No evidence of bighorn sheep in these hills was found, although there is suitable habitat for bighorn sheep in this area.

5.8.2 CEQA THRESHOLDS OF SIGNIFICANCE

For purposes of CEQA, a project will normally be determined to have a significant adverse environmental impact on biological resources if it results in a:

- Substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status species in local or regional plans, policies or regulations, or by the USFWS or the CDFG.
- Substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations or by the USFWS or the CDFG.
- Substantial adverse effect on a federally protected wetland as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, etc.) through direct removal, filling, hydrological interruption or other means.
- Substantial interference with the movement of any native resident or migratory fish or wildlife species, established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with local policies or ordinances for protection of biological resources, including tree preservation policies or ordinances.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, BLM wildlife management plan or other approved local, regional, state habitat conservation plan or recovery plan.

For a further discussion of CEQA thresholds of significance, see Section 5.20.

5.8.3 METHODOLOGY

Biological resources in the project area were documented using a variety of sources including review of aerial photographs; contacts with technical specialists familiar with the biological resources in the vicinity; review of prior documents (CMBC 1998; Lilburn Corp. 1994, 1995 and 1998; URS Consultants, Inc. 1993); review of the CNDDB (1999); CDFG List of Special-Status Reptiles; State and Federally Listed Endangered, Threatened and Rare Plants of California (1999); CDFG CNDDB Special Plant Lists (1999); BLM California Special Status Plant Species List (1996); and field surveys.

Habitat mapping was based on aerial photographs and field reconnaissance. Field reconnaissance was conducted in February through May 1999 for plants, birds and mammals. Reptiles were surveyed from March through June 1999. Survey protocol for the desert tortoise was conducted as follows: two transects were surveyed within each proposed 200-foot wide construction easement based on a staked centerline. Two additional transects were surveyed approximately 500 feet on either side of the centerline of the 200-foot wide easement. The spreading basin was surveyed using 30-foot transects and then additional surveys were conducted in the area of influence. Four transects were surveyed for the power transmission alignment associated with the Western and the Combination alternatives. More detailed information on survey methodology is provided in the Cadiz Groundwater Storage and Dry-Year Supply Program, Environmental Planning Technical Report: Biological Resources (Metropolitan Report No. 1164, November 1999).

5.8.4 IMPACTS

Direct impacts involve the temporary or permanent physical loss of plant communities, wildlife habitat and special interest plant and wildlife species resulting from site preparation activities such as clearing, grubbing and grading. Direct impacts may also include habitat degradation, fragmentation or modification. Direct impacts would occur on plant communities, wildlife habitat, special interest species and special interest habitats as a result of implementation of the Cadiz Project.

Indirect impacts result from secondary changes to biological resources beyond the area of direct impacts. A 500-foot corridor was surveyed to identify indirect impacts of the 200-foot-wide conveyance facility construction right-of-way on biological resources.

Indirect impacts on plant communities include the potential for erosion, siltation and runoff into washes; soil and water contamination due to construction equipment fluid leakage; and increased susceptibility of adjacent, native habitats to invasion by non-native plant species. In addition, increased public access to areas of the desert that are currently relatively free from human disturbance, including the wilderness areas, was also considered an indirect impact. Fugitive dust created during project construction settles on plants adjacent to the construction zone. This dust can at least temporarily result in reductions in plant photosynthesis, growth and reproduction. The growth of non-native plants leads to increased competition between native and non-native plants for available resources and decreased native species diversity in adjacent, native habitats.

Indirect impacts on wildlife species include the potential for noise, human intrusions into sensitive habitats, night-lighting, the introduction of non-native animals, increased raven population (a predator on young desert tortoise) and increased mortality of wildlife species displaced by construction due to competition for resources in adjacent areas. Local movement patterns for wildlife would be disrupted during construction.

Table 5.8-3 summarizes the temporary and permanent direct impacts on plant communities by project component. For the 200-foot-wide construction right-of-way for the conveyance pipeline associated with all alternatives, temporary impacts are based on a 180-foot temporary impact width, while permanent impacts are based on a 20-foot permanent impact width, the width of the permanent maintenance road. For the 200-foot-wide construction right-of-way associated with the conveyance canal for the Eastern/Canal Alternative, temporary impacts are based on a 120-foot temporary impact width, while permanent impacts are based on an 80-foot permanent impact width (the width of the canal and permanent maintenance road). Impacts of the project wellfield pipeline are based on a 20-foot temporary construction impact width and a 20-foot permanent impact width, the width of the permanent maintenance road. Impacts of the power distribution facility (Western and Combination Alternatives) were based on a 50-foot wide construction corridor with 20 feet of this remaining as a permanent impact.

Eastern Alternative

Impacts on Plant Communities and Wildlife Habitat

Direct Impacts on Plant Communities and Wildlife Habitat. Direct impacts resulting from the implementation of the Eastern Alternative, shown earlier in Table 5.8-3, include the removal of approximately 1,099 acres of Mojave creosote bush scrub (465 acres permanent impact), 13.7 acres of Mojave wash scrub (2.2 acres permanent impact), 165.2 acres of stabilized or partially stabilized desert dunes or desert sand fields (16.5 acres permanent impact), and 3.7 acres of agriculture (2.2 acres permanent impact). Permanent impacts are associated with features such as the spreading basins, maintenance roads, the Cadiz Pumping Plant and associated structures, and the wellfield. The remainder of these impacts are anticipated to be temporary because the plant communities can eventually reestablish themselves in the construction easement where no permanent structures are present. Temporary impacts are primarily a result of the disturbance associated with construction along the conveyance alignments.

Following the completion of construction, natural desert regeneration is anticipated to occur slowly, over a period of years. Seed germination and survival in the desert are rare events, especially for desert annuals. Significant rain events or years may result in abundant seed germination, especially for annual species, but these events may occur once every 10 to 50 years. In addition, the presence of a living, biological crust helps protect germinating seedlings. The absence of this crust following construction combined with the slow rate of crust formation will likely slow natural regeneration of desert plant species within the temporary easement. In addition, the absence of biological soil crusts may increase runoff and decrease infiltration.

The CDFG considers Mojave wash scrub and stabilized desert dunes/desert sand fields to be sensitive communities. Therefore, in accordance with the significance criteria (Section 5.8.2) direct impacts on Mojave wash scrub (13.7 acres) and stabilized or partially stabilized desert dunes or desert sand fields (165.2 acres) resulting from the implementation of the Eastern Alternative are expected to be potentially significant. Salvaging of topsoils, control of invasive weeds and access restriction (mitigation measures B-1 through B-4 described below), will help minimize direct impacts on these plant communities. Additionally, the project is designed so that the conveyance pipeline will cross washes perpendicularly, thereby minimizing impacts to Mojave wash scrub.

Indirect Impacts on Plant Communities and Wildlife Habitat. Short-term indirect impacts resulting from the implementation of the Eastern Alternative are anticipated to include increased potential for site erosion, contamination by equipment fluids, potential loss of vegetation productivity associated with fugitive dust, and an increase in invasive/exotic vegetation, resulting in habitat degradation. In

TABLE 5.8-3
PLANT COMMUNITY IMPACTS BY ALTERNATIVE

	Plant Community Impacts Under the Eastern Alternative							
	Temporary Impacts (Acres)				Permanent Impacts (Acres)			
Project Component	**Mojave Wash Scrub**	**Mojave Creosote Bush Scrub**	**Stabilized/Partially Stabilized Desert Dunes/Sand Fields**	**Agriculture**	**Mojave wash Scrub**	**Mojave Creosote Bush Scrub**	**Stabilized/Partially Stabilized Desert Dunes/Sand Fields**	**Agriculture**
Conveyance Pipeline	10.3	585.3	148.7	--	1.0	30.1	16.5	--
Cadiz Pumping Plant	--	1.7	--	--	--	1.2	--	--
Staging Area	--	9.9	--	--	--	--	--	--
Spreading Basins	--	--	--	--	--	390.0	--	--
Wellfield Pipelines	1.2	37.1	--	1.5	1.2	37.1	--	1.5
Wells + Substations	--	--	--	--	--	6.8	--	0.7
TOTAL	**11.5**	**634.0**	**148.7**	**1.5**	**2.2**	**465.2**	**16.5**	**2.2**

	Plant Community Impacts Under the Western Alternative							
	Temporary Impacts (Acres)				Permanent Impacts (Acres)			
Project Component	**Mojave Wash Scrub**	**Mojave Creosote Bush Scrub**	**Stabilized/Partially Stabilized Desert Dunes/Sand Fields**	**Agriculture**	**Mojave wash Scrub**	**Mojave Creosote Bush Scrub**	**Stabilized/Partially Stabilized Desert Dunes/Sand Fields**	**Agriculture**
Conveyance Pipeline	11.0	550.5	169.9	--	1.1	26.2	18.9	--
West Portal	--	46.9	--	--	--	31.3	--	--
Cadiz Pumping Plant	0.1	1.6	--	--	0.4	1.4	--	--
Staging Area	--	14.6	--	--	--	--	--	--
Spreading Basins	--	--	--	--	--	390.0	--	--
Wellfield Pipelines	1.2	37.1	--	1.5	1.2	37.1	--	1.5
Wells + Substations	--	--	--	--	--	6.8	--	0.7
TOTAL	**12.3**	**650.7**	**169.9**	**1.5**	**2.7**	**492.8**	**18.9**	**2.2**

