Southline Transmission, LLC

New Application for a Certificate of Environmental Compatibility

L-00000AAA-16-0370-00173

PART 4 OF 5

BARCODE # 0000173991

To review Parts 1-3 please see:
BARCODES # 0000173988 through 0000173990
To review Part 5 please see:
BARCODE # 0000173992

Arizona Corporation Commission
DOCKETED
OCT 14 2016
DOCKETED BY

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Fish and Wildlife Service
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December 30, 2014

Memorandum

DC 1/6/15

To: District Manager, Bureau of Land Management, Las Cruces, New Mexico

From: Field Supervisor, Arizona Ecological Services Office

Subject: Biological and Conference Opinion and Conference Report on the Proposed Southline Transmission Project

Thank you for your request for formal consultation and conference with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request was dated March 4, 2014, and received by us on March 4, 2014. At issue are the impacts that may result from the proposed Southline Transmission Project located in Doña Ana, Luna, Grant, and Hidalgo counties, New Mexico, and Greenlee, Graham, Cochise, Pima, and Pinal counties, Arizona. You determined that the proposed action may affect, and is likely to adversely affect, the endangered lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), the endangered Mexican long-nosed bat (*Leptonycteris nivalis*), the endangered Pima pineapple cactus (*Coryphantha scheeri var. robustispina*), and the endangered southwestern willow flycatcher (*Empidonax traillii extimus*).

In your memorandum, you requested our concurrence that the proposed action may affect, but is not likely to adversely affect, the endangered Gila chub (*Gila intermedia*) and its critical habitat and the endangered Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*). We concur with your determinations and provide our rationale in Appendix A.

In addition, you requested conference for effects of the proposed action on proposed threatened northern Mexican gartersnake (*Thamnophis eques megalops*) and its proposed critical habitat, and on the proposed threatened yellow-billed cuckoo (*Coccyzus americanus*) western distinct population. On September 23, 2014, you changed your request for a formal conference to a request for a formal consultation regarding the effects of the proposed action on the northern Mexican gartersnake because it was listed as threatened since your March 4, 2014, request. On October 10, 2014, you changed your request for a formal conference to a request for a formal consultation regarding the effects of the proposed action on the yellow-billed cuckoo because it was listed as threatened since your March 4, 2014 request, and you also requested a formal

conference on yellow-billed cuckoo proposed critical habitat, which was proposed since your request of March 4, 2014. Therefore, we are also providing formal consultation for the northern Mexican gartersnake and the yellow-billed cuckoo, and formal conference for the proposed critical habitat for these species, all of which are presented in the main body of this biological and conference opinion.

You also requested conference for effects of the project on the non-essential population of northern aplomado falcon (*Falco femoralis septentrionalis*), which is provided through a conference report as Appendix B. You also requested technical assistance for effects of the project on candidate species Sonoran desert tortoise (*Gopherus morafkai*) and Sprague's pipit (*Anthus spragueii*) which is provided in Appendix C. You also requested technical assistance for the effects of the project on the Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*). On September 23, 2014, we found that listing the Tucson shovel-nosed snake as an endangered or threatened species is not warranted and we removed this subspecies from our candidate list. Therefore, we are not providing technical assistance for this former candidate species.

This biological and conference opinion and conference report is based on information provided in the February 2014 "Biological Assessment for the Southline Transmission Project," the March 2014 "Proposed Southline Transmission Line Project Draft Environmental Impact Statement and Draft Resource Management Plan Amendment," telephone conversations, field investigations, and other sources of information. Literature cited in this biological and conference opinion is not a complete bibliography of all literature available on the species of concern, transmission line construction and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

Consultation History

- March 4, 2014. We received your request for formal consultation and conference.
- July 9, 2014. We sent you a request for an additional 60 days to complete formal consultation.
- August 4, 2014. We received your concurrence for an additional 60 days to complete formal consultation.
- September 23, 2014. We received your request to change from a conference opinion to biological opinion for the recently listed northern Mexican gartersnake
- October 10, 2014. We received your request to change from a conference opinion to a biological opinion for the recently listed yellow-billed cuckoo, and for a conference opinion regarding yellow-billed cuckoo proposed critical habitat.
- November 10, 2014. We sent you the draft biological and conference opinion for review and comment.
- December 17, 2014. We received your comments on the draft biological and conference opinion along with the amendment to the Biological Assessment.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is: for the BLM to issue a right-of-way grant to Southline Transmission, LLC (Southline) for the construction and operation of a 345 kV transmission line from the Afton Substation in New Mexico to the Apache Substation in Arizona (BO Figure1); for Western Area Power Administration (Western) to authorize and participate with Southline in the upgrade an existing Western transmission line and associated facilities from 115 kV to 230 kV from Apache Substation to Saguaro Substation in Arizona (BO Figure 1); for the U.S. Forest Service to authorize the upgrade of the Western line across Forest Service managed land in Cochise County, Arizona; and for the U.S. Bureau of Reclamation (Reclamation) to authorize the upgrade of the Western line across Reclamation managed lands in Pima and Pinal counties, Arizona. Because multiple Federal agencies have actions that are required by the project, this BCO evaluates all of these proposed actions and provides section 7 compliance for all of these agencies' actions. The BLM is acting as the lead action agency with regard to this consultation.

The Southline Transmission Line Project (project) is a proposed electrical transmission line project that would consist of two sections. The first section would entail construction of approximately 240 miles of new double-circuit 345-kilovolt (kV) transmission line in a 200-foot right-of-way (ROW) between the Afton Substation, south of Las Cruces in Doña Ana County, New Mexico, and Western's Apache Substation, south of Willcox in Cochise County, Arizona (New Build Section). The second section would entail the upgrade of approximately 120 miles of Western's existing Saguaro–Tucson and Tucson–Apache 115-kV transmission lines to a double-circuit 230-kV transmission line in a 100-foot existing ROW (Upgrade Section). The Upgrade Section would originate at the Apache Substation and terminate at the Saguaro Substation northwest of Tucson in Pinal County, Arizona (BO Figure 1). Both new permanent ROW and temporary construction ROW would be required in the New Build Section and in some portions of the Upgrade Section for the transmission line, substations, access roads, and other permanent and temporary project components; the anticipated ROW width for the Upgrade Section 230-kV transmission line would be 150 feet. The proposed project would also include installation of new communications equipment, and connect to 14 substations distributed throughout southern New Mexico and Arizona, including expanding/upgrading existing substations and potentially constructing a new substation in Luna County, New Mexico. The proposed project would also include installation of new communications equipment to facilitate operations. The proposed action includes proponent committed environmental measures, best management practices (BMPs), and additional proposed species-specific conservation measures (BA Table 3-7 included as Appendix D of this BO).

On December 17, 2014, you provided an amendment to your Biological Assessment with an updated project description (route changes) and an updated effects analysis for Leptonycteris bats. The route changes would occur in route group 2 and 4. You concluded that the route changes would not change the effects analysis or determinations for any listed species.

The proposed action includes maintenance activities, which includes inspecting portions of the line by air and ground, repair of structures and electrical equipment, access road maintenance,

clearing vegetation as necessary to minimize fire hazard or physical impedance of the transmission line, and noxious plant control. Maintenance of vegetation would be done using mechanical and manual equipment, such as weed trimmers, rakes, shovels, mowers, brush hooks, and, occasionally as need, chainsaws. Although unlikely to be necessary, species-dependent herbicide could be applied subsequent to vegetation clearing to prevent regrowth of that vegetation and/or noxious and invasive weeds. Emergency maintenance may be needed to repair downed wires during storms and correct unexpected outages, and repair or replace damaged equipment.

