3.2 VISUAL RESOURCES

This section discusses the existing visual resources in the vicinity of the Tucson Electric Power Company (TEP) Sahuarita-Nogales Transmission Line proposed project. The discussion includes a description of the terminology and concepts used to characterize visual resources for the entire length of the proposed project, including Bureau of Land Management (BLM), national forest, state, and private land. The terminology and concepts are consistent with the U.S. Department of Agriculture Forest Service (USFS) Scenery Management System (SMS) used by USFS for the inventory and analysis of aesthetic values of national forest lands, as outlined in *Landscape Aesthetics: A Handbook for Scenery Management* (USFS 1995).

The SMS is a tool for integrating benefits, values, desires, and preferences regarding aesthetics and scenery for all levels of land management planning. The SMS recognizes that high-quality scenery, especially scenery with natural-appearing landscapes, enhances people's lives and benefits society. By establishing a terminology for managing scenery, USFS has developed a systematic approach for determining the relative value and importance of scenery that can be applied in concept for the entire proposed project. The visual resource attributes outlined by the SMS include the following:

- **Landscape Character** – a description of the overall visual and cultural impression of landscape attributes and the physical appearance and cultural context of a landscape that gives it an identity and "sense of place."

- **Scenic Attractiveness** – ratings based on the SMS scale of Distinctive (A), Typical or Common (B), and Undistinguished (C) that indicate the uniqueness of landscapes in the region or human perceptions of the intrinsic beauty of landform, rockform, waterform, and vegetation patterns.

- **Concern Levels and Landscape Visibility** – ratings based on the SMS scale for Concern Levels, indicating the degree of public importance placed on the landscape viewed from travelways and use areas, and the visibility of lands in each distance zone. Concern Levels are based on the number of visitors and the interest of visitors in the scenery, and distance zones are based on the distance from the viewer, defined as foreground within 0.5 mi (0.8 km), middleground between 0.5 mi (0.8 km) and 4 mi (6 km), and background beyond 4 mi (6 km) from the observer. The visibility of lands is affected by the degree of discernible detail and perceptible visual range, or farthest distance a person can see without being clouded by haze, especially in the background distance zone. Perceptible visual range is attributable to the amount and size of particles in the air, depending on pollution levels, naturally occurring dust, and meteorological factors such as wind and humidity. Visibility is normally much better in dry climates, such as in southeastern Arizona, than in humid climates, although wind-suspended dust can significantly reduce visibility in drier periods. For further discussion of climate refer to Section 3.8, Air Quality.

- **Scenic Class** – a composite rating that indicates the relative importance of a landscape, based on the Scenic Attractiveness, Concern Level, and Landscape Visibility classifications of an area. Scenic Classes 1 and 2 have high public value, Classes 3 through 5 have moderate value, and Classes 6 and 7 have low value.

- **Scenic Integrity** – rating that indicates the degree of intactness and wholeness of the landscape character. Human alterations can lower, maintain, or raise Scenic Integrity. Scenic Integrity is rated as Very High, High, Moderate, Low, Very Low, or Unacceptably Low.

While the entire proposed project is described here in terminology and concepts consistent with the SMS, the quantitative rating and mapping of the visual attributes described above applies only to national forest land, and includes travelways both on and off the national forest land from which the proposed project

may be viewed, such as I-19. The following sections describe the existing visual environment in the vicinity of the proposed project for each alternative, with separate sections addressing the national forest land.