TABLE 5.8-3
PLANT COMMUNITY IMPACTS BY ALTERNATIVE (Continued)

	Plant Community Impacts Under the Combination Alternative							
	Temporary Impacts (Acres)				Permanent Impacts (Acres)			
Project Component	**Mojave Wash Scrub**	**Mojave Creosote Bush Scrub**	**Stabilized/Partially Stabilized Desert Dunes/Sand Fields**	**Agriculture**	**Mojave wash Scrub**	**Mojave Creosote Bush Scrub**	**Stabilized/Partially Stabilized Desert Dunes/Sand Fields**	**Agriculture**
Conveyance Pipeline	11.9	783.5	177.8	--	1.2	52.1	19.8	--
West Portal	--	46.9	--	--	--	31.3	--	--
Cadiz Pumping Plant	0.1	1.6	--	--	0.4	1.4	--	--
Staging Area	--	14.6	--	--	--	--	--	--
Spreading Basins	--	--	--	--	--	390.0	--	--
Wellfield Pipelines	1.2	37.1	--	1.5	1.2	37.1	--	1.5
Wells + Substations	--	--	--	--	--	6.8	--	0.7
TOTAL	**13.2**	**883.7**	**177.8**	**1.5**	**2.8**	**518.7**	**19.8**	**2.2**

	Plant Community Impacts Under the Eastern/Canal Alternative							
	Temporary Impacts (Acres)				Permanent Impacts (Acres)			
Project Component	**Mojave Wash Scrub**	**Mojave Creosote Bush Scrub**	**Stabilized/Partially Stabilized Desert Dunes/Sand Fields**	**Agriculture**	**Mojave wash Scrub**	**Mojave Creosote Bush Scrub**	**Stabilized/Partially Stabilized Desert Dunes/Sand Fields**	**Agriculture**
Conveyance Pipeline	9.8	545.6	130.0	--	1.5	69.9	35.2	--
Cadiz Pumping Plant	--	1.7	--	--	--	1.2	--	--
Staging Area	--	11.5	--	--	--	--	--	--
Spreading Basins	--	--	--	--	--	390.0	--	--
Wellfield Pipelines	1.2	37.1	--	1.5	1.2	37.1	--	1.0
Wells + Substations	--	--	--	--	--	6.8	--	0.7
TOTAL	**11.0**	**595.9**	**130.0**	**1.5**	**2.7**	**505.0**	**35.2**	**2.2**

addition, indirect impacts on plant communities and wildlife habitat are anticipated every five to seven years due to maintenance activities associated with pipeline inspection, which requires the evacuation of water from the pipe through blowoff structures. Public access into native habitats is also an indirect impact of the project. Mitigation measure B-3 will minimize impacts from non-native plant species.

During construction, there may be an increase in site erosion. Once the vegetation is removed and the site is disturbed, erosion potential increases. If there is rainfall, uncompacted soils are subject to being transported into washes. This would result in increased siltation. Because the washes are ephemeral (water runs only during and after rainfall events), there is no permanent aquatic life in the washes, and erosion control measures would be incorporated as identified earlier in Section 5.4. Therefore, no significant impacts are anticipated due to an increase in site erosion.

Refueling and maintenance of equipment would result in the potential for spills of petrochemicals such as fuel and lubricants. All fuel and lubricant spills must be cleaned up in accordance with existing regulations. Because the quantity of fuels and lubricants are relatively small, the extent of disturbance would also be confined to a generally small area, the impacts to biological resources would generally not be significant. However, due to the sensitivity of the desert wash habitat and the potential for petrochemicals to be transported downstream in a rain event, impacts to the desert wash habitat from accidental spills would be adverse. However, due to the low likelihood of occurrence and existing regulations requiring clean up of hazardous materials spills, the limited extent of this potential impact would not be significant. Mitigation measure B-5, provided later in section 5.8.5, would reduce this impact to below a level of significance.

Dust levels are generally high in the desert because of the high winds and limited vegetative cover. Vegetation, therefore, is adapted to withstand some dust deposition that is washed off during rain events. Unless fugitive dust reaches a level that the plants could not photosynthesize, the impacts are likely to be adverse, but not significant. Air quality mitigation measures A-2 and A-4 through A-7, provided earlier in Section 5.6, will reduce these potential adverse impacts on plant communities.

Blowoff structures will release water in the pipeline slowly (less than one cubic foot per second at peak flow), over a matter of days, and a majority of the water will percolate into the ground rapidly, thereby limiting the area of potential impact. Blowoff structures will be located at low points in the pipeline, where water would otherwise naturally collect. Because of the infrequent operation and limited area of effect, blowoff structure operations would not have a significant impact on native vegetation or wildlife communities.

Long-term indirect impacts under the Eastern Alternative are anticipated to include an increased susceptibility of adjacent, native habitats to invasion by non-native, weedy plant species, including mustard (*Brassica* sp.) and Russian thistle (*Salsola tragus*). These non-native species may have short-term competitive advantages over native species due to soil disturbance. Due to the highly invasive nature of these species, the adverse impacts of these species on the formation of native biological soil crusts and the slow recovery rates of desert plant communities, these temporary impacts are anticipated to be potentially significant. Weed control along the alignment (mitigation measure B-3, below) will also reduce these potential indirect impacts on plant communities and wildlife habitat to below a level of significance.

In addition, long-term indirect impacts of the Eastern Alternative are expected to include an increase in public access to relatively undisturbed portions of the desert, including off-road vehicle use between the Iron Mountain Pumping Plant and Cadiz-Rice Road. These areas have been relatively free from human disturbance since General Patton used this area for military training in the 1940s

and have good biological crust cover throughout most of this area. Impacts due to increased public access to these areas are anticipated to be potentially significant. Control of access to the pipeline alignment maintenance road with locked gates (mitigation measure B-4, below) will minimize long-term disturbance and reduce these potential indirect impacts on plant communities and wildlife habitat to below a level of significance.

Beneficial Impacts on Wildlife Species

The project has the potential for beneficial impacts on some wildlife species. There will be short-term increases in water availability associated with the spreading basins. Water availability (particularly open water) is extremely limited in the desert environment. When water is pumped to the spreading basins, birds and bats may take advantage of the new water source. Because the spreading basin will be fenced, it would provide a limited benefit for mammals and reptiles that could not pass through or over the fence. This benefit is expected to be short-term and not significant.

Impacts on Special Interest Biological Resources

Direct Impacts on Special Interest Plant Species. The Eastern Alternative will result in direct adverse impacts on ribbed cryptantha, a CNPS List 4 plant. These impacts will involve the temporary removal of occupied and suitable habitat, and recovery of this species within the alignment will likely be slow. However, ribbed cryptantha occurs fairly commonly in areas of stabilized and windblown sand along and adjacent to the conveyance pipeline alignment south of where it parallels Cadiz-Rice Road and east of the Kilbeck Hills and the Iron Mountains.

Construction of the pipeline would result in the localized loss of individuals of a sensitive species, ribbed cryptantha. Although the field reconnaissance did not identify any other sensitive plant species, there is minimal-to-moderate potential for some of these species to be present in the area of impact. Because the project would impact at least one sensitive plant species (ribbed crypthanta), the impacts are considered significant in accordance with the significance threshold (Section 5.8.2). Mitigation measures B-1 and B-3, which require salvaging of the topsoil and exotics control, respectively, would reduce this impact to below a level of significance.

Indirect Impacts on Special Interest Plant Species. Short-term indirect impacts may occur to special interest plant species located adjacent to the construction zone of the Eastern Alternative due to dust pollution, which could temporarily reduce their photosynthetic capabilities. As discussed previously in the Eastern Alternative Section, these impacts are not considered significant. Air quality mitigation measures (AQ-2, and AQ-4 through AQ-7) will reduce these potential adverse imparts on special interest plant species to below a level of significance.

Long-term indirect impacts may occur on special interest plant species located adjacent to the construction zone due to increased competition from non-native, weedy species that may have an increased abundance and cover following construction. In addition, increased public access to areas adjacent to the final maintenance road for the Eastern Alternative may increase trampling and mortality of special interest plant species as a result of increase in foot traffic or off-road vehicle use. Topsoil salvaging and access control (mitigation measures B-1 and B-4, below) will reduce these potential indirect impacts on special interest plant species to below a level of significance.

Direct Impacts on Special Interest Wildlife Species. The Eastern Alternative is expected to result in direct adverse impacts on the following wildlife species: desert tortoise, Mojave fringe-toed lizard, chuckwalla, sharp-shinned hawk, ferruginous hawk, prairie falcon, western burrowing owl, black-

tailed gnatcatcher, LeConte's thrasher, loggerhead shrike, yellow warbler, pallid bat, western mastiff bat and American badger. These impacts are related to the direct removal of occupied habitat as well as impacts on foraging habitat. These impacts on the special interest wildlife species observed or detected in the project alternatives are described in the following sections.

Desert Tortoise. During site preparation activities for the Eastern Alternative, direct removal of habitat occupied, or potentially occupied, by the desert tortoise is expected. In addition, construction of the pipeline and related facilities may potentially result in injury or mortality of tortoises occurring within the project site. Based on the surveys conducted by CMBC, tortoises were present in very low densities on all project alternatives. On the Eastern Alternative, the majority of tortoise evidence was observed in an area approximately 2,000 to 3,000 feet east of the Iron Mountain Pumping Plant. Areas to the north, along this alternative, support few, and in most places, probably no, tortoises.