Action Area

The action area for this BO is defined as a 1-mile buffer on either side of the centerline of the Agency Preferred Alternative in the New Build Section and a 500-foot corridor (200 feet off of the existing 100-foot-wide ROW) (see BO Figure 1) in the Upgrade Section, as well as any identified substations, staging areas, or access roads outside those corridors.

Term of ROW (New Build Section)

The term of the BLM right-of-way grant to allow use of Federal land within the New Build Section of the proposed project would be limited to 50 years.

Conservation Measures

Lesser Long-nosed Bat and Mexican Long-nosed Bat

LNB-1: All paniculate agaves (*Agave palmeri*, *A. parryi*, and *A. chrysantha*) and saguaros would be inventoried within the proposed ROW, and the potential to avoid or salvage each plant would be assessed. The priority would be avoidance when feasible.

LNB-2: All suitable (e.g., healthy, undamaged, not flowering) paniculate agaves that could not be avoided would be salvaged using methods approved by the BLM/Western and FWS, but mature agaves would be given preference for avoidance when feasible. Plants salvaged from areas of permanent disturbance would be used to reclaim areas of temporary disturbance, or replanted outside disturbed areas if necessary.

LNB-3: Saguaros less than 15 feet in height would be salvaged, unless prevented by site-specific conditions or poor plant health. Plants salvaged from areas of permanent disturbance would be used to reclaim areas of temporary disturbance, or replanted outside of disturbed areas if necessary. Larger saguaros would be avoided whenever feasible, but would be topped or removed if necessary.

LNB-4: Agave and saguaro salvage would be augmented, as necessary, within three years after completion of initial restoration activities. Augmentation would occur within the ROW in areas of higher value to bats (e.g., in the vicinity of active roosts, within areas of high concentration of agaves) to achieve a goal of no net loss of forage plants. Plant stocks from local sources or approved nursery-grown plants would be used.

LNB-5: Salvaged plants would be monitored following reclamation for a period of 3 years, as described in the POD. Supplementary water would be provided, if monitoring indicates that

rainfall is insufficient to achieve the goal of no net loss of forage plants. Plant survival through the monitoring period would be reported annually to the BLM/Western and FWS.

Pima Pineapple Cactus

PPC-1: Any Pima pineapple cactus that are not within the area of permanent disturbance, but are present within the project vicinity, shall be flagged by a qualified biologist prior to the commencement of work to avoid accidental damage during construction. Flagging will be removed following construction.

PPC-2: Any Pima pineapple cactus that cannot be avoided would be conserved by relocating plants within the existing ROW, but outside of the area of any ongoing disturbance.

PPC-3: For Pima pineapple cactus that cannot be avoided. Southline will purchase credits in an FWS-approved conservation bank for Pima pineapple cactus, corresponding to the area of permanent disturbance to occupied Pima pineapple cactus habitat. Alternatively, Southline my purchase suitable mitigation lands within Pima County's Pima pineapple cactus priority conservation areas.

PPC-4: In compliance with Executive Order 13112 regarding invasive species, all disturbed soils that will not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the project vicinity.

PPC-5: Also in compliance with Executive Order 13112 regarding invasive species, all earth-moving and hauling equipment shall be washed at the contractor's storage facility prior to arriving on site to prevent the introduction of invasive species.

PPC-4: To prevent invasive species propagules from leaving the site, the contractor shall inspect all construction equipment and remove all attached plant/vegetation and soil/mud debris prior to leaving the construction site.

Southwestern Willow Flycatcher

WF-1: All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and the Santa Cruz River would take place between September 15 and March 1, to avoid disturbance of breeding or nesting southwestern willow flycatchers.

WF-2: Line marking devices would be placed at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River to minimize the potential for avian collisions with transmission lines.

Northern Mexican Gartersnake

No specific conservation measures are proposed for the northern Mexican gartersnake because the proposed action minimizes ground and vegetation disturbance within the riparian habitat and proposed critical habitat at Cienega Creek and the San Pedro River (see Effects of the Action). However, some conservation benefit to the gartersnake is derived by shortened construction time frames proposed as conservation measures for the yellow-billed cuckoo and southwestern willow flycatcher.

Yellow-billed Cuckoo

YBC-1: All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and Santa Cruz River would take place between September 15 and March 1, to avoid disturbance of breeding or nesting yellow-billed cuckoos.

YBC-2: Line marking devices would be placed at the proposed crossings of the San Pedro River and Cienega Creek to minimize the potential for avian collisions with transmission lines.

STATUS OF THE SPECIES AND CRITICAL HABITAT

Lesser Long-Nosed Bat

The lesser long-nosed bat was listed (originally, as *Leptonycteris sanborni*; Sanborn's long-nosed bat) as endangered in 1988 (53 FR 38456). No critical habitat has been designated for this species. A recovery plan was completed in 1997 (U.S. Fish and Wildlife Service 1997). Loss of roost and foraging habitat, as well as direct taking of individual bats during animal control programs, particularly in Mexico, have contributed to the current endangered status of the species. Recovery actions include roost monitoring, protection of roosts and foraging resources, and reducing existing and new threats. The recovery plan states that the species will be considered for delisting when three major maternity roosts and two post-maternity roosts in the U.S., and three maternity roosts in Mexico have remained stable or increased in size for at least five years, following the approval of the recovery plan. A five-year review has been completed and recommends downlisting to threatened (U.S. Fish and Wildlife Service 2007b).

Species Description

The lesser long-nosed bat is a medium-sized, leaf-nosed bat. It has a long muzzle and a long tongue, and is capable of hover flight. These features are adaptations for feeding on nectar from the flowers of columnar cacti (e.g., saguaro [*Carnegiea gigantea*]; cardon [*Pachycereus pringlei*]; and organ pipe cactus [*Stenocereus thurberi*]; and from paniculate agaves (e.g., Palmer's agave [*Agave palmeri*]) (Hoffmeister 1986).

Distribution and Life History

The lesser long-nosed bat is migratory and found throughout its historical range, from southern Arizona and extreme southwestern New Mexico, through western Mexico, and south to El Salvador. It has been recorded in southern Arizona from the Picacho Mountains (Pinal County) southwest to the Agua Dulce Mountains (Pima County) and Copper Mountains (Yuma County), southeast to the Peloncillo Mountains (Cochise County), and south to the international boundary; and in the boot heel of New Mexico (Hidalgo County).

Within the U.S., habitat types occupied by the lesser long-nosed bat include Sonoran Desert scrub, semi-desert and plains grasslands, and oak and pine-oak woodlands. Farther south, the lesser long-nosed bat occurs at higher elevations. Maternity roosts, suitable day roosts, and concentrations of food plants are all critical resources for the lesser long-nosed bat. All of the factors that make roost sites suitable have not yet been identified, but maternity roosts tend to be

very warm and poorly ventilated (U.S. Fish and Wildlife Service 1997). Such roosts reduce the energetic requirements of adult females while they are raising their young (Arends *et al.* 1995).