It should be noted that the Coronado National Forest has recommended use of the SMS for visual analysis of the proposed project, rather than the former USFS Visual Resource Management System. In the early 1980s, the Coronado National Forest was mapped by USFS using the Visual Resource Management System, which included Visual Quality Objectives. In the early 1990s, the SMS was developed as a new system for managing scenic resources, including new terminology, different end products, increased public involvement, and mapping using Geographic Information Systems (GIS) technology. In 1994, the Deputy Chief of the USFS directed National Forests to use the SMS (Reynolds, 2380, August 22, 1994), and in 1996, the Chief directed the same (USFS 1995). Although it is unlikely that the proposed project would meet Visual Quality Objectives in the old Visual Resource Management System, the SMS is more appropriate (though not necessarily more stringent) for the proposed project analysis because the SMS takes into account increased public awareness and involvement in protecting scenic resources on national forest lands, and increased public use of the area, which has changed how the landscapes are viewed (the SMS considers viewsheds from trails). The Coronado National Forest has completed an inventory of its scenic resources using the SMS, and has developed new criteria for defining Scenic Attractiveness, a major component in mapping scenic resources. This information will be considered during the Forest Plan revision, and Scenic Integrity Objectives will be established through that process. Until then, the SMS inventory will be used for project-level analysis and design, such as the analysis that follows for the TEP Sahuarita-Nogales Transmission Line Project (USFS 2002b).

3.2.1 Western Corridor

Coronado National Forest. The Western Corridor crosses an estimated 29.5 mi (47.5 km) of the Coronado National Forest, primarily through a landscape of undisturbed vegetation set in steep sloped canyons, foothills, and mountains. The Western Corridor passes south along the west side of the Tumacacori and Atascosa Mountains (passing through Bear Valley just north of the Pajarita Wilderness), then meets and runs along the south side of Ruby Road as it turns gradually east at the Pajarita Wilderness (see Figures 3.1–1 and 3.2–2). The Western Corridor separates from Ruby Road west of Castle Rock, continuing south of Ruby Road until the Western Corridor intersects the El Paso Natural Gas (EPNG) pipeline right-of-way (ROW) and the Central and Crossover Corridors. Upon rejoining, the three corridors continue together through a landscape of natural vegetation, following the EPNG pipeline ROW along the eastern foothills of the Atascosa and Pajarito Mountains to the Coronado National Forest boundary.

The proposed project is set within the Sky Island Landscape Character Type that encompasses southeastern Arizona and the entire Coronado National Forest. This region is characterized by strong contrasts of massive mountain ranges rising abruptly from arid desert floors, with areas of rugged foothills, cliffs, and canyons in between. “It is this mosaic of low deserts and high mountains that results in an incredible diversity of plants and animals and awesome scenery” (USFS 1999). Specifically within the Tumacacori Ecosystem Management Area (EMA) in the vicinity of the Western Corridor, the northern portion to the west of the Tumacacori Mountains is desert grasslands with sparse, short, well-spaced vegetation that is gray-green to blue-green in color, set in grasses that are typically golden brown, as shown in Figure 3.2–1. During the summer months after the monsoon rains, the grasses become bright green in color. As the Western Corridor turns gradually east near the Pajarita Wilderness and continues along Ruby Road, the project corridor includes an increasing number of oak trees (Broadleaf Woodland Evergreen vegetation type) and rocky outcrops. Castle Rock, a prominent rocky outcrop topographic feature, is located in this area, to the southwest of Peña Blanca Lake. The area also includes numerous desert washes, mountain meadows, and canyon bottoms with riparian vegetation, green from seasonal water availability. The vegetation, topography, rock form, and water combine to create three categories of

Figure 3.2–1. Typical Desert Grasslands Vegetation in the Coronado National Forest.

Scenic Attractiveness, as shown in Figure 3.2–2. This figure shows that the Western Corridor passes primarily through Distinctive (A) landscapes 21.2 mi (34.1 km), with 7.7 mi (12 km) of Typical or Common landscape (B), and 0.6 mi (1 km) of Undistinguished (C) landscape. Scenic Attractiveness and other visual attributes described in the following text are quantified for each proposed corridor in Table 3.2–1.

Table 3.2-1. Visual Attributes of the Western, Central, and Crossover Corridors.

On the Coronado National Forest									
			Scenic Attractiveness			Scenic Classes (Public Value)			
						High		Moderate	
Corridor	Total length	Length on the CNF	A Distinctive	B Typical	C Undistinguished	1	2	3	4
Western (mi)	65.7	29.5	21.2	7.7	0.6	10.5	11.1	2.6	5.3
Central (mi)	57.1	15.1	5.4	9.6	0.1	1.8	13.3	-	-
Crossover (mi)	65.2	29.3	14.7	14.0	0.6	5.5	15.2	3.3	5.3

Source: USFS 2001b.