Although the desert tortoise occurs in very low densities within the Eastern Alternative, any impacts on this federal and state threatened species, or its habitat, are considered significant. Mitigation measures B-1 through B-4 and B-8 through B-31 will reduce these impacts on desert tortoise to below a level of significance.

Other Special Interest Wildlife Species. The Eastern Alternative is expected to result in the direct removal of occupied habitat for Mojave fringe-toed lizard, western burrowing owl, black-tailed gnatcatcher, LeConte's thrasher, loggerhead shrike and American badger. Based on field survey results, eighteen fringe-toed lizards were observed along the Eastern Alternative in areas of fine, windblown sand, primarily east of the Iron Mountains. Burrowing owls were found at four locations along the conveyance pipeline where the alignment parallels Cadiz-Rice Road, and at three locations in the spreading basins. Black-tailed gnatcatchers were observed in many of the washes within this Alternative, with the largest numbers occurring in Schulyler Wash, on the east side of the wellfields. LeConte's thrashers were observed in at least three locations, including two locations of Schulyler Wash, and one in the spreading basins. Loggerhead shrikes were observed at several locations within this Alternative, primarily along Cadiz-Rice Road (in the vicinity of the Ship Mountains and south of Chubbuck), and within Schulyler Wash. Numerous digs and enlarged ground squirrel burrows with characteristic American badger claw marks on the side walls were found in this Alternative, indicating the potential for direct impacts on this species. Impacts to western burrowing owl and American badger are potentially significant. Mitigation measures B-6 and B-7 will reduce potential direct impacts on these species to below a level of significance. Impacts resulting from the Eastern Alternative on habitat occupied by the remainder of the above species were considered adverse but not significant due to: 1) the broad distribution of these species in the region; 2) the lack of any significant populations occurring in the impact area; 3) abundance of suitable habitat in the vicinity of the project site; 4) the relatively short-term extent of the impacts; and 5) the relatively low sensitivity status of these species.

The Eastern Alternative is also expected to result in the removal of foraging habitat for sharp-shinned hawk, ferruginous hawk, prairie falcon, yellow warbler, pallid bat and western mastiff bat. With the exception of the prairie falcon, pallid bat and western mastiff bat, these species are expected to occur as winter visitors or occasional migrants in the project area. Although the falcon potentially occurs as a breeder in this area, no breeding habitat for this species will be impacted by this Alternative. Pallid bat and western mastiff bat make local, seasonal movements, and are not migratory. Because no breeding roosts were observed on this alternative, only impacts on foraging habitat for these species are expected. Impacts on foraging habitat for these species will not be considered significant due to: 1) the broad distribution of these species in the region; 2) the abundance of suitable habitat in the project vicinity; and 3) the lack of any significant resources on this alternative that would be critical to the continued occurrence of these species in the area.

Due to the factors identified above, no other significant impacts are expected on other sensitive wildlife species that were recorded in the vicinity of this alternative, or that may potentially occur due to suitable habitat and distribution.

Indirect Impacts on Special Interest Wildlife Species. The Eastern Alternative may result in indirect impacts on desert tortoise and other special interest wildlife species. These effects are described below.

Desert Tortoise. The Eastern Alternative may result in adverse, but insignificant, indirect impacts on desert tortoise. Common ravens are well known predators on young tortoises. Ravens may potentially be attracted to the project area due to trash left by workers, the presence of power poles or the presence of water in the spreading basins. The project spreading basins are not expected to attract significantly greater raven populations, however, because water is already present in the agricultural areas in the vicinity of the project site, and a large raven population currently exists in this area (as recorded during field surveys in February 1999). Mitigation measures B-21 and B-24 will further reduce the likelihood of ravens being attracted to the project area.

There is also the potential for mortality of tortoises associated with access to the proposed spreading basins and will reduce this impact to below a level of significance. Mitigation measure B-22 will provide tortoise exclusion fences around the basins. There is also the potential for increased mortality and habitat degradation from vehicles, and illegal collecting by unauthorized access into the project area along pipeline maintenance roads. Mitigation measure B-4 will deter unauthorized public access into the project area and will reduce this impact to below a level of significance.

Other Special Interest Wildlife Species. Indirect, short- and long-term impacts on other special interest species identified above may potentially occur as a result of: 1) startle effects related to noise and motion; 2) increased potential for site erosion; 3) habitat degradation from fugitive dust, siltation, invasion by non-native weedy plant species and contamination by equipment fluids; and 4) potential introduction of non-native wildlife species, which may compete with native species for limited resources. Due to the short-term nature and limited extent of these potential impacts, the indirect impacts on special interest species resulting from this Alternative will not be considered significant.

Impacts on Wildlife Movement. As a result of the conveyance pipeline and wellfield features of the Eastern Alternative, trenching and other construction-related activities may potentially result in short-term restrictions on wildlife movement. These impacts will be generally limited to the larger, relatively mobile mammal species such as bighorn sheep, coyote and fox. Movement corridors for bighorn sheep have been identified along the southern part of the Eastern Alternative pipeline, between the Iron Mountains on the west and the Old Woman Mountains on the east. Short-term impacts may also be expected on less mobile species, such as reptiles and smaller mammals, which is related more to the potential for temporary disruption. Multiple pipeline construction sites will be used along the length of the alignment, with each site having 2,500 linear feet of pipeline (trench) under construction at any one time. Due to the limited duration and relatively limited extent of pipeline construction, the lack of natural features that would potentially concentrate movement through any particular area in the project site, and the relatively low volume of wildlife movement expected in these areas, the potential impacts on wildlife movement are not considered significant.

The fencing proposed around the spreading basins at the north end of the project may potentially result in a permanent impediment to wildlife movement (e.g., bighorn sheep) between the Marble Mountains to the northwest and the Ship Mountains to the east. These impacts would not be

considered significant due to the reasons discussed above, as well as the substantial amount of open space remaining in the immediate vicinity of the basins. Other project facilities, due to their smaller extent, will not be considered an impact on wildlife movement.

Western Alternative

Impacts on Plant Communities and Wildlife Habitat

Table 5.8-1, shown earlier, summarizes the temporary (short-term) and permanent (long-term) direct impacts on plant communities by project component. For the water conveyance pipeline, temporary impacts are based on a 180-foot temporary impact width, while permanent impacts are based on a 20-foot permanent impact width, the width of the permanent maintenance road. Impacts of the southern transmission line are based on a 50- foot construction corridor (20-foot permanent impact). Impacts of the wellfield pipeline are based on a 20-foot temporary impact width and a 20-foot permanent impact width, the width of the permanent maintenance road.

Direct Impacts on Plant Communities and Wildlife Habitat. Direct impacts of the Western Alternative, not including the transmission line, are anticipated to include approximately 1,143.5 acres of Mojave creosote bush scrub (492.8 acres permanent), 15 acres of Mojave wash scrub (2.7 acres permanent), 188.8 acres of stabilized or partially stabilized desert dunes or desert sand fields (18.9 acres permanent), and 3.7 acres of agriculture (2.2 acres permanent). Permanent impacts are associated with features such as the project spreading basins, maintenance roads, the Cadiz Pumping Plant and associated structures, and the wellfield. The remainder of these impacts are anticipated to be temporary because the plant communities can re-establish themselves in the construction easement where no permanent structures are present. Temporary impacts are primarily a result of construction along the conveyance alignments.

As discussed for the Eastern Alternative, there are potentially significant impacts associated with the direct loss of native plant communities and associated wildlife habitat, increased erosion and siltation, fugitive dust and impacts to plant productivity, increased invasive and non-native species, habitat degradation from fueling or maintenance activities, access to native habitats that are not currently subject to indirect impacts from humans and impacts to desert tortoises. Mitigation measures B-1 through B-33 would also be required for this Alternative. Mitigation measures identified in Air Quality to reduce fugitive dust (AQ-2 and AQ-4 through AQ-7) and Topography to reduce erosion (G-4) would also be required under this Alternative. These mitigation measures would reduce these indirect impacts to below a level of significance.

Indirect Impacts on Plant Communities and Wildlife Habitat. In addition to those general impacts identified earlier, long-term indirect impacts of the Western Alternative are expected to include an increase in public access to relatively undisturbed portions of the desert. These impacts may be greater than for the Eastern Alternative because the Western Alternative has a greater extent of relatively inaccessible areas and a greater occurrence of sensitive habitats (desert dunes and sand fields, desert washes). Should the Western Alternative be constructed, it is expected that public access by off-road vehicles will increase in the areas between the northern terminus of the Colorado River Aqueduct near the West Portal and Cadiz-Rice Road near the Kilbeck Hills. Although there is already an access road adjacent to the Cadiz Dunes Wilderness Area, the addition of a second, more easily drivable access road near this wilderness area that may increase undesirable public entry. These impacts due to increased public access are anticipated to be potentially significant. Access control using locked gates (mitigation measure B-4, below), will reduce these potential indirect impacts on plant communities and wildlife habitat to below a level of significance.

Beneficial Impacts on Wildlife Species

Beneficial impacts of the Western Alternative on wildlife species would be the same as those discussed for the Eastern Alternative.

Impacts on Special Interest Biological Resources

Direct Impacts on Special Interest Plant Species. The Western Alternative will result in direct impacts on ribbed crypthantha, a CNPS List 4 plant. These impacts will involve the temporary removal of occupied and suitable habitat, and recovery of this species within the alignment will likely be slow. Numbers of individuals were not estimated for the determination of project impacts, because ribbed crypthantha occurs fairly commonly in areas of stabilized and windblown sand along and adjacent to the conveyance pipeline alignment west of the Kilbeck Hills and the Iron Mountains.

