Alternative R Gas Pipeline Corridor

The impacts of Alternative R would be the same as the Proposed Action.

Alternative T Gas Pipeline Corridor

Construction of the gas pipeline along the Alternative T gas pipeline corridor would result in crossing the Big Sandy River approximately 3 to 4 miles north of Wikieup. The Big Sandy River is ephemeral in this area, so it is likely that the river would be dry during pipeline installation. Thus, there would be little potential for surface water quality impacts to occur during construction. Some increase in sedimentation and turbidity could occur when the river later flows across the trenched area in response to a substantial precipitation event. This potential impact would be temporary, and it is likely that the river water would naturally have elevated turbidity due to entrainment of fines that collect on the surface of the channel during periods of no flow. Implementation of the best management practices contained in the Proposed Action would reduce the potential for impacts on surface water quality. Therefore, the impacts of this alternative would be less than significant.

No-Action Alternative

Under the No-Action Alternative, the Project would not be constructed and there would be no change to, or disturbance of, existing surface water resources within the Big Sandy Valley.

3.5.2.6 Mitigation and Residual Impacts

If adopted, the mitigation measure described in Section 3.4.2.5 regarding conversion of existing surface water irrigation rights to instream flow rights, would avoid significant impacts on surface water flow. With implementation of this measure, no residual significant impacts are expected.

If adopted, the following measure would be implemented to minimize adverse impacts not considered to be significant:

- The small wash between the evaporation ponds and evaporation pond dike would be designed and constructed to prevent substantial erosion and ensure the integrity of the pond.

3.6 FLOODPLAINS

This section describes the affected environment and environmental consequences relative to floodplains. This section complies with 10 CFR 1022, Floodplain/Wetlands Environmental Review Requirements. The Final EIS will contain a Statement of Findings explaining why the Proposed Action would be located in a floodplain and a list of alternatives considered, and describe steps that would be taken to minimize harm to or within any floodplain.