The degree of public importance placed on the landscape viewed from travelways and use areas is indicated by the Concern Levels defined in the SMS. Concern Level 1 roads and trails include primary travelways that receive a moderate to high amount of use by people that are likely to have high interest in the surrounding landscape. Figure 3.2–3 shows that the Concern Level 1 travelways in the vicinity of the Western Corridor are Ruby Road, I-19, and Arivaca Road. The Concern Level 2 areas near the Western Corridor shown on the map are secondary travelways and use areas that receive a moderate amount of use, including several roads off Ruby Road, Forest Road 684, and trails to Atascosa Lookout and into the Pajarita Wilderness. The shadings on the map represent a broad-brush definition of foreground and middleground distance zones from the Concern Level 1 and 2 travelways. Note that these broad-brush definitions of distance zones were used as the starting point for evaluating project visibility. The hilly terrain and canyons of the area provide wide-open views of the Western Corridor in some areas while blocking views of the Western Corridor in other areas. The Western Corridor would be most visible in the immediate foreground to travelers on Ruby Road in the area west of Peña Blanca Lake and northwest of the Pajarita Wilderness. The Western Corridor would be west of the Tumacacori and Atascosa Mountains and thus not visible in the national forest from I-19 until near Nogales.

Based on Scenic Attractiveness, Concern Levels, and distance zones, USFS has determined Scenic Class ratings for the Coronado National Forest. Scenic Class indicates the relative importance of landscapes for use during the forest planning process to compare the value of scenery to other resources. Scenic Classes 1 and 2 have high public value, Classes 3 to 5 have moderate value, and Classes 6 and 7 have low value. Figure 3.2–4 shows the Scenic Class ratings of the Coronado National Forest Tumacacori EMA. The figure shows that the Tumacacori EMA is predominantly Classes 1 and 2, with portions of Classes 3 and 4. The Western Corridor passes through 10.5 mi (16.9 km) of Class 1, 11.1 mi (17.9 km) of Class 2, 2.6 mi (4.2 km) of Class 3, and 5.3 mi (8.5 km) of Class 4. The Scenic Class ratings were mapped on a large forest-wide scale, and then verified through project-level consultation with USFS.

The human alterations to the natural landscape are minimal along the Western Corridor within the Coronado National Forest, as shown by the map of existing Scenic Integrity in Figure 3.2–5. Especially to the south and west of the Tumacacori and Atascosa Mountains, the landscape is pristine as far as the eye can see, resulting in very high Scenic Integrity (the landscape is intact). For a 1-mi (1.6-km) strip of land following Ruby Road through the Tumacacori EMA, the Scenic Integrity is high (appears to be intact). Although Ruby Road is a human alteration, because it provides visitor access and provides viewing platforms for the public, it is generally considered a fairly neutral element in the landscape (that is, it has a minimal impact on Scenic Integrity). Peña Blanca Lake Recreation Area, which includes visitor facilities, and the town of Ruby west of the proposed project, both have moderate Scenic Integrity (appears slightly altered). Subtle alterations to the area landscape include roads and trails off Ruby Road, and an electric distribution line on wooden poles near Peña Blanca Lake.

Outside the Coronado National Forest. Approximately 36.2 mi (58.3 km) of the Western Corridor (out of a total of 65.7 mi [106 km]) is outside of the Coronado National Forest. The landscape of this portion of the Western Corridor is characterized primarily by desert grassland set in scattered foothills, as depicted in Figure 3.2–1. Upon leaving the existing South Substation and crossing I-19, the Western Corridor passes a low-density residential area, and upon exiting Sahuarita passes several commercial properties. There are multiple mine tailings piles that dominate the landscape in this area. This section of the Western Corridor follows existing TEP transmission lines including a 345-kV and 138-kV line on BLM lands, and meets up with an EPNG pipeline ROW that passes by the existing TEP Cyprus Sierrita Substation, as depicted in Figure 3.11–1 showing existing utilities.