Construction of the pipeline would result in the localized loss of individuals of a sensitive species, ribbed crypthantha. Although the field reconnaissance did not identify any other sensitive plant species, there is minimal-to-moderate potential for some of these species to be present in the area of impact. Because the project would impact at least one sensitive plant species (ribbed crypthantha) the impacts are considered potentially significant in accordance with the significance thresholds (Section 5.8.2). Mitigation measures B-1 and B-3, requiring salvaging of the topsoil and exotics control, respectively, would reduce this impact to below a level of significance.

Indirect Impacts on Special Interest Plant Species. Short-term indirect impacts may occur on special interest plant species located adjacent to the construction zone as a result of the Western Alternative due to dust pollution, which could temporarily reduce their photosynthetic capabilities. These indirect impacts are considered potentially adverse, but not significant. Air quality mitigation measures (AQ-2 and AQ-4 through AQ-7) will minimize these potential adverse impacts on plant communities.

Long-term indirect impacts may occur on special interest plant species adjacent to the construction zone due to increased competition with non-native, weedy species that may have an increased abundance and cover following construction. In addition, increased public access to the areas adjacent to the final maintenance road for the Western Alternative may increase trampling and mortality of special interest plant species via increases in foot traffic or off-road vehicle use. These impacts are anticipated to be potentially significant. Weed control and access control (mitigation measures B-3 and B-4, below) will reduce these potential indirect impacts on special interest plant species to below a level of significance.

Direct Impacts on Special Interest Wildlife Species. The Western Alternative is expected to result in direct adverse impacts on the following wildlife species: desert tortoise, Mojave fringe-toed lizard, chuckwalla, northern harrier, sharp-shinned hawk, ferruginous hawk, golden eagle, prairie falcon, western burrowing owl, long-eared owl, black-tailed gnatcatcher, LeConte's thrasher, loggerhead shrike, yellow warbler, western mastiff bat and American badger. These impacts are related to the direct removal of occupied habitat as well as impacts on foraging habitat. Impacts on the special interest wildlife species observed or detected in the project alternatives are evaluated below.

Desert Tortoise. During site preparation activities for the Western Alternative, direct removal of habitat occupied, or potentially occupied, by the desert tortoise is expected. In addition, construction of the pipeline and related facilities may potentially result in injury or mortality of tortoises occurring within the project site. Based on the surveys conducted by CMBC, tortoises were present in very low densities in all project alternatives. In the Western Alternative, the majority of tortoise evidence

was observed along the southern segment of the power distribution facilities. This area was considered by CMBC to support relatively more tortoises than any other portion of this Alternative. Areas to the north, along this Alternative, were considered to support few, and in some places, probably no, tortoises.

Although the desert tortoise occurs in very low densities along most of the Western Alternative, any impacts on this federal and state threatened species, or its habitat, are potentially significant. Mitigation measures B-8 through B-31 will reduce these impacts on desert tortoise to below a level of significance.

Other Special Interest Wildlife Species. The Western Alternative is expected to result in the direct removal of occupied habitat for Mojave fringe-toed lizard, western burrowing owl, black-tailed gnatcatcher, LeConte's thrasher, loggerhead shrike and American badger. Based on field survey results, forty-one fringe-toed lizards were observed along the Western Alternative, west of the Iron Mountains and Kilbeck Hills in areas of fine, windblown sand. Burrowing owls were found at four locations along the conveyance pipeline west of the Iron Mountain and along Cadiz Road, and at three locations in the vicinity of the project spreading basins. Black-tailed gnatcatchers were observed in washes within this Alternative along Cadiz Road, with the largest numbers occurring in Schulyler Wash, on the east side of the project wellfield. LeConte's thrashers were observed in at least three locations, including two locations of Schulyler Wash and one in the vicinity of the project spreading basins. Loggerhead shrikes were observed at several locations within this Alternative, along Cadiz Road (in the vicinity of the Ship Mountains), and within Schulyler Wash. Numerous digs and enlarged ground squirrel burrows with characteristic American badger claw marks on the side walls were found on this Alternative, indicating the potential for direct impacts on this species. More of these burrows were identified on this Alternative than on the Eastern and Eastern/Canal Alternatives. Impacts to western burrowing owl and American badger are potentially significant. Mitigation measures B-6 and B-7 will reduce potential direct impacts on these species to below a level of significance. Impacts resulting from the Western Alternative on habitat occupied by the remainder of the above species were considered adverse but not significant due to: 1) the broad distribution of these species in the region; 2) the lack of any significant populations occurring in the impact area; 3) the abundance of suitable habitat in the vicinity of the project site; 4) the relatively short-term extent of the impacts; and 5) the relatively low-sensitivity status of these species.

The Western Alternative is also expected to result in the removal of foraging habitat for northern harrier, sharp-shinned hawk, ferruginous hawk, golden eagle, prairie falcon, long-eared owl, yellow warbler and western mastiff bat. With the exception of the prairie falcon, golden eagle and western mastiff bat, these species would be expected to occur as winter visitors or occasional migrants in the project area. Although the falcon and eagle potentially occur as breeders in this area, no breeding habitat for these species will be impacted by this Alternative. Western mastiff bat makes local, seasonal movements, and is not migratory. Because no breeding roosts were observed on this Alternative, only impacts on foraging habitat for this species are expected. Impacts on foraging habitat for the above species would not be considered significant due to: 1) the broad distribution of these species in the region; 2) the abundance of suitable habitat in the project vicinity; and 3) the lack of any significant resources in this Alternative that would be critical to the continued occurrence of these species in the area.

Due to the factors identified above, no other significant impacts are expected on other sensitive wildlife species that may potentially occur in the Western Alternative due to suitable habitat and distribution.
Indirect Impacts on Special Interest Wildlife Species. As discussed for the Eastern Alternative, indirect impacts on desert tortoise resulting from implementation of the Western Alternative are potentially significant. Mitigation measures B-4, B-21, B-22 and B-25 will reduce indirect impacts

on the tortoise to below a level of significance. Indirect impacts of the Western Alternative on other special interest wildlife species are not considered significant due to the short-term nature and limited extent of these potential impacts.

Impacts on Wildlife Movement. As discussed previously under the Eastern Alternative, impacts to wildlife movement due to implementation of the Western Alternative are not anticipated to result in significant impacts. This is because of the limited duration and relatively limited extent of conveyance pipeline construction, lack of natural features that would potentially concentrate movement through any particular area and the relatively low volume of wildlife movement in the area.

Combination Alternative

Impacts on Plant Communities and Wildlife Habitat

Direct impacts resulting from the implementation of the Combination Alternative, not including the southern segment of the power transmission line, are anticipated to include 1,402.4 acres of Mojave creosote bush scrub (518.7 acres permanent), 16 acres of Mojave wash scrub (2.8 acres permanent), 197.6 acres of stabilized or partially stabilized desert dunes or desert sand fields (19.8 acres permanent), and 3.7 acres of agriculture (2.2 acres permanent). Permanent impacts are associated with features such as the spreading basins, maintenance roads, the Cadiz Pumping Plant and associated structures, and the wellfield. The remainder of these impacts are anticipated to be temporary because the plant communities can re-establish themselves in the construction easement where no permanent structures are present. Temporary impacts are primarily a result of construction along the conveyance alignments.

As discussed for the Eastern Alternative, there are potentially significant impacts associated with the direct loss of native plant communities and associated wildlife habitat, including increased erosion and siltation; increased invasive and non-native species; habitat degradation from fueling or maintenance activities; access to native habitats that are not currently subject to indirect impacts from humans; and impacts to desert tortoises. Mitigation B-1 through B-33 would also be required for this Alternative which would reduce these impacts to below a level of significance.

In addition, long-term indirect impacts of the Combination Alternative are expected to include an increase in public access to areas of the desert. These impacts may be greater than those for the Eastern Alternative because the Combination Alternative has a greater extent of relatively inaccessible areas and a greater occurrence of sensitive habitats including desert dunes and sand fields, and desert washes. The Combination Alternative is expected to increase public access by off-road vehicle use of areas between the northern terminus of the CRA near the west portal and Cadiz Road south of Chubbuck. These areas are more remote than those on the Eastern Alignment and have been relatively free from human disturbance since General Patton used this area for military training in the 1940s. These impacts due to increased public access to these areas are anticipated to be potentially significant and greater than for the Eastern Alignment. Access control using locked gates (mitigation measure B-4, below) will reduce these potential indirect impacts on plant communities and wildlife habitat to below a level of significance.

Impacts on Special Interest Biological Resources

Direct Impacts on Special Interest Plant Species. Construction of the Combination Alternative will result in direct impacts on ribbed cryptantha, a CNPS List 4 plant. These impacts will involve the temporary (short-term) removal of occupied and suitable habitat, although recovery of this species within the alignment will likely be slow. Numbers of individuals were not estimated for the determination of project impacts because ribbed cryptantha occurs fairly commonly in areas of stabilized and windblown sand along the conveyance pipeline alignment west of the Kilbeck Hills and the Iron Mountains.