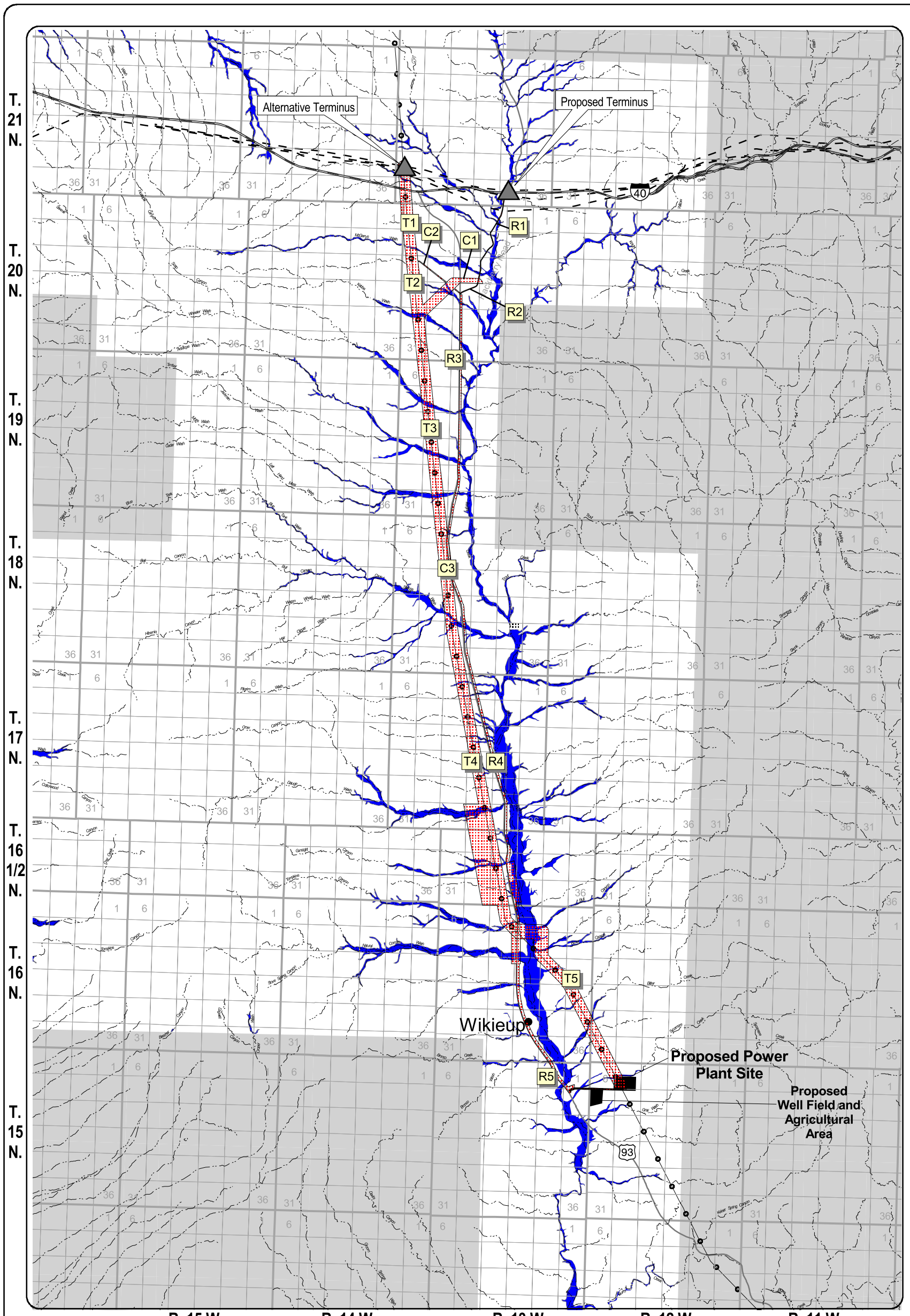
3.6.1 Affected Environment

The following sections describe the current floodplain conditions. The description of current conditions represents the baseline for the assessment of impacts and environmental consequences.

Areas of potential flooding (100-year and 500-year floodplains) as determined by the Federal Emergency Management Agency (FEMA) have been identified in the vicinity of the proposed Project and are presented on Figure 3.6-1.

The proposed power plant site, which is located mainly in the southwest quarter of Section 5, T15N, R12W, is situated in Zone C, which is defined by FEMA to include all areas of minimal flooding.

The proposed gas pipeline corridor crosses the Big Sandy River, minor tributaries, and several washes.



Legend

Resource Components

- Zone A - Areas of 100 year flood; base flood elevations and flood hazard factors not determined.
- Zone D - Areas of undetermined, but possible, flood hazards.
- Zone X - Areas of minimal flooding.
- Area Not Included

Project Components

- Pipeline Corridor Segments
- Proposed Pipeline Corridor - R1,C1,T3,C3,T4,R5
- Alternative R Corridor - R1,R2,R3,C3,R4,R5
- Alternative T Corridor - T1,T2,T3,C3,T4,T5
- Proposed Plant Facilities

General Reference

- Existing Pipelines
- Mead-Liberty/Mead-PhoenixTransmission Lines
- Stream/River
- Interstate (40)
- U.S. Route (93)

Floodplain Map of the Big Sandy Basin

Big Sandy Energy Project EIS

0 5

Scale in Miles

Universal Transverse Mercator Projection
1927 North American Datum
Zone 12

N

Figure 3.6-1

x:/bigsandy/projects/floodplain.apr

The floodplains that would be crossed by the proposed pipeline corridor are classified as Zone A, which are areas of the 100-year flood; base flood elevations and flood hazard factors have not been determined. One tributary crossing in corridor segment R5 is classified as Zone A0, which is an area of 100-year shallow flooding where depths are between 1 and 3 feet; the average depth of inundation in this case is 2 feet, but no flood hazard factors have been determined. A list of the floodplains crossed by the proposed and alternative gas pipeline corridors is presented in Table 3.6-1.

3.6.1.1 Region of Influence

The region of influence for assessing impacts on floodplains and washes includes all facilities related to the Project. The Project parcels, well sites, access roads, pipeline corridors, and potential areas for the OPGW installation were evaluated to determine the level of possible floodplain disturbance.

3.6.1.2 Existing Conditions

Proposed Power Plant Site

The proposed power plant site is located in the southeastern portion of the Big Sandy groundwater basin, which occupies an area of approximately 800 square miles. The primary drainage and surface water resource in the basin is the Big Sandy River.