Roosts in Arizona are occupied from late April to September (Cockrum and Petryszyn 1991) and on occasion, as late as November (Sidner 2000); the lesser long-nosed bat has only rarely been recorded outside of this time period in Arizona (U. S. Fish and Wildlife Service 1997, Hoffmeister 1986, Sidner and Houser 1990). In New Mexico, lesser long-nosed bats typically occupy roosts in late summer and fall. In spring, adult females, most of which are pregnant, arrive in Arizona and gather into maternity colonies in southwestern Arizona. These roosts are typically at low elevations near concentrations of flowering columnar cacti. After the young are weaned, these colonies mostly disband in July and August; some females and young move to higher elevations, primarily in the southeastern parts of Arizona near concentrations of blooming paniculate agaves. Adult males typically occupy separate roosts forming bachelor colonies. Males are known mostly from the Chiricahua Mountains and, recently, the Galiuro Mountains (personal communication with Tim Snow, Arizona Game and Fish Department, 1999), but also occur with adult females and young of the year at maternity sites (U. S. Fish and Wildlife Service 1997). Throughout the night between foraging bouts, both sexes will rest in temporary night roosts (Hoffmeister 1986).

Lesser long-nosed bats appear to be opportunistic foragers and extremely efficient fliers. They are known to fly long distances from roost sites to foraging sites. Night flights from maternity colonies to foraging areas have been documented in Arizona at up to 25 miles, and in Mexico, at 25 miles and 36 miles (one way) (Ober *et al.* 2000; Dalton *et al.* 1994, Ober and Steidl 2004, Lowery *et al.* 2009). Lowery *et al.* (2009) and Steidl (personal communication, 2001) found that typical one-way foraging distance for bats in southeastern Arizona is roughly 6 to 18 miles. A substantial portion of the lesser long-nosed bats at the Pinacate Cave in northwestern Sonora (a maternity colony) fly 25-31 miles each night to foraging areas in OPCNM (U.S. Fish and Wildlife Service 1997). Horner *et al.* (1990) found that lesser long-nosed bats commuted 30-36 miles round trip between an island maternity roost and the mainland in Sonora; the authors suggested these bats regularly flew at least 47 miles each night. Lesser long-nosed bats have been observed feeding at hummingbird feeders many miles from the closest known potential roost site (Lowery *et al.* 2009; personal communication with Yar Petryszyn, University of Arizona 1997).

Lesser long-nosed bats, which often forage in flocks, consume nectar and pollen of paniculate agave flowers; and pollen and fruit produced by a variety of columnar cacti. Nectar of these cacti and agaves is high energy food. Concentrations of some food resources appear to be patchily distributed on the landscape, and the nectar of each plant species used is only seasonally available. Cacti flowers and fruit are available during the spring and early summer; blooming agaves are available primarily from July through October. In Arizona, columnar cacti occur in lower elevational areas of the Sonoran Desert region, and paniculate agaves are found primarily in higher elevation desert scrub areas, semi-desert grasslands and shrublands, and into the oak and pine-oak woodlands (Gentry 1982). Lesser long-nosed bats are important pollinators for agave and cacti, and are important seed dispersers for some cacti.

The conservation and recovery of lesser long-nosed bats requires the presence of secure and appropriate roost sites throughout the landscape (including maternity roost sites, as well as transitional and migration roost sites) and adequate forage resources in appropriate juxtaposition to provide for life history needs including breeding, parturition, and migration.

Status and Threats

Recent information indicates that lesser long-nosed bat populations appear to be increasing or stable at most Arizona roost sites identified in the recovery plan (Arizona Game and Fish Department 2005, Tibbitts 2005, Wolf and Dalton 2005, U.S. Fish and Wildlife Service 2007b; electronic mail from Tim Tibbitts 2009). Lesser long-nosed bat populations additionally appear to be increasing or stable at other roost sites in Arizona and Mexico not included for monitoring in the recovery plan (Sidner 2005, Arizona Game and Fish Department 2009). Less is known about lesser long-nosed bat numbers and roosts in New Mexico. Though lesser long-nosed bat populations appear to be doing well, many threats to their stability and recovery still exist, including excess harvesting of agaves in Mexico; collection and destruction of cacti in the U.S.; conversion of habitat for agricultural and livestock uses, including the introduction of bufflegrass, a non-native, invasive grass species; wood-cutting; alternative energy development (wind and solar power); illegal border activities and required law enforcement activities; drought and climate change; fires; human disturbance at roost sites; and urban development.

Approximately 25 – 30 large lesser long-nosed bat roost sites, including maternity and late-summer roosts, have been documented in Arizona and New Mexico. Of these, 10 – 20 are monitored on an annual basis depending on available resources (U.S. Fish and Wildlife Service 2007b). Monitoring in Arizona in 2004 documented approximately 78,600 lesser long-nosed bats in late-summer roosts and approximately 34,600 in maternity roosts. More recently, in 2008, the numbers were 63,000 at late-summer roosts and 49,700 at maternity roosts (Arizona Game and Fish Department 2009). Ten to 20 lesser long-nosed bat roost sites in Mexico are also monitored annually. Over 100,000 lesser long-nosed bats are found at just one natural cave at the Pinacate Biosphere Reserve, Sonora, Mexico (Cockrum and Petryszyn 1991). The numbers above indicate that although a relatively large number of lesser long-nosed bats exist, the relative number of known large roosts is quite small.

The primary threat to lesser long-nosed bat is roost disturbance or loss. The colonial roosting behavior of this species, where high percentages of the population can congregate at a limited number of roost sites, increases the risk of significant declines or extinction due to impacts at roost sites. Lesser long-nosed bats remain vulnerable because they are so highly aggregated (Nabhan and Fleming 1993). Some of the most significant threats known to lesser long-nosed bat roost sites are impacts resulting from use and occupancy of these roost sites by individuals crossing the border illegally for a number of reasons. Mines and caves, which provide roosts for lesser long-nosed bats, also provide shade, protection, and sometimes water, for border crossers. The types of impacts that result from illegal border activities include disturbance from human occupancy, lighting fires, direct mortality, accumulation of trash and other harmful materials, alteration of temperature and humidity, destruction of the roost itself, and the inability to carry out conservation and research activities related to lesser long-nosed bats. These effects can lead to harm, harassment, or, ultimately, roost abandonment (U.S. Fish and Wildlife Service 2005).

For example, the illegal activity, presumably by individuals crossing the border, at the Bluebird maternity roost site, caused bats to abandon the site in 2002, 2003, and 2005. Other reasons for disturbance or loss of bat roosts include the use of caves and mines for recreation; the deliberate destruction, defacing or damage of caves or mines; roost deterioration (including both buildings or mines); short or long-term impacts from fire; and mine closures for safety purposes. The presence of alternate roost sites may be critical when this type of disturbance occurs.

Threats to lesser long-nosed bat forage habitat include excess harvesting of agaves in Mexico; collection and destruction of cacti in the U.S.; conversion of habitat for agricultural and livestock uses; the introduction of bufflegrass and other invasive species that can carry fire in Sonoran Desert scrub; wood-cutting; urban development; fires; and drought and climate change.