Construction of the pipeline would result in the loss of individuals of a sensitive species, ribbed crypthantha. Although the field reconnaissance did not identify any other sensitive plant species, there is a minimal-to-moderate potential for some of these species to be present in the area of impact. Because the project would impact at least one sensitive plant species (ribbed crypthantha) the impacts are considered potentially significant in accordance with the significance thresholds (Section 5.8.2). Mitigation measures B-1 and B-3, requiring salvaging of the topsoil and exotics control, respectively, would reduce this impact to below a level of significance.

Indirect Impacts on Special Interest Plant Species. Short-term indirect impacts may occur on special interest plant species located adjacent to the construction zone as a result of the Combination Alternative due to dust pollution, which could temporarily reduce their photosynthetic capabilities. The production of fugitive dust may decrease plant photosynthesis and production of special interest plant species adjacent to the 200-foot construction corridor for this Alternative. Therefore, these indirect impacts are considered to be adverse. Air quality mitigation measures (AQ-2 and AQ-4 through AQ-7) will reduce these potential adverse impacts on plant communities to below a level of significance.

Long-term indirect impacts may occur on special interest plant species adjacent to the construction zone due to increased competition with non-native, weedy species that are anticipated to have an increased abundance and cover following construction. In addition, increased public access to the areas adjacent to the final maintenance road for the Combination Alternative may increase trampling and mortality of special interest plant species as a result of increases in foot traffic or off-road vehicle use. Weed control and access control using locked gates (mitigation measures B-3 and B-4, below) will reduce these potential indirect impacts on special interest plant species to below a level of significance.

Direct Impacts on Special Interest Wildlife Species. The Combination Alternative is expected to result in direct adverse impacts on the following wildlife species: desert tortoise, Mojave fringe-toed lizard, chuckwalla, northern harrier, sharp-shinned hawk, ferruginous hawk, golden eagle, prairie falcon, western burrowing owl, long-eared owl, black-tailed gnatcatcher, LeConte's thrasher, loggerhead shrike, yellow warbler, pallid bat, western mastiff bat and American badger. These impacts are related to the direct removal of occupied habitat as well as impacts on foraging habitat. Impacts on the special interest wildlife species observed or detected in the project alternatives are evaluated below.

Desert Tortoise. During site preparation activities for the Combination Alternative, direct removal of habitat occupied, or potentially occupied, by the desert tortoise is expected. In addition, construction of the pipeline and related facilities may potentially result in injury or mortality of tortoises occurring within the project site. Based on the surveys conducted by CMBC, tortoises were present in very low densities in all project alternatives. In the Combination Alternative, the majority of tortoise evidence was observed along the southern transmission line. This area was considered by

CMBC to support relatively more tortoises than any other portion of this Alternative. Areas to the north, along this Alternative, support few, and in most places, probably no, tortoises.

Although the desert tortoise occurs in very low densities along most of the Combination Alternative, any impacts on this federal and state threatened species, or its habitat, are considered potentially significant. Mitigation Measures B-1 through B-4 and B-8 through B-31 will reduce these impacts on desert tortoise to below a level of significance.

Other Special Interest Wildlife Species. The Combination Alternative is expected to result in the direct removal of occupied habitat for Mojave fringe-toed lizard, western burrowing owl, black-tailed gnatcatcher, LeConte's thrasher, loggerhead shrike and American badger. Based on field survey results, twelve fringe-toed lizards were observed within the Combination Alternative in areas of fine windblown sand, primarily west of the Iron Mountains. Burrowing owls were found at three locations along the conveyance pipeline, and at three locations in the spreading basins. Black-tailed gnatcatchers were observed in many of the washes within this Alternative, with the largest numbers occurring in Schulyler Wash, on the east side of the wellfields. LeConte's thrashers were observed in at least three locations, including two locations of Schulyler Wash and one in the vicinity of the project spreading basins. Loggerhead shrikes were observed at several locations within this alternative, primarily along Cadiz Road in the vicinity of the Ship Mountains, and within Schulyler Wash. Numerous digs and enlarged ground squirrel burrows with characteristic American badger claw marks on the side walls were found in this Alternative, indicating the potential for direct impacts on this species. More of these burrows were identified on this Alternative than on the Eastern and Eastern/Canal Alternatives. Impacts to western burrowing owl and American badger are potentially significant. Mitigation measures B-6 and B-7 will reduce potential direct impacts on these species to below a level of significance. Impacts resulting from the Combination Alternative on habitat occupied by the remainder of the above species were considered adverse but not significant due to: 1) the broad distribution of these species in the region; 2) the lack of any significant populations occurring in the impact area; 3) the abundance of suitable habitat in the vicinity of the project site; 4) the relatively short-term extent of the impacts; and 5) the relatively low-sensitivity status of these species.

The Combination Alternative is also expected to result in the removal of foraging habitat for northern harrier, sharp-shinned hawk, ferruginous hawk, golden eagle, prairie falcon, long-eared owl, yellow warbler, pallid bat and western mastiff bat. With the exception of the prairie falcon, golden eagle, pallid bat and western mastiff bat, these species would be expected to occur only as winter visitors or occasional migrants in the project area. Although the falcon and eagle potentially occur as breeders in this area, no breeding habitat for these species will be impacted by this Alternative. Pallid bat and western mastiff bat make local, seasonal movements, and are not migratory. Because no breeding roosts were observed in this alternative, only impacts on foraging habitat for these species are expected. Impacts on foraging habitat for these species would not be considered significant due to: 1) the broad distribution of these species in the region; 2) the abundance of suitable habitat in the project vicinity; and 3) the lack of any significant resources in this Alternative that would be critical to the continued occurrence of these species in the area.

Due to the factors identified above, no other significant impacts are expected on other sensitive wildlife species that were recorded in the vicinity of this Alternative, or that may potentially occur due to suitable habitat and distribution.

Indirect Impacts on Special Interest Wildlife Species. As discussed for the Eastern Alternative, indirect impacts of the Combination Alternative on desert tortoise are potentially significant. Mitigation measures B-4, B-21, B-22 and B-25 will reduce indirect impacts on the tortoise to below

a level of significance. Indirect impacts of this alternative on other special-interest wildlife species are not considered significant due to the short-term nature and limited extent of these potential impacts.

Impacts on Wildlife Movement. Due to the similarity of impacts between the Combination and Eastern alternatives on wildlife movement, refer to the discussion of impacts on wildlife movement provided earlier for the Eastern Alternative.

Eastern/Canal Alternative

Impacts on Plant Communities and Wildlife Habitat

The Eastern/Canal Alternative would follow the same conveyance alignment as the Eastern Alternative, but would include an approximately eight-mile long segment of open canal in the Danby Dry Lake area. This canal section would be an open cut similar to the Colorado River Aqueduct. The canal would cause greater permanent acreage losses of affected desert plant communities than the buried pipeline of the Eastern Alternative as shown earlier on Table 5.8-1.

Direct impacts to plant communities resulting from the implementation of the Eastern/Canal Alternative include removal of approximately 1,100.9 acres of Mojave creosote bush scrub (505 acres permanent impact), 13.7 acres of Mojave wash scrub (2.7 acres permanent impact), 165.2 acres of stabilized or partially stabilized desert dunes or desert sand fields (35.2 acres permanent impact), and 3.7 acres of agriculture (2.2 acres permanent impact). Permanent impacts are associated with features such as the canal, spreading basins, maintenance roads, the Cadiz Pumping Plant and associated features, and the wellfield. The remainder of these impacts are anticipated to be temporary because the plant communities can re-establish themselves in the construction easement where no permanent structures are present. Temporary impacts are primarily a result of construction along the conveyance alignment.

As discussed for the Eastern Alternative, there are potentially significant impacts associated with the direct loss of native plant communities and associated wildlife habitat, increased erosion and siltation, increased invasive and non-native species, habitat degradation from fueling or maintenance activities, access to native habitats that are not currently subject to indirect impacts from humans and impacts to desert tortoises. Mitigation measures B-1 through B-33 would also be required for this alternative which would reduce these impacts to below a level of significance.

In addition to those general impacts identified earlier, long-term indirect impacts of the Eastern/Canal Alternative are expected to include an increase in public access to relatively undisturbed parts of the desert. The impacts of this Alternative are expected to be similar to those of the Eastern Alternative and are expected to be potentially significant. Access control using locked gates (mitigation measure B-4, below) will reduce these potential indirect impacts on plant communities and wildlife habitat to below a level of significance.

Impacts on Special Interest Biological Resources

Direct Impacts on Special Interest Plant Species. The Eastern/Canal Alternative is expected to result in direct impacts to ribbed cryptantha, a CNPS List 4 plant to a similar extent as the Eastern Alternative. Both alternatives would have the same temporary construction impacts, but additional permanent loss of habitat due to the canal footprint would result in somewhat greater permanent impacts to this species under Eastern/Canal Alternative. Mitigation measures B-1 and B-3, identified below, would reduce this impact to below a level of significance.

Indirect Impacts on Special Interest Plant Species. Long-term indirect impacts may occur on special interest plant species adjacent to the construction zone due to increased competition with non-native, weedy species that may have an increased abundance and cover following construction. In addition, increased public access to the areas adjacent to the final maintenance road for the Eastern/Canal Alternative may increase trampling and mortality of special interest plant species as a result of increases in foot traffic or off-road vehicle use. Soil salvaging and access control (mitigation measures B-1 and B-4) will reduce these potential indirect impacts on special interest plant species to below a level of significance.