The proposed power plant site and substation are located between Sycamore Creek and Gray Wash, which are both westerly flowing tributaries to the Big Sandy River. The site is crossed by several southerly and southwesterly flowing ephemeral drainages that are tributaries to Gray Wash.

TABLE 3.6-1
FLOODPLAIN CROSSINGS BY THE PROPOSED AND ALTERNATIVE PIPELINE CORRIDORS

Proposed Route	Alternative R	Alternative T
Big Sandy River	Big Sandy River	Big Sandy River
Sycamore Creek	Sycamore Creek	Sycamore Creek
Bronco Creek	Bronco Creek	Bitter Creek
Tributary #1 (AO)	Tributary #1 (AO)	Tompkins Canyon Creek
Natural Corrals Wash	Natural Corrals Wash	Gunsight Canyon Creek
Tompkins Canyon Creek	Tompkins Canyon Creek	Deluge Wash
Gunsight Canyon Creek	Gunsight Canyon Creek	Cane Springs Wash
Deluge Wash	Deluge Wash	Moss Wash
Cane Springs Wash	Cane Springs Wash	Antelope Wash
Moss Wash	Moss Wash	Wheeler Wash
Antelope Wash	Antelope Wash	Kabba Wash
Wheeler Wash	Wheeler Wash	McGarrys Wash
Kabba Wash	Kabba Wash	10 Minor Tributaries
Bottleneck Wash	Bottleneck Wash	
McGarrys Wash	McGarrys Wash	
14 Minor Tributaries	29 Minor Tributaries	

Note: All floodplains crossed by the proposed and alternative gas pipeline corridors are classified as Zone A except Tributary #1, which is classified as Zone A0.

The proposed power plant site and substation are located in an area of minimal flooding, outside of the 100-year and 500-year floodplain zones that extend from the Big Sandy River. The proposed gas pipeline corridor crosses the river west of the proposed power plant site and various extensions of the floodplain as the corridor runs north toward the intersection with the existing pipeline.

Proposed Gas Pipeline Corridor

Most of the segments that make up the proposed gas pipeline corridor intersect a floodplain. Only corridor segment C3, which also is included in the Alternative R and T gas pipeline corridors, is completely encompassed by Zone C and avoids any such crossings.

Corridor segment R5 crosses the Big Sandy River just west of the proposed power plant site along US 93. The crossing of Zone A0 is also located in corridor segment R5. All other crossings along the proposed gas pipeline corridor involve Zone A floodplains.

Alternative R Gas Pipeline Corridor

The Alternative R gas pipeline corridor crosses the same washes and creeks as the Proposed Action, but intersects many more minor tributaries. Corridor segment R4 is the main contributor to the additional crossings and overlaps approximately 8,000 feet of Zone A floodplain of the Big Sandy River in T16N, R13W. The remaining segments of this alternative have similar qualities to the Proposed Action. Corridor segment R2 is solely in Zone C, but the rest cross at least one floodplain in Zone A.

Alternative T Gas Pipeline Corridor

The Alternative T gas pipeline corridor has the fewest floodplain crossings of all the corridors presented. However, corridor segment T5 would cross approximately 0.5 mile of the Big Sandy floodplain. Zone A is the only floodplain that would be affected, as corridor segment R5 is excluded from this alternative. All the segments in the Alternative T gas pipeline corridor have similar intersections.

Crossover Segment C2

Crossover segment C2, which is not part of any of the corridors, does not intersect any flood zones.

3.6.2 Environmental Consequences

The construction of new facilities within floodplains or washes potentially could have an adverse impact on 100-year peak flow events. The extent of disturbance for this Project is examined in the following sections.

3.6.2.1 Identification of Issues

The issues identified are the potential adverse impacts on natural and floodplain values, as well as the potential adverse impacts on downstream lives and property.

3.6.2.2 Significance Criteria

The effects of the Proposed Action and alternatives would be considered significant if the following would occur:

- encroachment on a floodplain or alteration of a wash, watershed, or river or wash flow that would cause a rise in river or wash flow stage or increase in floodplain area downstream, such that the alteration would cause destruction of lives or property
- construction within or surrounding washes that would cause a substantial reduction in flood-carrying capacity

3.6.2.3 Impact Assessment Methods

Potential impacts on washes and floodplains were assessed based on intersections that would occur where the proposed Project would cross an existing wash or floodplain boundary. Factors including the number and location of

intersections and the nature and size of facilities that intersect these features were evaluated.