Large fires supported by invasive vegetation in 2005 affected some lesser long-nosed bat foraging habitat, though the extent is unknown. For example, the Goldwater, Aux, and Sand Tank Fire Complexes on BMGR-East burned through and around isolated patches of saguaros. Rogers (1985) showed that saguaros are not fire-adapted and suffer a high mortality rate as a result of fire. Therefore, fire can significantly affect forage resources for lesser long-nosed bats in the Sonoran desert. Monitoring of saguaro mortality rates should be done to assess the impacts on potential lesser long-nosed bat foraging habitat. More recently, the summer of 2011 saw huge wildfires burning across Arizona. The Wallow Fire (538,049 acres) set a new state record, burning a larger area than the 2002 Rodeo-Chediski Fire (468,638 acres). The Horseshoe 2 Fire (222,954 acres) burned approximately 70% of the Chiricahua Mountains and became the 4th largest fire in Arizona history. In addition to the Horseshoe 2 Fire, two other large wildfires (Murphy Complex and the Monument Fire) and numerous smaller fires burned a total of 366,679 acres in the Coronado National Forest. The Horseshoe 2, Monument, and Murphy fires affected lesser long-nosed bat forage and roost resources throughout those mountain ranges. Fire suppression activities associated with wildfires could also affect foraging habitat. For example, slurry drops can leave residue on saguaro flowers, which could impact lesser long-nosed bat feeding efficiency or result in minor contamination.

Drought may affect lesser long-nosed bat foraging habitat, though the effects of drought on bats are not well understood. The drought in 2004 resulted in near complete flower failure in saguaros throughout the range of lesser long-nosed bats. During that time however, in lieu of saguaro flowers, lesser long-nosed bats foraged heavily on desert agave (*Agave deserti*) flowers, an agave species used less consistently by lesser long-nosed bats (Tibbitts 2006). Similarly, there was a failure of the agave bloom in southeastern Arizona in 2006, probably related to the ongoing drought. As a result, lesser long-nosed bats left some roosts earlier than normal and increased use of hummingbird feeders by lesser long-nosed bats was observed in the Tucson area (personal communication with Scott Richardson, FWS, January 11, 2008). Climate change impacts to the lesser long-nosed bats in this portion of its range likely include loss of forage resources. Of particular concern is the prediction that saguaros, the primary lesser long-nosed bat forage resource in the Sonoran Desert, will decrease or even disappear within the current extent of the Sonoran Desert as climate change progresses (Weiss and Overpeck 2005, p. 2074). Monitoring bats and their forage during drought years is needed to better understand the effects of drought on this species.

The lesser long-nosed bat recovery plan (U.S. Fish and Wildlife Service 1997) identifies the need to protect roost habitats and foraging areas and food plants, such as columnar cacti and agaves. The lesser long-nosed bat recovery plan provides specific discussion and guidance for management and information needs regarding bat roosts and forage resources (U.S. Fish and Wildlife Service 1997). More information regarding the average size of foraging areas around roosts would be helpful to identify the minimum area around roosts that should be protected to maintain adequate forage resources.

We have produced numerous BOs on the lesser long-nosed bat since it was listed as endangered in 1988, some of which anticipated incidental take. Incidental take has been in the form of direct mortality and injury, harm, and harassment and has typically been only for a small number of individuals. Because incidental take of individual bats is difficult to detect, incidental take has often been quantified in terms of loss of forage resources, decreases in numbers of bats at roost sites, or increases in proposed action activities.

Examples of more recent BOs that anticipated incidental take for lesser long-nosed bats are summarized below. The 2013 BO for the Rosemont Copper Mine anticipated take of up to (1) 6,000 individuals harassed at three post-maternity roosts; (2) ten individuals harmed at known lesser long-nosed bat roosts subject to the implementation of protective measures; and (3) 5,401 acres of affected habitat lost containing Palmer's agave, a surrogate measure of take (via harm and harassment) of individuals. The 2010 BO related to the National Park Service's abandoned mine closure program, anticipated the direct take of up to 115 lesser long-nosed bats as a result of collisions with mine closure structures, and the abandonment of one roost site due to mine closure activities. The 2009 and 2008 BOs for implementation of the SBI*net* Ajo 1 and Tucson West Projects, including the installation, operation, and maintenance of communication and sensor towers and other associated infrastructure, each included incidental take in the form of 10 bats caused by collisions with towers and wind turbine blade-strike mortality for the life (presumed indefinite) of the proposed action. The 2007 BO for the installation of one 600 kilowatt wind turbine and one 50KW mass megawatts wind machine on Fort Huachuca included incidental take in the form of 10 bats caused by blade-strikes for the life (presumed indefinite) of the proposed action (U.S. Fish and Wildlife Service 2007c). The 2005 BO for implementation of the Coronado National Forest Land and Resource Management Plan (U.S. Forest Service) included incidental take in the form of harm or harassment. The amount of take for individual bats was not quantified; instead take was to be considered exceeded if simultaneous August counts (at transitory roosts in Arizona, New Mexico, and Sonora) drop below 66,923 lesser long-nosed bats (the lowest number from 2001 – 2004 counts) for a period of two consecutive years as a result of the action. The 2004 BO for the Bureau of Land Management Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management included incidental take in the form of harassment. The amount of incidental take was quantified in terms of loss of foraging resources, rather than loss of individual bats. The 2003 BO for MCAS–Yuma Activities on the BMGR included incidental take in the form of direct mortality or injury (five bats every 10 years). Because take could not be monitored directly, it was to be considered exceeded if nocturnal low-level helicopter flights in certain areas on the BMGR increased significantly or if the numbers of bats in the Agua Dulce or Bluebird Mine roosts decreased significantly and MCAS-Yuma activities were an important cause of the decline. The 2007 BO for Department of the Army Activities at and near Fort Huachuca (Fort), Arizona anticipated incidental take in the form of

direct mortality or injury (six bats over the life of the project), harassment (20 bats per year), and harm (10 bats over the life of the project) (U.S. Fish and Wildlife Service 2007a).

The lesser long-nosed bat recovery plan (U.S. Fish and Wildlife Service 1997), listing document (53 FR 38456), and the 5-year review summary and evaluation for the lesser long-nosed bat (U.S. Fish and Wildlife Service 2007b), all discuss the status of the species, and threats, and are incorporated by reference.

Mexican Long-nosed Bat

The Mexican long-nosed bat was listed as endangered under the ESA on September 30, 1988 (53 FR 38456). A Recovery Plan was completed in September 1994 (USFWS 1994), and notice of a pending 5-year review was given by the USFWS in February of 2009 (USFWS 2009). There is no designated critical habitat for the species.

Distribution

The Mexican long-nosed bat is primarily a Mexican species, ranging as far south as central Guatemala, but occurs in the United States during the summer months in mountains of the Trans-Pecos area of Texas along the Rio Grande (Barbour and Davis 1969; Schmidly 1991), and in southern Hidalgo County, New Mexico. The first confirmed day-roost site in the United States was a maternity roost in Big Bend National Park (BBNP) (Easterla 1972). Mexican long-nosed bats were also captured in mist nets in southern Hidalgo County, leading to the discovery of two roost sites shared with lesser long-nosed bats (Bogan *et al.* 2006; Cryan 2007). Both sites are caves in the Animas and Big Hatchet mountains. There are additional netting records from the Chinati Mountains of Presidio County, Texas, and Guadalupe Canyon in the southern Peloncillo Mountains of New Mexico (Hoyt *et al.* 1994; Arita and Humphrey 1988).