Direct Impacts on Special Interest Wildlife Species. Implementation of the Eastern/Canal Alternative is expected to result in direct adverse impacts on the following wildlife species: desert tortoise, Mojave fringe-toed lizard, chuckwalla, sharp-shinned hawk, ferruginous hawk, prairie falcon, western burrowing owl, black-tailed gnatcatcher, LeConte's thrasher, loggerhead shrike, yellow warbler, pallid bat, western mastiff bat and American badger. These impacts are related to the direct removal of occupied habitat as well as impacts on foraging habitat. Impacts on the special interest wildlife species observed or detected in the project alternatives are evaluated below.

Desert Tortoise. The impacts of the Eastern/Canal Alternative on desert tortoise would include greater levels of impacts as the Eastern Alternative due to the presence of open water more of the time under this Alternative. In addition to these impacts, the canal portion of this alternative could block movement of tortoises in the vicinity of Danby Dry Lake. With appropriate fencing along the canal, tortoise mortality due to drowning is not expected. Mitigation measures B-1 through B-4 and B-8 through B-31 will reduce these impacts on desert tortoise to below a level of significance.

Other Special Interest Wildlife Species. The impacts of the Eastern/Canal Alternative are expected to be the same as for the Eastern Alternative as discussed earlier. Impacts of the Eastern/Canal Alternative on habitats utilized by special interest wildlife species are considered to be adverse, but not significant.

Indirect Impacts on Special Interest Wildlife Species. The Eastern/Canal Alternative may result in indirect impacts on desert tortoise and other special interest wildlife species. These effects are described below.

Desert Tortoise. The Eastern/Canal Alternative may result in indirect impacts on desert tortoise similar to those that would be caused by the Eastern Alternative discussed above. Ravens may potentially be attracted to the project area due to trash left by workers, the presence of power poles or the presence of water in the spreading basins. The spreading basins are not expected to attract significantly greater raven populations, however, because water is already present in the agricultural areas in the vicinity of the project site, and a large raven population currently exists in this area as recorded during field surveys in February 1999. Mitigation measures B-21 and B-25 reduce the likelihood of ravens being attracted to the project area to below a level of significance.

There is also the potential for mortality of tortoises associated with access to the proposed spreading basins and the canal. Therefore, mitigation measure B-22 will provide tortoise exclusion fences around the basins and canal, if used. There is a potential for increased mortality and habitat degradation from vehicles and an increased potential for illegal collecting due to unauthorized access to the project area along pipeline maintenance roads. Mitigation measure B-4 has been proposed to deter unauthorized public access into the project area. These measures would reduce these impacts to below a level of significance.

Other Special Interest Wildlife Species. Indirect, short- and long-term impacts on other special interest species identified above may potentially occur as a result of: 1) startle effects related to noise and motion; 2) increased potential for site erosion; 3) habitat degradation from fugitive dust, siltation, invasion by non-native weedy plant species and contamination by equipment fluids; and 4) potential introduction of non-native wildlife species, which may compete with native species for limited resources. Due to the short-term nature and limited extent of these potential impacts, however, the indirect impacts on special interest species resulting from this Alternative would not be considered significant.

Impacts on Wildlife Movement. The seven mile long canal segment of the Eastern/Canal Alternative would pose a substantial and permanent barrier to movement of desert tortoise, bighorn sheep, and other wildlife, and would be a potential source of mortality for all terrestrial species. The canal section is within a BLM designated bighorn sheep corridor and would potentially adversely impact movement of this species. Blocking of wildlife movement, combined with the threat of mortality to threatened and endangered species, as well as other wildlife, would be considered significant. Fencing the canal section would reduce the potential for direct mortality of terrestrial species. Siphons would be provided at major canal wash crossings and would reduce adverse impacts resulting from blocking of a designated wildlife corridor to below a level of significance.

Construction of the conveyance pipeline and wellfield features, including trenching and other construction-related activities, may potentially result in short-term restrictions on wildlife movement. Fencing of the spreading basins at the north end of the project may redirect bighorn sheep movement between the Marble Mountains to the northwest and the Ship Mountains to the east. These impacts would be the same as for the Eastern Alternative and are not considered significant.

No Project Alternative

Because the No Project Alternative will not involve construction or operation of any of the project components, this Alternative will not result in any impacts on biological resources.

5.8.5 MITIGATION MEASURES

The project alternatives will result in potentially significant, adverse impacts on Mojave wash scrub, stabilized and partially stabilized desert dunes and desert sand fields, and desert tortoise. Because the project impacts are similar for each alternative, mitigation measures are provided below for all significant, adverse impacts on biological resources. Each alternative would involve implementation of these measures at a level appropriate for the alternative and would reduce impacts to below a level of significance.

The following mitigation measures are provided to reduce direct impacts on native plant communities and wildlife habitat to below a level of significance.

B-1 Topsoil will be salvaged by the contractor prior to construction and replaced following construction. The top 4 to 6 inches of topsoil, including all vegetative materials (shrubs, etc.) and biological soil crusts, where present, will be salvaged during construction and stockpiled prior to use of the site to help preserve the excavated native soil. Topsoil storage shall not exceed three months. Topsoil piles shall be kept dry and less than four feet high and dry. The vegetation removed from the construction zone by grubbing or blading will act as mulch and will be stored along with the topsoil. The subsoil removed during pipeline construction will be stored separately and replaced after the pipeline is in place. The upper two feet of backfilled subsoil will not be compacted. At the completion of construction in a

given area, the temporary impact area shall be recontoured to approximate pre-project conditions and an estimated 4 to 6 inches of the topsoil and mulch will be spread over the subsoil, leaving a rough surface. A sheepsfoot roller will be used to roughen the soil surface, providing microhabitats for seeds to germinate and capturing available rainfall. The Plans and Specifications will specify topsoil storage locations and depths and necessary equipment.

B-2 During construction, to the extent practicable, the areas to be cleared of all vegetation and topsoil shall be restricted to the pipeline construction trench and permanent access road. For all other areas, vegetation shall be crushed in place while maintaining most of the roots intact.

The following mitigation measures are provided to reduce indirect impacts on native plant communities and wildlife habitat to below a level of significance.

Mitigation measure G-4 identified in Section 5.4.5 (Topography, Geology Seismicity and Soils) will reduce impacts from erosion on native plant communities.

Mitigation measures AQ-2 and AQ-4 through AQ-7 in Section 5.6.5 (Air Quality) will minimize potential adverse impacts on native plant communities due to fugitive dust.

B-3 Following the completion of construction of any portion of the project, and for two years thereafter, invasive non-native plants such as mustards (*Brassica* spp.), Russian thistle (*Salsola tragus*), camel knapweed (*Centaurea ssp.*), and tamarisk (*Tamarix pariflora*) will be removed from the temporary impact area after summer and winter rains before these weed species can set seed. In addition, maintenance of the project spreading basins will include eradication of invasive, non-native plants (including tamarisk) from the area after summer and winter rains before these weed species can set seed. No herbicides will be used for eradication in the project spreading basins.

B-4 After construction has been completed, Metropolitan shall discourage unauthorized access into the desert from any new access created by this project through such measures as barrier fences, boulders, topographic impediments (grading potential access points where vehicles will have difficulty gaining access) and signage.

B-5 No equipment shall be fueled in a wash. All fueling activities shall occur with adequate protection to provide the immediate clean-up of any accidentally spilled fuels. All maintenance (e.g., oil changes, repairs) shall take place in the designated staging areas. Provisions for the safe transport, storage and disposal of all materials shall be provided.

The following mitigation measure is provided to reduce potential direct impacts on western burrowing owl to below a level of significance.

B-6 Between the period of February and July prior to any site preparation, grading or clearing, focused surveys will be conducted for burrowing owls in areas of suitable habitat (Mojave wash scrub, Mojave creosote bush scrub) 100 feet on either side of the conveyance pipeline or associated facilities. These surveys, conducted by a qualified biologist familiar with the owl and its habitat, will determine the location of burrowing owls, as well as the location and status of active burrows.

"Passive relocation" of owls will be conducted during the non-breeding season (approximately February through July) wherever active burrows are found in the construction easement or within 100 feet of the easement limits. Passive relocation will involve the elimination of owl roosting sites in the construction easement while the adult owls are away from their burrows, as well as the elimination of any other potentially suitable burrows within 100 feet of the construction easement. If owls are found at active nest sites within 100 feet of construction, these areas will be avoided until after the completion of nesting activities and at which time the young are determined by the biologist to be independent of the adults.

The following mitigation measure is provided to reduce potential direct impacts on American badger and desert kit fox to below a level of significance.

B-7 Occupied American badger and desert kit fox burrows will be identified during pre-construction surveys. Removal of these species and removal of the burrows from the construction corridor will be accomplished following consultation with the CDFG.

Mitigation Measures for Desert Tortoise Applicable during Construction of the Cadiz Project and Management Plan Monitoring Facilities

The following mitigation measures are provided to reduce potential direct impacts on desert tortoise to below a level of significance. Upon completion of federal and State endangered species permitting, these measures may be refined or additional measures required.

B-8 Metropolitan shall designate a field contact representative (FCR) who will be responsible for overseeing compliance with protective stipulations for the desert tortoise during construction and for coordination of compliance with the BLM. The FCR must be on-site during all project activities that occur within habitat for the desert tortoise. The FCR shall have the authority to halt all project construction activities that are in violation of the stipulations. The FCR shall have a copy of all stipulations when work is being conducted on the site. The FCR may be a crew chief or field supervisor, a project manager, any other employee of Metropolitan, or a contracted biologist.