The Western Corridor separates from the Central Corridor and EPNG pipeline ROW at an estimated 3 mi (5 km) south of the Cyprus Sierrita Substation, turning to the southwest through desertscrub vegetation and crossing into the Coronado National Forest. The human alterations to the natural landscape such as utilities, multiple expansive mine tailings piles, and buildings in the northern portion of the Western Corridor reduce the Scenic Integrity of the landscape to Moderate to Low (the visual landscape appears slightly to moderately altered, and the mine tailings piles dominate some areas of the landscape). The Scenic Integrity of the BLM land is Moderate to Low given the two existing transmission lines. Upon separating from the Central Corridor, the Scenic Integrity increases to High (the landscape begins to appear unaltered). As the Western Corridor crosses I-19 and passes roads and residences, the proposed project would be visible to residents, travelers, and recreationalists in the foreground and middleground distance zones, until it is hidden behind mine tailings piles. Upon separating from the Central Corridor, the Western Corridor would be almost entirely obscured from view from I-19 by mine tailings piles and natural foothills.

Upon exiting the Coronado National Forest to the southeast, the three proposed corridors run together through a landscape of undeveloped land with natural vegetation, following the EPNG pipeline ROW. The corridors go along the eastern foothills of the Atascosa and Pajarita Mountains and into the edge of the City of Nogales and the proposed Gateway Substation. The corridors then continue south to the Mexico border through an area of industrial and limited residential development.

3.2.2 Central Corridor

Coronado National Forest. The Central Corridor crosses an estimated 15.1 mi (24.3 km) of the Coronado National Forest, all of which is within or near an existing Forest Transportation Systems and Utilities Corridor containing a buried EPNG pipeline within a 50 ft (15 m) ROW. The Central Corridor runs south along the east side of the Tumacacori Mountains and Atascosa Mountains, then turns southeast, crosses Ruby Road, and intersects the Western Corridor. Upon rejoining, the three corridors continue together through a landscape of natural vegetation, following the pipeline ROW along the eastern foothills of the Atascosa and Pajarito Mountains to the Coronado National Forest boundary.

The proposed project is set within the Sky Island Landscape Character Type, as described above for the Western Corridor. Within the Tumacacori EMA, the Central Corridor passes through desert grasslands with sparse, short, well-spaced vegetation that is gray-green to blue-green in color, set in golden brown grasses. Vegetation within the EPNG pipeline ROW and access roads leading to the ROW is cleared, as shown in Figure 3.2–6. The area also includes some rocky outcrops, desert washes, and canyon bottoms with riparian vegetation, green from seasonal water availability. The vegetation, topography, rock form, and water combine to create three categories of Scenic Attractiveness, as shown in Figure 3.2–2. This figure shows that the Central Corridor passes primarily through Typical or Common (B) landscape (9.6 mi [15.4 km]), with 5.4 mi (8.7 km) passing through Distinctive (A) landscape, and 0.1 mi (0.2 km) passing through Undistinguished (C) landscape.

The degree of public importance placed on the landscape viewed from travelways and use areas is indicated by the Concern Levels defined in the SMS. Concern Level 1 roads and trails include primary travelways that receive a moderate to high amount of use by people that are likely to have high interest in the surrounding landscape. Figure 3.2–3 shows that the Concern Level 1 travelways in the vicinity of the Central Corridor are Ruby Road and I-19. The Concern Level 2 areas near the Central Corridor shown on the map are secondary travelways on the east side of the Atascosa Mountains that receive a moderate amount of use, such as Rock Corral Canyon Road. San Cayetano Elementary School at Peck Canyon Road and I-19 is also a Concern Level 2 area. The shadings on the map represent a broad-brush definition of foreground and middleground distance zones from the Concern Level 1 and 2 travelways. Note that these broad-brush definitions of distance zones were used as the starting point for evaluating project