A single Mexican long-nosed bat was captured in a mist n*et al*ong the Gila River near the Grant-Hidalgo county line in New Mexico, well outside the previously known range of the species (M. Ramsey, personal communication). Juvenile Mexican long-nosed bats have been documented to make wide-ranging, apparently exploratory flights outside of their normal foraging range (England 2012). However, no additional information is available to indicate whether this record represents juvenile dispersal, a vagrant adult, or a roost site that may be previously unknown, intermittently used, or recently colonized. Known lesser long-nosed bat roosts are present in the Peloncillo Mountains, approximately 30 to 40 miles from this capture record, indicating the possible presence of a Mexican long-nosed bat roost because these species are known to roost together in New Mexico.

Habitat and Life History

The Mexican long-nosed bat is a colonial, cave-roosting species. These bats appear to prefer montane habitats, mostly at or above the transition from lowland forests to pine-oak (Barbour and Davis 1969; Schmidly 1991). Mexican long-nosed bats broadly overlap with the range of the lesser long-nosed bat, but Mexican long-nosed bats prefer higher and cooler elevations (Arita 1991). They feed on nectar and pollen, generally using species of *Agave* as their primary food

source while in the United States (Barbour and Davis 1969; Schmidly 1991). Palmer's century plant is the primary food source for the species in New Mexico, and Havard's century plant (*A. havardiana*) is the primary food source in Texas (England 2012).
Estimates of the numbers of bats at the BBNP cave site have varied from more than 13,000 to complete absence in some years. The roost sites in New Mexico have not been entered for censuses, although exit counts combining both species have exceeded 7,000 individuals. Lesser long-nosed bats appear to outnumber Mexican long-nosed bats in New Mexico roosts, based on mist-netting results, although behavioral differences may have influenced relative capture success for both species (Bogan *et al.* 2006).

The presence of this species in the United States at the northern edge of its range may reflect fluctuation of the core population in Mexico from year to year, or dispersal due to a lack of food resources within the core range (Schmidly 1991). While the bats typically roost at higher elevations, they may visit lower elevations while foraging, as evidenced by a netting record along the Rio Grande (Barbour and Davis 1969).

Threats to the Survival of the Mexican long-nosed bat

A primary threat to the species is disturbance or killing of bats in roosts (USFWS 1994). Loss of food resources from conversion of land for agriculture or agave harvesting in Mexico could adversely affect the species (Moreno-Valdez *et al.* 2004).

Previous consultations for the Mexican long-nosed bat include the October 24, 2002 consultation AESO/SE 2-21-98-F-399-R1, Reinitiation of Biological Opinion 2-21-98-F-399; Continuation of Livestock Grazing on the Coronado National Forest (Arizona), the May 14, 2008 consultation 22410-2008-F-0053 reinitiating consultation on several allotment on the Douglas Ranger District, Coronado National Forest, and the November 13, 2013 consultation 02EAAZ00-2013-F-0168 for the SunZia Southwest Transmission Line Project.

Pima Pineapple Cactus

The Pima Pineapple cactus was listed as an endangered species without critical habitat on September 23, 1993 (58 FR 49875). Factors that contributed to the listing include habitat loss and degradation, habitat modification and fragmentation, limited geographical distribution and species rareness, illegal collection, and difficulties in protecting areas large enough to maintain functioning populations. In 2005, a 5-year review was initiated for the Pima Pineapple cactus (70 FR 5460). This review was completed in 2007 and recommended no change to the cactus's classification as an endangered species (U.S. Fish and Wildlife Service 2007).

Recent investigations of taxonomy and geographical distribution focused, in part, on assessing the validity of the taxon (see Baker 2004, Baker 2005, and Schmalzel *et al.* 2004). Although there is evidence for a general pattern of clinal variation across the range of the species (Schmalzel *et al.* 2004), this does not preclude the recognition of taxonomic varieties within *C. sheeri* (= *C. robustispina*). Baker (2005) found that there are distinct geographical gaps between the distribution of this subspecies and the other subspecies, which occur in eastern Arizona, New Mexico, and Texas, and that the subspecies are morphologically coherent within

their respective taxa (Baker 2004). His geographical and morphological work supports the idea that the sub-specific groups within *C. robustispina* are indeed discrete, and merit separate taxonomic status as subspecies (U.S. Fish and Wildlife Service 2007).

We have determined that Pima Pineapple cactus that are too isolated from each other may not be effectively pollinated. For example, the major pollinator of Pima Pineapple cactus is thought to be *Diadasia rinconis*, a ground-nesting, solitary, native bee. McDonald (2005) found that Pima Pineapple cactus plants need to be within approximately 600 m (1,969 ft) of each other in order to facilitate effective pollination. Based on this information and other information related to similar cacti and pollinators, we have determined that Pima Pineapple cactus plants that are located at distances greater than 900 meters from one another become isolated with regard to meeting their life history requirements. The species is an obligate outcrosser (not self-pollinating), so it is important for plants to be within a certain distance to exchange pollen with each other. Also, the study found that pollination was more effective when other species of native cacti are near areas that support Pima Pineapple cactus. The native bees pollinate a variety of cacti species and the sole presence of Pima Pineapple cactus may not be enough to attract pollinators.

The Pima Pineapple cactus occurs south of Tucson, in Pima and Santa Cruz counties, Arizona, as well as in adjacent northern Sonora, Mexico. In Arizona, it is distributed at very low densities throughout both the Altar and Santa Cruz valleys, and in low-lying areas connecting the two valleys. This cactus generally grows on slopes of less than 10 percent and along the tops (upland areas) of alluvial bajadas. The plant is found at elevations between 2,360 feet (ft) and 4,700 ft (Phillips *et al.* 1981, Benson 1982, Ecosphere Environmental Services Inc. 1992), in vegetation characterized as either or a combination of Arizona upland of the Sonoran desertscrub community and semi-desert grasslands (Brown 1982, Johnson 2004). Paredes-Aguilar *et al.* (2000) reports the subspecies from oak woodlands in Sonora. Several attempts have been made to delineate habitat within the range of Pima Pineapple cactus (McPherson 2002, RECON Environmental Inc. 2006, U.S. Fish and Wildlife Service unpublished analysis) with limited success. As such, we are still unable to determine exact ecological characters to help us predict locations of Pima Pineapple cactus or precisely delineate Pima Pineapple cactus habitat (U.S. Fish and Wildlife Service 2007), except perhaps in localized areas (U.S. Fish and Wildlife Service 2005).

As a consequence of its general habitat requirements, considerable habitat for this species appears to exist in Pima and Santa Cruz counties, much of which is unoccupied. Pima Pineapple cactus occurs at low densities, widely scattered, sometimes in clumps, across the valley bottoms and bajadas. The species can be difficult to detect, especially in dense grass cover. For this reason, systematic surveys are expensive and have not been conducted extensively throughout the range of the Pima Pineapple cactus. As a result, location information has been gathered opportunistically, either through small systematic surveys, usually associated with specific development projects, or larger surveys that are typically only conducted in areas that seem highly suited for the species. Furthermore, our knowledge of the distribution and status of this species is gathered primarily through the section 7 process; and we only see projects that require a Federal permit or have Federal funding. There are many projects that occur within the range of Pima Pineapple cactus that do not undergo section 7 consultation, and we have no information

regarding the status or loss of plants or habitat associated with those projects. For these reasons, it is difficult to address abundance and population trends for this species.