B-9 All construction employees who work on the Cadiz Project facilities shall participate in a Metropolitan-sponsored education program. Metropolitan is responsible for ensuring that the education program is developed and presented prior to conducting activities. New employees shall receive formal approved training prior to working on the Cadiz Project facilities. The employee education program must be approved by the BLM, USFWS and CDFG prior to the presentation of the program. The program may consist of a class presented by a qualified biologist (BLM or contracted) or a video. The program shall cover the following topics at a minimum:

- Distribution of the desert tortoise.
- General behavior and ecology of the desert tortoise.
- Sensitivity of the desert tortoise to human activities.
- Legal protection for the desert tortoise.
- Penalties for violations of state or federal laws related to protected species.
- Reporting requirements.
- Project protective mitigation measures.

B-10 During construction, only biologists authorized by the USFWS, CDFG, BLM, or NPS, if on NPS-managed lands, shall handle desert tortoises.

B-11 During project construction, the area of disturbance shall be confined to the smallest practical area, considering topography, placement of facilities, location of burrows, public health and safety, and other limiting factors. Work area boundaries shall be delineated with flagging or other marking to minimize surface disturbance associated with vehicle straying. Special habitat features, such as burrows, identified by the qualified biologist shall be avoided to the extent possible. To the extent possible, previously disturbed areas within the project site shall be used for the stockpiling of excavated materials, storage or equipment, location of office trailers, and parking of vehicles. Metropolitan, in consultation with the qualified biologist, shall ensure compliance with this measure.

B-12 Except when absolutely required by the project and as explicitly stated in the project permit, employees must use established or proposed roads. Established roads are those that are graded, bladed, or consist of an imbedded set of tire tracks. "Cross-country" vehicle use may be used to access monitoring facility locations for purposes of facility installation, operation or maintenance where those facilities are unavoidably located at some distance from an existing road and must use a vehicle to accomplish the task (e.g. drill rig, truck with pump for taking water samples from observation wells). Such cross-country travel in desert tortoise habitat must be accomplished with the assistance of a qualified biologist to avoid and minimize harm to desert tortoise and any active burrows. All other cross-country vehicle use is prohibited.

B-13 Desert tortoises may be handled only by the authorized biologist and only when necessary. In handling desert tortoises, the authorized biologist shall follow the techniques for handling desert tortoises contained in "Guidelines for Handling Desert Tortoises during Construction Projects" (Desert Tortoise Council 1994, as revised 1999).

B-14 The authorized biologist shall maintain a record of all desert tortoises handled. This information shall include for each tortoise:

1. The locations (narrative and maps) and dates of observations.

2. General condition and health, including injuries and state of healing and whether animals voided their bladders.

3. Location moved from and location moved to.

4. Diagnostic markings (i.e., identification numbers or marked lateral scutes).

5. Slide photograph of each handled desert tortoise.

B-15 No later than 90 days after completion of construction or termination of activities, the authorized biologist shall prepare a report for the BLM and CDFG, and, as appropriate, NPS. The report shall document the effectiveness and practicality of the mitigation measures, the number of tortoises excavated from burrows, the number of tortoises moved from the site, the number of desert tortoises killed or injured, and the specific information for each handled desert tortoise as described in measure B-14. The report may make recommendations for modifying the stipulations to enhance protection of the desert tortoise or to make it more

workable. The report shall provide an estimate of the actual acreage (by habitat types) disturbed by various aspects of the operation.

The initial installation of monitoring facilities within desert tortoise habitat or when installation involves access by cross-country vehicle travel through desert tortoise habitat, the biologist shall address these facilities within the above report. Thereafter and throughout the term of the project, installation or modification of monitoring facilities or vehicle-assisted operation and maintenance (other than for travel via established roads) shall be documented using the Completion Form and procedures specified in the USFWS/CDFG endangered species permitting.

B-16 Upon injuring, killing or finding an injured or dead desert tortoise, Metropolitan is to notify the USFWS, BLM, CDFG, and NPS, if on NPS-managed lands, within three days of the finding. Written notification must be made within three days of the finding, both to the Ventura USFWS office and to the USFWS's Division of Law Enforcement in Torrance. The information provided must include the date and time of the incident (if known), location of the carcass or injured animal, a photograph, cause of death, if known, and other pertinent information.

An injured tortoise shall be transported to a qualified veterinarian for treatment at the expense of Metropolitan. If an injured tortoise recovers, the Ventura USFWS office shall be contacted for final disposition of the animal.

B-17 During construction, vehicles shall not exceed 35 miles per hour between Cadiz-Rice Road and the Iron Mountain Pumping Plant.

B-18 Workers shall inspect for tortoises under a vehicle prior to moving the vehicle. Signage shall be designed and attached to each vehicle in the construction/installation area. The intent of the signage will be to remind the driver to inspect the area prior to moving the vehicle. Signage may be placed on door handle, window, steering wheel or other visible location. If a desert tortoise is present, the authorized biologist shall be notified and shall move the tortoise from the construction site.

B-19 No dogs or other domesticated animals shall be allowed at the construction/installation sites in desert tortoise habitat. Pack animals used in the installation, operation and maintenance of the monitoring facilities shall be controlled at all times, and not be allowed to wander within desert tortoise habitat.

B-20 Prior to filling any construction trench, the trench shall be inspected by the qualified biologist to ensure that no desert tortoise may have entered into the trench. If a desert tortoise is found, the authorized biologist shall move the tortoise to a safe location.

B-21 During construction and monitoring facility installation, all trash and food items shall be promptly contained within closed, raven and wildlife-proof containers. These shall be regularly removed from the project site to an authorized site to reduce the attractiveness of the area for ravens and other predators of the desert tortoise.

B-22 A chain-link fence shall be constructed around the outside of the spreading basin facility immediately after construction on the facility (and the canal, if used) has been completed (and the canal, if used). The depth that the fence will be buried below the surface approximately 12 inches.

B-23 After construction has been completed, Metropolitan shall discourage unauthorized access into the desert from any new access created by this project through such measures as barrier fences, boulders, topographic impediments (grading potential access points such that vehicles will have difficulty gaining access), and signage.

B-24 Power distribution facilities will be designed such that the cross members slope downward at an angle of approximately 45 degrees to minimize the potential for raven nesting. Monitoring facilities shall be designed to discourage nesting by ravens.

B-25 A desert tortoise clearance survey shall be conducted no earlier than 30 days prior to any construction-related ground disturbance. Should a tortoise be identified, no disturbance shall occur within 20 feet or as specified by the qualified biologist until the tortoise is relocated in accordance with B-13. Should a burrow be identified, the burrow will need to be excavated in accordance with adopted protocol.

B-26 In conformance with the 1994 Desert Tortoise (Mojave Population) Recovery Plan and the 1991 document entitled "Compensation for the Desert Tortoise" approved by the Desert Tortoise Management Oversight Group, Metropolitan shall provide offsite property at a 1:1 ratio for impacts to desert tortoise habitats (Mojave wash scrub, Mojave creosote bush scrub, desert dunes/sandy fields) as identified in Table 5.8-3. For installation of monitoring facilities, the impacted areas of desert tortoise habitat shall be compensated at the appropriate ratio (1:1 in BLM Category III, and 5:1 in BLM Category I or in designated desert tortoise critical habitat.) This area shall be permanently protected and managed with emphasis for the protection and preservation of desert tortoise. Fee title to such mitigation property shall be conveyed to either the BLM, NPS, or the CDFG for protection and management purposes.

Mitigation Measures for Desert Tortoise Applicable to Operations and Maintenance of the Cadiz Project

The following mitigation measures are provided to reduce potential direct impacts on desert tortoise to below a level of significance. Upon completion of federal and state permitting, these measures may be refined or additional measures required.

B-27 All operations and maintenance employees who inspect, maintain, repair, or otherwise visit the Cadiz Project conveyance pipeline, spreading basins, well field or monitoring facilities within desert tortoise habitat shall participate in the Metropolitan-sponsored education program outlined in B-9 prior to conducting field work in the specified areas.

B-28 Operations and maintenance employees shall inspect under parked vehicles for tortoises prior to moving the vehicle. If a tortoise is present, the employee shall wait 15 minutes for the tortoise to move, and may move the vehicle thereafter if it can be done without harming the tortoise. If the tortoise does not move within 15 minutes and the vehicle cannot be moved without the tortoise, the operations and maintenance employees are authorized to pick up the tortoise and move it out of the way while wearing latex gloves. Should such handling occur, Metropolitan shall notify BLM, USFWS, CDFG, and NPS if on NPS-managed lands, and shall indicate the date and location of such incident.

B-29 Upon injuring or killing a desert tortoise during operations and maintenance activities, Metropolitan will notify the USFWS, BLM, CDFG, and NPS if on NPS-managed lands,

within three days of the finding. Written notification must be made within three days of the finding, both to the Ventura USFWS office and to the USFWS's Division of Law Enforcement in Torrance. The information provided must include the date and time of the incident (if known), location of the carcass or injured animal, a photograph, cause of death, if known, and other pertinent information.

An injured tortoise shall be transported by an authorized biologist to a qualified veterinarian for treatment at the expense of Metropolitan. If an injured tortoise recovers, the Ventura USFWS office shall be contacted for final disposition of the animal.