The washes and floodplains were identified by plotting the proposed power plant site and the proposed and alternative gas pipeline corridors on FEMA Flood Insurance Rate Map (FIRM) panels. The proposed power plant site was found to be outside of any flood zone, but the access road and the proposed and alternative gas pipeline corridors cross several 100-year floodplains. Floodplain crossings associated with the proposed and alternative gas pipeline corridors were counted based on hypothetical assumed pipeline alignments along the centerlines of the corridors; these crossings are presented in Table 3.6-1. Any crossings not included in Table 3.6-1 that may occur due to selection of a final alignment would be evaluated as necessary during pre-construction surveys.

3.6.2.4 Actions Incorporated Into the Proposed Action to Reduce or Prevent Impacts

The Proposed Action includes the following measures to reduce or prevent potential adverse impacts on floodplains:

- The proposed county road that would connect the proposed power plant site to US 93 would include a box culvert at the Sycamore Creek crossing designed to handle a 100-year, 24-hour flood event.

- The Proposed Action includes numerous erosion and sedimentation control measures that would help to reduce downstream floodplain impacts. Section 2.2.8.2 includes a discussion of these measures.

3.6.2.5 Impact Assessment

Proposed Action

Since the proposed power plant site is located outside of the 100- and 500-year floodplain zones, no adverse impacts are expected in this area. All stormwater within the proposed power plant site and substation boundaries would be captured and diverted to the evaporation ponds in accordance with the Stormwater Management Plan. Stormwater in the washes upstream of the power plant, substation, and evaporation ponds would be collected and diverted in drainage channels around the facilities back into the same washes through appropriate erosion control and energy dissipation structures. Therefore, floodplains in Gray Wash and Sycamore Creek would not be adversely affected.

There are numerous crossings of floodplains by the proposed gas pipeline corridor. These areas would be disturbed only temporarily during construction because the pipeline would be placed underground. The pipeline would be buried at a depth of approximately 4 to 5 feet, which would eliminate the possibility of permanent floodplain disturbance. After the pipeline is in place, the excavated trench would be regraded to the approximate pre-construction contour. In effect, the original floodplain features and characteristics would remain unchanged. A Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (COE) would be required for the section of pipeline trenched through the Big Sandy River in corridor segment R5. Downstream effects would be minimal because this disturbance along the pipeline corridor would be temporary and because of the erosion/sedimentation control measures included in the Proposed Action.

The option to directionally drill the natural gas pipeline approximately 20 to 30 feet below the Big Sandy River instead of trenching and burying is included in the Proposed Action. The directional drilling option would minimize or eliminate impacts on floodplains and associated riparian areas during construction. In addition, this method could avoid the requirement of a permit from the COE pursuant to Section 404 of the Clean Water Act.

In corridor segment T4, where this corridor expands in the vicinity of the Carrow-Stephens Ranches Area of Critical Environmental Concern (ACEC) and near the Hackberry

Road/US 93 intersection, floodplain crossings other than those listed in Table 3.6-1 would be encountered. Following pre-construction surveys, the final alignment would be located anywhere within the corridor. However, as mentioned before, all crossings would involve only temporary impacts.

The proposed county road would cross the Sycamore Creek floodplain. Because the box culvert under the road would be sized to handle the 100-year, 24-hour flood event, it would not cause a substantial reduction in flood-carrying capacity. Sycamore Creek would continue to flow through the box culvert and its downstream effects should remain the same.

The proposed agricultural activities and well sites would not affect any floodplains.

Any floodplains that occur along the route of the OPGW installation option would be easily avoided.

The microwave dishes would be installed on existing towers and would have no impact on floodplains.

Because there would be no alteration of flood-carrying capacity from the crossing of Sycamore Creek, and no permanent encroachment or alteration of a wash or river, and the resulting downstream effects would be negligible, the potential adverse impact on floodplains would not be significant.

Alternative R Gas Pipeline Corridor

The Alternative R gas pipeline corridor is similar to the Proposed Action. It crosses the same washes and streams, but intersects more tributaries. Corridor segment R4 potentially could affect the Big Sandy floodplain, but the impact would not be significant since there would not be substantial encroachment or alteration of flows or flood-carrying capacity.