The AGFD maintains the Heritage Data Management System (HDMS), a database identifying elements of concern in Arizona and consolidating information about their distribution and status throughout the state. This database has 5,553 Pima Pineapple cactus records, with 5,449 Pima Pineapple cactus that have coordinates. Some of the records are quite old, and we have not confirmed whether the plants are still alive. We also cannot determine which plants may be the result of multiple surveys in a given area. Of the known individuals (5,553), approximately 1,340 Pima Pineapple cactus plants are documented in the database as extirpated as of 2003. There have been additional losses since 2003, but that information is still being compiled in the database. The database is dynamic, based on periodic entry of new information, as time and staffing allows. As such, the numbers used from one biological opinion to the next may vary and should be viewed as a snapshot in time at any given moment. We have not tracked loss of habitat because a limited number of biological assessments actually quantify habitat for Pima Pineapple cactus.

We do know the number and fate of PPC that have been detected during surveys for projects that have undergone section 7 consultation. Through 2014, section 7 consultations on development projects (e.g., residential and commercial development, mining, infrastructure improvement) considered 2,939 PPC plants found on approximately 15,771 acres within the range of the PPC. Of the total number of plants, 2,170 PPC (74 percent) were destroyed, removed, or transplanted as a result of development, mining, and infrastructure projects. In terms of PPC habitat, some of the 15,771 acres likely did not provide PPC habitat, but that amount is difficult to quantify because PPC habitat was not consistently delineated in every consultation. Of the 15,771 acres, however, we are aware that 15,106 acres (96 percent) have been either permanently or temporarily impacted. Some of these acres may still provide natural open space, but we have not been informed of any measures (e.g., conservation easements) that have been completed to ensure these areas will remain open. Through section 7 consultation on non-development-related projects (e.g., fire management plans, grazing, buffelgrass control), we are aware of an additional 781 plants within an unknown number of acres; we do not know the number of acres because these types of projects are often surveyed for PPC inconsistently, if at all. Across the entire PPC range, it is difficult to quantify the total number of PPC lost and the rate and amount of habitat loss for three reasons: 1) we review only a small portion of projects within the range of PPC (only those that have Federal involvement and are subject to section 7 consultation), 2) development that takes place without any jurisdictional oversight is not tracked within Pima and Santa Cruz counties, and 3) many areas within the range of the PPC have not been surveyed; therefore, we do not know how many plants exist or how much habitat is presently available.

Some additional information related to the survival of Pima Pineapple cactus comes from six demographic plots that were established in 2002 in the Altar Valley. The results from the first year (2002-2003) indicate that the populations were stable; out of a total of over 300 Pima Pineapple cactus measured, only 10 died, and two Pima Pineapple cactus seedlings were found (Routson *et al.* 2004). The plots were not monitored in 2004, but were visited again starting in May 2005. In the two years between September 2003 and September 2005, 35 individuals, or 13.4 percent, of the original population had died and no new seedlings were found (Baker

2006a). Baker (2006a) suggests that recruitment likely occurs in punctuated events in response to quality and timing of precipitation, and possibly temperature, but there is little evidence until such events occur. He goes on to say that further observations need to be made to determine the rate at which the population is declining, because, based on an overall rate of die-off of 13.4 percent every two years, few individuals will be alive at this site after 15 years. As this monitoring program continues, critical questions regarding the life cycle of this species will be answered.

Threats to Pima Pineapple cactus continue to include habitat loss and fragmentation, competition with non-native species, and inadequate regulatory mechanisms to protect this species. We believe residential and commercial development, and its infrastructure, is by far the greatest threat to Pima Pineapple cactus and its habitat. However, we have only a limited ability to track the cumulative amount of development within the range of Pima Pineapple cactus. What is known with certainty is that development pressure continues in Pima and Santa Cruz counties.

Invasive grass species may be a threat to the habitat of Pima Pineapple cactus. Habitat in the southern portion of the Altar Valley is now dominated by Lehmann lovegrass (*Eragrostis lehmanniana*). According to Gori and Enquist (2003), Boer lovegrass (*Eragrostis chloromelas*) and Lehmann lovegrass are now common and dominant on 1,470,000 acres in southeastern Arizona. They believe that these two grass species will continue to invade native grasslands to the north and east, as well as south into Mexico. These grasses have a completely different fire regime than the native grasses, tending to form dense stands that promote higher intensity fires more frequently. Disturbance (like fire) tends to promote the spread of these non-natives (Ruyle *et al.* 1988, Anable *et al.* 1992). Roller and Halvorson (1997) hypothesized that fire-induced mortality of Pima Pineapple cactus increases with Lehmann lovegrass density. Buffelgrass (*Pennisetum ciliare*) has become locally dominant in vacant areas in the City of Tucson and along roadsides, notably in the rights-of-way along Interstate 10 and State Route 86. Some portions of Pima Pineapple cactus habitat along these major roadways are already being converted to dense stands of buffelgrass, which can lead to recurring grassland fires and the destruction of native desert vegetation (Buffelgrass Working Group 2007).

The effects of climate change (i.e., decreased precipitation and water resources) are a threat to the long-term survival and distribution of native plant species, including the Pima Pineapple cactus. For example, temperatures rose in the twentieth century and warming is predicted to continue over the twenty-first century. Although climate models are less certain about predicted trends in precipitation, the southwestern United States is expected to become warmer and drier. In addition, precipitation is expected to decrease in the southwestern United States, and many semi-arid regions will suffer a decrease in water resources from climate change as a result of less annual mean precipitation and reduced length of snow season and snow depth. Approximately half of the precipitation within the range of the Pima Pineapple cactus typically falls in the summer months; however, the impacts of climate change on summer precipitation are not well understood. Drought conditions in the southwestern United States have increased over time and may have contributed to loss of Pima Pineapple cactus populations through heat stress, drought stress, and related insect attack, as well as a reduction in germination and seedling success since the species was originally listed in 1993, and possibly historically. Climate change trends are

likely to continue, and the impacts on species will likely be complicated by interactions with other factors (e.g., interactions with non-native species and other habitat-disturbing activities).

The Arizona Native Plant Law can delay vegetation clearing on private property for the salvage of specific plant species within a 30-day period. Although the Arizona Native Plant Law prohibits the taking of this species on State and private lands without a permit for educational or research purposes, it does not provide for protection of plants *in situ* through restrictions on development activities. Even if Pima Pineapple cactus are salvaged from a site, transplanted individuals only contribute to a population if they survive and are close enough (within 900 m [(2,970 ft]) to other Pima Pineapple cactus to be part of a breeding population from the perspective of pollinator travel distances and the likelihood of effective pollination. Transplanted Pima Pineapple cactus have variable survival rates, with moderate to low levels of survival documented. Past efforts to transplant individual Pima Pineapple cactus to other locations have had limited success. For example, on two separate projects in Green Valley, the mortality rate for transplanted Pima Pineapple cactus after two years was 24 percent and 66 percent, respectively (SWCA, Inc. 2001, WestLand Resources, Inc. 2004). One project southwest of Corona de Tucson involved transplanting Pima Pineapple cactus into areas containing *in situ* plants. Over the course of three years, 48 percent of the transplanted individuals and 24 percent of the *in situ* individuals died (WestLand Resources, Inc. 2008). There is also the unquantifiable loss of the existing Pima Pineapple cactus seed bank associated with the loss of suitable habitat. Furthermore, once individuals are transplanted from a site, Pima Pineapple cactus is considered to be extirpated from that site, as those individuals functioning in that habitat are moved elsewhere. There are currently two ongoing research projects related to the relocation of Pima Pineapple cacti which should give us additional information related to the effectiveness of this potential conservation strategy.