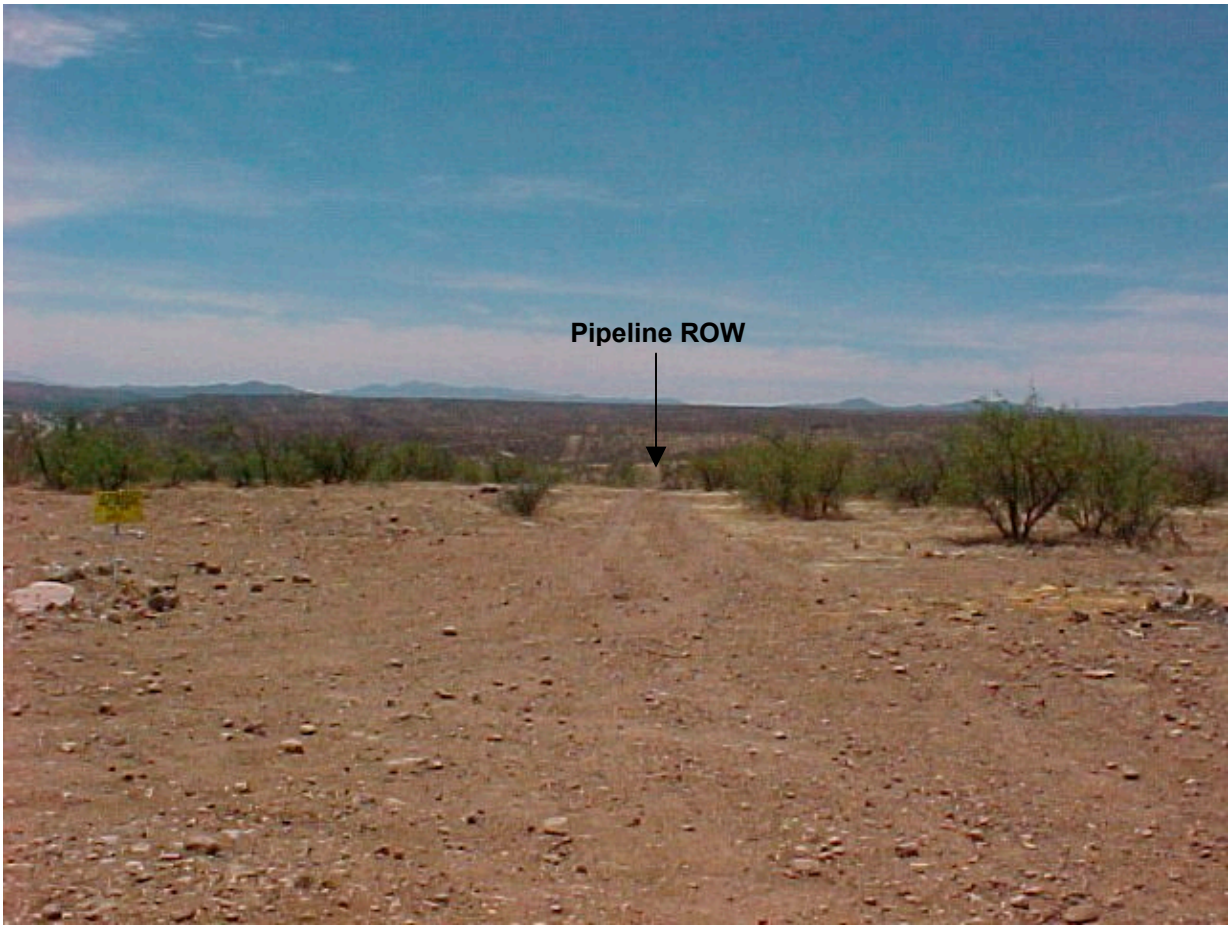

Figure 3.2–6. El Paso Natural Gas Pipeline ROW.

visibility; refined project maps showing actual project visibility based on screening created by the area's terrain and vegetation are included in Section 4.2, Visual Impacts.

The elevated landforms that run directly along the west side of I-19 block views of the Central Corridor from most of I-19 as the Central Corridor approaches and traverses the national forest land. A number of Concern Level 2 travelways in the area enter the foothills and provide more open vantage points of the Central Corridor, with segments of the Central Corridor evident in foreground, middleground, and background where it crosses the tops of ridges and foothills. As shown in Figure 3.2–4, the Central Corridor is in the foreground as it crosses Ruby Road. The Central Corridor is not visible from Peña Blanca Lake Recreation Area.