As with the Proposed Action, there would be no alteration of the flood-carrying capacity of Sycamore Creek, and all crossings occurring along this alternative corridor would involve only temporary impacts. Thus, the potential for adverse impacts on floodplains would not be significant.

Alternative T Gas Pipeline Corridor

The Alternative T gas pipeline corridor would have similar impacts as the Proposed Action. This alternative would likely have fewer floodplains to cross; however, it would cross approximately 0.5 mile of the Big Sandy floodplain.

As with the Proposed Action, there would be no alteration of the flood-carrying capacity of Sycamore Creek, and all crossings occurring along this alternative corridor would involve only temporary impacts. Thus, the potential for adverse impacts on floodplains would not be significant.

Crossover Corridor Segment C2

Crossover segment C2 would have no adverse impacts on floodplains because it does not cross any flood zone.

No-Action Alternative

The Proposed Action would not be constructed under the No-Action Alternative. There would be no impacts on floodplains.

3.6.2.6 Mitigation and Residual Impacts

No significant impacts would result from the implementation of the Proposed Action with the actions incorporated to reduce or prevent impacts and there would be no residual significant impacts.

If adopted, the following measure would be implemented to minimize adverse impacts not considered to be significant:

- Should substantial channel erosion occur in Sycamore Creek as a result of the

installation of the box culvert that causes an impediment to wildlife movement, corrective actions, such as the placement of additional riprap or other means of restoring the channel grade sufficient to allow wildlife movement, would be taken.

3.7 LAND USE AND ACCESS

This section identifies and describes the jurisdiction and existing and planned land uses in the vicinity of the Proposed Action, as well as environmental consequences as they apply to land use and access.

Information was compiled from agency maps and planning documents, aerial photography, and previously conducted resource studies. Field investigations were conducted in August 2000 and April 2001 to verify existing land use conditions.

Land jurisdiction represents the administrative control maintained by the responsible Federal, state, Indian nation, or local agencies within the Project area. The jurisdiction does not necessarily dictate ownership. Jurisdictional boundaries were obtained from BLM and Arizona State Land Department (ASLD) maps and digital data. The main jurisdictions within the Project area include BLM, ASLD, Hualapai Tribe, and Mohave County. Private lands in the Project area are under the jurisdiction of Mohave County. Land jurisdiction and ownership for the power plant site, pipeline corridors, and surrounding areas are presented in Section 2.0 on Figure 2-12.

Existing land uses (regardless of jurisdiction or planned use) were determined from aerial photography and subsequent field visits. Planned land uses were assessed from appropriate planning documents; the plans applicable for land management in the area include the Kingman Area Resource Management Plan (BLM 1995) and Mohave County General Plan (1995) and Zoning Ordinance (2000). The approximate locations of residences and existing land uses are shown on Figure 3.7-1; planned land uses are shown on Figure 3.7-2.

In May 2001, the BLM Kingman Field Office completed the Cane Springs Land Exchange. This exchange brought additional lands in the region under the management responsibility of BLM. Twenty-eight sections of land in T18N and T19N; R13W and R14W just west of US 93 (Figure 3.7-3) were involved in this exchange. The Alternative T gas pipeline corridor crosses portions of two of these sections. Due to the timing of this land exchange agreement, and the limited effect this change in management responsibility has on the proposed Project, this Draft EIS was completed without further assessment of the lands involved in this exchange.

3.7.1 Affected Environment

The following sections describe the current land use and access conditions; this represents the baseline for assessment impacts.

3.7.1.1 Region of Influence

The region of influence for assessing construction, operation, and maintenance impacts on land uses includes all areas within 5 miles of the proposed power plant site, substation, access road, well pads, and agricultural area (all of these Project lands previously part of Banegas Ranch), and 1 mile on each side of the centerline of each alternative pipeline corridor. The Mead-Liberty 345-kV transmission line right-of-way, north of the alternative pipeline terminus, is also included for the potential installation of the redundant communication OPGW. In addition, lands owned by the Hualapai Tribe that are within the Big Sandy Valley have been included as a potentially sensitive land jurisdiction.

3.7.1.2 Existing Conditions

The Big Sandy Valley is surrounded by the Aquarius Mountains to the east, and McCracken and Hualapai Mountains to the west. The Big