B-30 Prior to the first use of the blowoff valves to dewater the conveyance pipeline for routine maintenance purposes, the area in the vicinity of each valve to be so operated shall be surveyed for desert tortoise by an authorized biologist. The first operation of the blowoffs shall be monitored to evaluate the possible effects on desert tortoise and its habitat. The authorized biologist shall remove any tortoises present in affected areas that appear subject to possible harm from the operation of the blowoff valves, and shall promptly notify BLM, USFWS, and CDFG if any tortoise was relocated. Metropolitan shall submit a report to BLM, USFWS, and CDFG documenting the findings from the operation of the blowoffs. This report and subsequent coordination among Metropolitan, BLM, USFWS, and CDFG shall be used to determine the appropriate level and focus of survey and monitoring, if any, required for subsequent operation of each of the blowoff valves.

B-31 In the event of repair or modification of conveyance or wellfield pipelines that entail unearthing of substantial reaches of buried facilities, the repair/modification shall be treated as a construction activity and the following conservation measures shall apply: B-1, B-2, B-8 through B-16, B-18 through B-21, and B-25.

The following mitigation measures are provided to specifically address the CDFG's requirements for a Streambed Alteration Agreement pursuant to section 1601 of the California Fish and Game Code, and reduce impacts to wash habitat to below a level of significance.

B-32 Metropolitan shall mulch and stockpile vegetation grubbed from the pipeline construction right-of-way within washes along with the topsoil from those areas as discussed above in the project description. Grubbing and removal of vegetation and topsoil along the pipeline alignment shall be limited to the approximately 50-foot-wide swath within the construction right-of-way that is needed for pipeline trenching and the permanent access road. Vegetation shall be crushed in place on other portions of the pipeline construction right-of-way. Following completion of construction of each portion of the pipeline, the area of temporary disturbance shall be recontoured to approximate pre-project conditions and the stockpiled topsoil and mulched vegetation randomly spread across the recontoured area. A sheep's foot shall then be rolled across the treated area. Mulched vegetation and topsoil shall be stockpiled for a maximum of three months prior to respreading.

B-33 Metropolitan shall provide offsite property that replaces impacted wash habitat at a 1:1 ratio. This shall be accomplished in conjunction with property acquired to compensate for impacts to desert tortoise habitat as identified in measure B-26, above.

The following mitigation measure is provided to specifically address cumulative impacts to desert tortoise, and reduce potential impacts below a level of significance.

B-34 Cumulative impacts to desert tortoise habitat associated with the installation of Management Plan monitoring facilities, excepting any cross-country vehicle travel, will not exceed 25 acres. Metropolitan shall provided to BLM the global positioning system (GPS) coordinates for this surface disturbance when it occurs within a Desert Wildlife Management Area (DWMA).

5.8.6 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Eastern Alternative

The Eastern Alternative would not have any impact on a federally protected wetland, conflict with any local policies or ordinances for protection of biological species or conflict with any adopted biological management plan. Therefore, there are no significant unmitigated impacts associated with these thresholds of significance.

The Eastern Alternative would result in impacts to two plant community types designated as sensitive by the CDFG. These two plant community types, stabilized or partially stabilized desert dunes or desert sand fields and Mojave wash scrub, are designated as threatened by the CDFG. This designation is given when it is determined that only 10,000 to 50,000 acres of the plant community remain. Construction of the Eastern Alternative impacts 165.2 acres of stabilized or partially stabilized desert dunes or desert sand fields and 13.7 acres of Mojave wash scrub.

Permanent impacts of the Eastern Alternative are limited to 16.5 acres of stabilized or partially stabilized desert dunes or desert sand fields and 2.2 acres of Mojave wash scrub. Conservatively assuming that only 10,000 acres of each of these two plant community types exist, then the permanent impacts of the Eastern Alternative comprise 0.17 percent of the remaining stabilized or partially stabilized desert dunes or desert sand fields and 0.02 percent of the remaining Mojave wash scrub.

In addition to the permanent impacts disclosed above, are those additional temporary impacts that are expected within the construction easement. Temporary impacts to stabilized or partially stabilized desert dunes or desert sand fields are estimated at 165.2 acres. This represents a relatively small percentage impact of 1.65 percent to the remaining community type, assuming just 10,000 acres remain. Temporary impacts to Mojave wash scrub are estimated at 13.7 acres. This represents a small percentage impact of 0.14 percent of the remaining plant community type, again assuming that just 10,000 acres remain.

These permanent and temporary impacts associated with the Eastern Alternative do not comprise a substantial percentage of the remaining acreage of these community types. These impacts do not, therefore, constitute "substantial" adverse impacts in terms of the threshold of significance. In addition, an extensive mitigation program is proposed to reduce the level of these insignificant impacts and is expected to enhance the recovery time for dependent flora and fauna. These mitigation components include the following:

- Construction worker training,
- Restricted/limited vegetation removal,
- Salvage of topsoil,
- Control of construction vehicle fueling/maintenance to prevent soil contamination
- Post construction replacement and re-contouring of topsoil,
- Post construction weed control,

- Access controls and
- Replacement acreage for temporary and permanent acreage losses of Mojave wash scrub and desert tortoise habitat at a 1:1 ratio.

These measures will reduce the insignificant, temporary impact to the sensitive plant communities and assist in their recovery. Moreover, when these mitigation measures are considered in conjunction with the fact that the permanently affected acreage is small in comparison to the amount of remaining acreage for the two sensitive plant communities, it is clear that the threshold of significance of a "substantial adverse effect" is not exceeded. Therefore, there would be no remaining significant adverse impacts to sensitive plant communities.

The habitats affected by the Cadiz Project provide limited habitat values for the desert tortoise as evidenced by only very limited sign of tortoise use. Notwithstanding the limited value to desert tortoise, extensive mitigation measures have been proposed to reduce the magnitude of impact to desert tortoise to below a level of significance. These measures include the above measures to restore tortoise habitat that is directly affected by the Eastern Alternative, including stockpiling, replacing and re-contouring topsoil, controlling weeds, access controls, etc. and others to reduce direct impacts to individual animals that may be found on the Cadiz Project site. To minimize the potential for incidental take of desert tortoise by the Cadiz Project, measures are included that require specific design features and actions by construction and operations and maintenance personnel as described earlier in this section. Mitigation measures also include replacement of desert tortoise habitat at a 1:1 ratio for both temporary and permanent acreage losses. With the implementation of these measures, impacts to the desert tortoise are reduced to below a level of significance. Impacts to other special interest species were not determined to be significant prior to mitigation as discussed in Section 5.8.4.

Western Alternative

The significance of impacts for the Western Alternative is generally the same as for the Eastern Alternative. No significant impacts would remain following mitigation. However, the Western Alternative results in slightly greater effects. It permanently impacts 18.8 acres of stabilized or partially stabilized desert dunes or desert sand fields and 2.7 acres of Mojave wash scrub, slightly more than the Eastern Alternative. In addition, the Western Alternative temporarily impacts 188 acres of stabilized or partially stabilized desert dunes and desert sand fields and 15 acres of Mojave wash scrub. Like the Eastern Alternative, these impacts are not substantial relative to the total amounts of these plant communities that remain.

The temporary indirect impacts of the Western Alternative are greater due to its greater extent in areas that are now relatively inaccessible. Over the long term, even with access controls, it is expected that public access by off-road vehicles will increase in the areas between the West Portal and the Cadiz Dunes Wilderness Area due to its more remote location. Like the Eastern Alternative, impacts to the desert tortoise are mitigated to below a level of significance.

Combination Alternative

The significance of impacts for the Combination Alternative is generally the same as for the Eastern Alternative. No significant impacts would remain following mitigation. However, the Combination Alternative results in slightly greater effects than the Eastern or Western Alternatives. It permanently impacts 19.8 acres of stabilized or partially stabilized desert dunes or desert sand fields and 2.8 acres of Mojave wash scrub. The Combination Alternative temporarily impacts 197.6 acres of stabilized or partially stabilized desert dunes or desert sand fields and 16 acres of Mojave wash

scrub. Similar to the Eastern and Western Alternatives, the amounts of affected plant communities are not substantial, relative to the acreage of the plant communities that remain and no significant impacts would remain after mitigation.

Like the Western Alternative, the Combination Alternative results in greater temporary impacts than the Eastern Alternative due to its greater extension in areas that are now relatively inaccessible. It also results in the same long term public access impacts as the Western Alternative. Like the Eastern and Western Alternatives, impacts to the desert tortoise would be mitigated to below a level of significance.

Eastern/Canal Alternative

The significance of impacts for the Eastern/Canal Alternative is generally the same as for the Eastern Alternative. No significant impacts would remain following mitigation. However, the Eastern/Canal Alternative has the most effects among the Cadiz Project Alternatives. It permanently impacts 35.2 acres of stabilized or partially stabilized desert dunes or desert sand fields and 2.7 acres of Mojave wash scrub. The Eastern/Canal Alternative temporarily impacts 165.2 acres of stabilized and partially stabilized desert dunes or desert sand fields and 13.7 acres of Mojave wash scrub. Similar to the Eastern, Western and Combination Alternatives, the impacts to these sensitive plant communities are not substantial relative to the remaining acreage of these resources.

In addition, the canal segment of the Eastern/Canal Alternative would cross an identified wildlife movement corridor and constrain the passage of animals between the Iron Mountains and Old Woman Mountains. Siphons would be provided at major washes along the canal, however, allowing for wildlife movement.