Based on Scenic Attractiveness, Concern Levels, and Distance Zones, USFS has determined Scenic Class ratings for the Coronado National Forest, as described above for the Western Corridor. The Central Corridor passes through 1.8 mi (2.9 km) of Class 1 and 13.3 mi (21.4 km) of Class 2.

Figure 3.2–5 is a map of existing Scenic Integrity within the Tumacacori EMA. The human alterations to the natural landscape along the Central Corridor within the Coronado National Forest are the linear disturbances of the EPNG pipeline ROW and access and recreational roads. The Scenic Integrity along the Central Corridor within the Tumacacori EMA is very high, except for a 1-mi (1.6-km) strip of land crossing Ruby Road where the Scenic Integrity is high. Peña Blanca Lake Recreation Area, which

includes visitor facilities, and the town of Ruby west of the proposed project, both have moderate Scenic Integrity.

Outside of the Coronado National Forest. Approximately 42 mi (68 km) of the Central Corridor (out of a total of 57.1 mi [91.9 km]) is outside of the Coronado National Forest. The landscape of this portion of the Central Corridor is characterized primarily by desert grassland set in scattered foothills, as depicted in Figure 3.2–1. Upon leaving the existing South Substation and crossing I-19, the Central Corridor passes a low-density residential area and several commercial properties. There are multiple mine tailings piles that dominate the landscape in this area. This section of the Central Corridor follows existing TEP transmission lines, including a 345-kV and 138-kV BLM land, and meets up with an EPNG pipeline ROW that passes by the existing TEP Cyprus Sierrita Substation, as depicted in Figure 3.11–1 showing existing utilities.

The Central Corridor separates from the Western Corridor at approximately 3 mi (4.8 km) south of the Cyprus Sierrita Substation, continuing to follow the pipeline ROW south through primarily undeveloped land. The Central Corridor approaches to within approximately 1.0 mi (1.6 km) of I-19 near Amado, Tubac, and Tumacacori, passing adjacent to areas of low-density residential development. The Central Corridor passes within 0.25 mi (0.40 km) of several Tubac residences. The Central Corridor continues south until it enters the Coronado National Forest south of Tumacacori.

Given the human alterations to the natural landscape such as utilities, multiple very large mine tailings piles, and buildings in the northern portion of the Central Corridor, the existing Scenic Integrity of the landscape is Moderate to Low (the visual landscape appears slightly to moderately altered, and the mine tailings piles dominate some areas of the landscape). The Scenic Integrity of the BLM land is Moderate to Low, given the two existing transmission lines. Upon separating from the Western Corridor, the Scenic Integrity is Moderate as the landscape appears slightly altered due to residences, commercial establishments, and roads in the area connecting with I-19. In Sahuarita, the Central Corridor would be visible to residents, travelers, and recreationalists in the foreground and middleground distance zones, until it is hidden behind mine tailings piles. Upon separating from the Western Corridor, the Central Corridor would be intermittently visible and blocked by the elevated terrain that runs directly along the west side of I-19. The Central Corridor would be visible from a number of residences in Amado, Tubac, and Tumacacori, especially those on the west side of I-19.

Upon exiting the Coronado National Forest to the southeast, the three proposed corridors run together through a landscape of undeveloped land with natural vegetation, following the EPNG pipeline ROW. The corridors follow the eastern foothills of the Atascosa and Pajarita Mountains and into the edge of the City of Nogales and the proposed Gateway Substation. The corridors then continue south to the Mexico border through an area of industrial and limited residential development.

3.2.3 Crossover Corridor

Coronado National Forest. The Crossover Corridor crosses an estimated 29.3 mi (47.2 km) of the Coronado National Forest, part of which is within or near an existing Forest Transportation Systems and Utilities Corridor containing a buried EPNG pipeline within a 50-ft (15-m) ROW. The Crossover Corridor is the same as the Western Corridor upon entering the national forest land from the north, running along the west side of the Tumacacori Mountains. The Crossover Corridor then turns to the east, goes approximately 7 mi (11 km) through Peck Canyon, and joins the Central Corridor on the east side of the Tumacacori Mountains. The Crossover Corridor continues south along the east side of the Atascosa Mountains, then turns to the southeast, crosses Ruby Road, and intersects the Western Corridor. Upon rejoining, the three corridors continue together through a landscape of natural vegetation, following the

EPNG pipeline ROW along the eastern foothills of the Atascosa and Pajarito Mountains to the Coronado National Forest boundary.