Pima County regulates the loss of native plant material associated with ground-disturbing activities through their Native Plant Protection Ordinance (NPPO) (Pima County 1998). The NPPO requires inventory of the site and protection and mitigation of certain plant species slated for destruction by the following method: the designation of a minimum of 30 percent of on-site, permanently protected open space with preservation in place or transplanting of certain native plant species from the site. There are various tables that determine the mitigation ratio for different native plant species (e.g. saguaros, ironwood trees, Pima Pineapple cactus) with the result that mitigation may occur at a 1:1 or 2:1 replacement ratio. Mitigation requirements are met through the development of preservation plans. The inadvertent consequence of this ordinance is that it has created a "market" for Pima Pineapple cactus. Any developer who cannot avoid this species or move it to another protected area must replace it. Most local nurseries do not grow Pima Pineapple cactus (and cannot grow them legally unless seed was collected before the listing). As a result, environmental consultants are collecting Pima Pineapple cactus seed from existing sites (which can be done with a permit from the Arizona Department of Agriculture and the permission of the private landowner), germinating seed, and placing Pima Pineapple cactus plants grown from seed back on these sites. There have been no long-term studies of transplant projects, thus the conservation benefit of these actions is unknown. Moreover, growing and planting Pima Pineapple cactus does not address the loss of Pima Pineapple cactus habitat that necessitated the action of transplanting cacti in the first place.

Other specific threats that have been previously documented (58 FR 49875), such as overgrazing, illegal collection, prescribed fire, and mining, have not yet been analyzed to determine the extent of effects to this species. However, partial information exists. Overgrazing by livestock, illegal collection, and fire-related interactions involving exotic Lehmann lovegrass and buffelgrass may negatively affect Pima Pineapple cactus populations. Mining has resulted in the loss of hundreds, if not thousands, of acres of potential habitat throughout the range of the plant.

The protection of Pima Pineapple cactus habitat and individuals is complicated by the varying land ownership within the range of this species in Arizona. An estimated 10 percent of the potential habitat for Pima Pineapple cactus is held in Federal ownership. The remaining 90 percent is on Tribal, State, and private lands. Most of the federally-owned land is either at the edge of the plant's range or in scattered parcels. The largest contiguous parcel of federally-owned habitat is the Buenos Aires National Wildlife Refuge, located at the southwestern edge of the plant's range at higher elevations and with lower plant densities. No significant populations of Pima Pineapple cactus are known from Sonora or elsewhere in Mexico (Baker 2005).

There have been some notable conservation developments for this species. As of 2010, there are two conservation banks for Pima Pineapple cactus, one on a private ranch in the Altar Valley (Palo Alto Ranch Conservation Bank) and another owned by Pima County that includes areas in both the Altar Valley and south of Green Valley. In the Palo Alto Ranch Conservation Bank, 131.6 acres have been conserved to date. In Pima County's Bank, a total of 530 acres are under a conservation easement at this time (the County offsets its own projects within this bank). Additionally, three large blocks of land totaling another 1,078 acres have been set aside or are under conservation easements through previous section 7 consultations (see consultations 02-21-99-F-273, 02-21-01-F-101, and 02-21-03-F-0406). While not formal conservation banks, these areas, currently totaling 1,739.6 acres, are set aside and managed specifically for Pima Pineapple cactus as large blocks of land, and likely contribute to recovery of the taxon for this reason; therefore, we consider these acres conserved. Another 647 acres of land have been set aside as natural open space within the developments reviewed through section 7 consultation between 1995 and 2010. However, these are often small areas within residential backyards (not in a common area) that are difficult to manage and usually isolated within the larger development, and often include areas that do not provide Pima Pineapple cactus habitat (e.g., washes). Some conservation may occur onsite because of these open space designations, but long-term data on conservation within developed areas are lacking; the value of these areas to Pima Pineapple cactus recovery over the long-term is likely not great.

In summary, Pima Pineapple cactus conservation efforts are currently hampered by a lack of information on the species. Specifically, we have not been able to determine exact ecological characters to help us predict locations of Pima Pineapple cactus or precisely delineate its habitat, and considerable area within the Pima Pineapple cactus range has not been surveyed. Further, there are still significant gaps in our knowledge of the life history of Pima Pineapple cactus; for instance, we have yet to observe a good year for seed germination. From researcher observations and motion sensing cameras, we have learned that ants, Harris' antelope squirrels, and jackrabbits act as seed dispersal agents. Demographic plots have been only recently established,

and information is just now beginning to be reported with regard to describing population dynamics for Pima Pineapple cactus in the Altar Valley.

Development and associated loss of habitat remain important and continuing threats to this taxon. However, the expanding threat of non-native grasses and resulting altered fire regimes are a serious concern for the long-term viability of the species, as is ongoing drought. The full impact of drought and climate change on Pima Pineapple cactus has yet to be studied, but it is likely that, if recruitment occurs in punctuated events based on precipitation and temperature (Baker 2006a), Pima Pineapple cactus will be negatively affected by these forces. Already we have seen a nearly 25% loss of individuals across six study sites in the Altar Valley between 2010 and 2011; these deaths were attributed largely to drought and associated predation by native insects and rodents (Baker 2011). Conservation efforts that focus on habitat acquisition and protection, like those proposed by Pima County and the City of Tucson, are important steps in securing the long-term viability of this taxon. Regulatory mechanisms, such as the native plant protection ordinances, provide conservation direction for Pima Pineapple cactus habitat protection within subdivisions, and may serve to reduce Pima Pineapple cactus habitat fragmentation within areas of projected urban growth.

Southwestern Willow Flycatcher

The flycatcher was listed as endangered, without critical habitat on February 27, 1995 (60 FR 10694). Final designated critical habitat was published on January 3, 2013 ((78 FR 344). The southwestern willow flycatcher recovery plan (U.S. Fish and Wildlife Service 2002) (RP) describes reasons for endangerment, flycatcher status, addresses recovery actions, includes detailed issue papers, and provides recovery goals. Recovery is based on reaching numerical and habitat related goals for each specific Management Unit (MU) established throughout the subspecies' range and establishing long-term conservation plans.

Description

The southwestern willow flycatcher is a small grayish-green passerine bird (Family Tyrannidae) measuring approximately 5.75 inches. The song is a sneezy "fitz-bew" or a "fit-a-bew", the call is a repeated "whit." It is one of four currently recognized willow flycatcher subspecies (Phillips 1948, Unitt 1987, Browning 1993). It is a neotropical migrant that breeds in the southwestern U.S. and migrates to Mexico, Central America, and possibly northern South America during the non-breeding season (Phillips 1948, Stiles and Skutch 1989, Peterson 1990, Ridgely and Tudor 1994, Howell and Webb 1995). The historical breeding range of the southwestern willow flycatcher included southern California, Arizona, New Mexico, western Texas, southwestern Colorado, southern Utah, extreme southern Nevada, and extreme northwestern Mexico (Sonora and Baja) (Unitt 1987).