The proposed project is set within the Sky Island Landscape Character Type, as described for the Western Corridor. Within the Tumacacori EMA, the northern portion of the Crossover Corridor west of the Tumacacori Mountains passes through desert grasslands with sparse, short, well-spaced vegetation that is gray-green to blue-green in color, set in golden brown grasses. Figure 3.2–1 shows typical desert grassland vegetation. As the Crossover Corridor approaches Peck Canyon, the project corridor includes an increasing number of oak trees (Broadleaf Woodland Evergreen vegetation type) and rocky outcrops. Within Peck Canyon there are many areas with riparian vegetation, green from seasonal water availability. The vegetation, topography, rock form, and water combine to create three categories of Scenic Attractiveness, as shown in Figure 3.2–2. This figure shows that the Crossover Corridor passes primarily through Distinctive (A) landscape (14.7 mi [23.7 km]), with 14.0 mi (22.5 km) passing through Typical or Common landscape (B), and 0.6 mi (1 km) passing through Undistinguished (C) landscape.

The degree of public importance placed on the landscape viewed from travelways and use areas is indicated by the Concern Levels defined in the SMS. Concern Level 1 roads and trails include primary travelways that receive a moderate to high amount of use by people that are likely to have high interest in the surrounding landscape. Figure 3.2–3 shows that the Concern Level 1 travelways in the vicinity of the Crossover Corridor are Ruby Road, I-19, and Arivaca Road. The Concern Level 2 areas near the Crossover Corridor shown on the map are secondary travelways and use areas that receive a moderate amount of use, such as Rock Corral Canyon Road and roads on the east side of the Atascosa Mountains. San Cayetano Elementary School at Peck Canyon and I-19 is also a Concern Level 2 area. The shadings on the map represent a broad-brush definition of foreground and middleground distance zones from the Concern Level 1 and 2 travelways. The elevated landforms that run directly along the west side of I-19 block views of the Crossover Corridor from most of I-19 on the national forest land. A number of Concern Level 2 travelways in the area enter the foothills and provide more open vantage points of the Crossover Corridor south of Peck Canyon, with segments of the Crossover Corridor evident in foreground, middleground, and background where it crosses the tops of ridges and foothills. The Crossover Corridor is in the foreground as it crosses Ruby Road. The Crossover Corridor is not visible from Peña Blanca Lake Recreation Area.

Based on Scenic Attractiveness, Concern Levels, and Distance Zones, the USFS has determined Scenic Class ratings for the Coronado National Forest, as described above for the Western Corridor. As shown in Figure 3.2–4, the Crossover Corridor passes through 5.6 mi (9.0 km) of Class 1, 15.3 mi (24.6 km) of Class 2, 3.4 mi (5.5 km) of Class 3, and 5.4 mi (8.7 km) of Class 4.

Figure 3.2–5 is a map of existing Scenic Integrity within the Tumacacori EMA. The human alterations to the natural landscape along the Crossover Corridor within the Coronado National Forest are the linear disturbances of the EPNG pipeline ROW and access and recreational roads. The Scenic Integrity along the Crossover Corridor within the Tumacacori EMA is very high, except for a 1-mi (1.6-km) strip of land crossing Ruby Road where the Scenic Integrity is High. Peña Blanca Lake Recreation Area, which includes visitor facilities, and the town of Ruby west of the proposed project, both have moderate Scenic Integrity.

Outside of the Coronado National Forest. An estimated 35.9 mi (57.7 km) of the Crossover Corridor is outside of the Coronado National Forest. The Crossover Corridor outside of national forest land is identical to the Western Corridor, and thus the affected environment is identical to the Western Corridor in this overlapping segment, as described in Section 3.2.1.