Habitat

The southwestern willow flycatcher breeds in dense riparian habitats from sea level in California to approximately 8,500 feet in Arizona and southwestern Colorado. Historical egg/nest collections and species' descriptions throughout its range describe the southwestern willow

flycatcher's widespread use of willow (*Salix* spp.) for nesting (Phillips 1948, Phillips *et al.* 1964, Hubbard 1987, Unitt 1987). Currently, southwestern willow flycatchers primarily use Geyer willow (*S. geyeriana*), coyote willow (*S. exigua*), Goodding's willow (*S. gooddingii*), boxelder (*Acer negundo*), saltcedar (*Tamarix* sp.), Russian olive (*Elaeagnus angustifolio*), and live oak (*Quercus agrifolia*) for nesting. Other plant species less commonly used for nesting include: buttonbush (*Cephalanthus* sp.), black twinberry (*Lonicera involucrata*), cottonwood (*Populus* spp.), white alder (*Alnus rhombifolia*), blackberry (*Rubus ursinus*), and stinging nettle (*Urtica* spp.). Based on the diversity of plant species composition and complexity of habitat structure, four basic habitat types can be described for the southwestern willow flycatcher: monotypic willow, monotypic exotic, native broadleaf dominated, and mixed native/exotic (Sogge *et al.* 1997). The southwestern willow flycatcher is an insectivore, foraging in dense shrub and tree vegetation along rivers, streams, and other wetlands.

The flycatcher's habitat is dynamic and can change rapidly: nesting habitat can grow out of suitability; saltcedar habitat can develop from seeds to suitability in about four to five years; heavy runoff can remove/reduce habitat suitability in a day; or river channels, floodplain width, location, and vegetation density may change over time. The flycatcher's use of habitat in different successional stages may also be dynamic. For example, over-mature or young habitat not suitable for nest placement can be occupied and used for foraging and shelter by migrating, breeding, dispersing, or non-territorial southwestern willow flycatchers (McLeod *et al.* 2005, Cardinal and Paxton 2005). Flycatcher habitat can quickly change and vary in suitability, location, use, and occupancy over time (Finch and Stoleson 2000).

Tamarisk is an important component of the flycatcher's nesting and foraging habitat in the central part of the flycatcher's breeding range in Arizona, southern Nevada and Utah, and western New Mexico. In 2001 in Arizona, 323 of the 404 (80 percent) known flycatcher nests (in 346 territories) were built in a tamarisk tree (Smith *et al.* 2002). Tamarisk had been believed by some to be a habitat type of lesser quality for the southwestern willow flycatcher, however comparisons of reproductive performance (U. S. Fish and Wildlife Service 2002), prey populations (Durst 2004) and physiological conditions (Owen and Sogge 2002) of flycatchers breeding in native and exotic vegetation has revealed no difference (Sogge *et al.* 2005).
The introduced tamarisk leaf beetle was first detected affecting tamarisk within the range of the southwestern willow flycatcher in 2008 along the Virgin River in St. George, Utah. Initially, this insect was not believed to be able to move into or survive within the southwestern United States in the breeding range of the flycatcher. Along this Virgin River site in 2009, 13 of 15 flycatcher nests failed following vegetation defoliation (Paxton *et al.* 2010). As of 2012, the beetle has been found in southern Nevada/Utah and northern Arizona/New Mexico within the flycatcher's breeding range. Because tamarisk is a component of about 50 percent of all known flycatcher territories (Durst *et al.* 2008), continued spread of the beetle has the potential to significantly alter the distribution, abundance, and quality of flycatcher nesting habitat and impact breeding attempts.

Arizona Distribution and Abundance

While numbers have significantly increased in Arizona (145 to 459 territories from 1996 to 2007) (English *et al.* 2006, Durst *et al.* 2008), overall distribution of flycatchers throughout the state has not changed much. Currently, population stability in Arizona is believed to be largely dependent on the presence of two large populations (Roosevelt Lake and San Pedro/Gila River confluence). Therefore, the result of catastrophic events or losses of significant populations either in size or location could greatly change the status and survival of the bird. Conversely, expansion into new habitats or discovery of other populations would improve the known stability and status of the flycatcher.

Factors Affecting the Species

The evidence suggests that fire was not a primary disturbance factor in southwestern riparian areas near larger streams (U. S. Fish and Wildlife Service 2002). Yet, in recent time, fire size and frequency has increased on the lower Colorado, Gila, Bill Williams, and Rio Grande rivers. The increase has been attributed to increasing dry, fine fuels as a result of the cessation of flood flows and human caused ignition sources. The spread of the highly flammable plant, tamarisk, and drying of river areas due to river flow regulation, water diversion, lowering of groundwater tables, and other land practices is largely responsible for these fuels. A fire in June 1996 destroyed approximately a half mile of occupied tamarisk flycatcher nesting habitat on the San Pedro River in Pinal County. That fire resulted in the forced dispersal or loss of up to eight pairs of flycatchers (Paxton *et al.* 1996). Smaller fires have occurred along the upper most portion of the San Pedro River closer to the Mexico Border and another large fire occurred on the lower San Pedro River at the Nature Conservancy's San Pedro Preserve between Winkelman and Dudleyville in 2004. Recreationists cause over 95 percent of the fires on the lower Colorado River (U. S. Fish and Wildlife Service 2002).

There are no extensive records for the actual causes of adult southwestern willow flycatcher mortality. Incidents associated with nest failures, human disturbance, and nestlings are typically the most often recorded due to the static location of nestlings, eggs, and nests. As a result, nestling predation and brood parasitism are the most commonly recorded causes of southwestern willow flycatcher mortality. Also, human destruction of nesting habitat through bulldozing, groundwater pumping, and aerial defoliants has been recorded in Arizona (T. McCarthey, AGFD, pers. comm.). Human collision with nests and spilling the eggs or young onto the ground have been documented near high use recreational areas (U. S. Fish and Wildlife Service 2002). A southwestern willow flycatcher from the Greer Town site along the Little Colorado River in eastern Arizona was found dead after being hit by a vehicle along SR 373. This route is adjacent to the breeding site (T. McCarthey, AGFD, pers. comm.).

Since listing in 1995, approximately 210 Federal agency actions have undergone (or are currently under) formal section 7 consultation throughout the flycatcher's range. This list of consultations can be found in the administrative record for this consultation. Since flycatcher critical habitat was finalized in 2005, at least 33 formal opinions have been completed in Arizona (within and outside designated critical habitat). While many opinions were issued for the

previous critical habitat designation, the stream reaches and constituent elements have changed under the more recent designation.

Activities continue to adversely affect the distribution and extent of all stages of flycatcher habitat throughout its range (development, urbanization, grazing, recreation, native and non-native habitat removal, dam operations, river crossings, ground and surface water extraction, etc.). Introduced tamarisk eating leaf beetles were not anticipated to persist within the range of the southwestern willow flycatcher. However, they were detected within the breeding habitat (and designated critical habitat) of the flycatcher in 2008 along the Virgin River near the Town of St. George, Utah. In 2009, beetles were also known to have been detected defoliating habitat within the range of flycatcher habitat in southern Nevada, and along the Colorado River in the Grand Canyon and near Shiprock in Arizona. Stochastic events also continue to change the distribution, quality, and extent of flycatcher habitat.

Conservation measures associated with some consultations and Habitat Conservation Plans have helped to acquire lands specifically for flycatchers on the San Pedro, Verde, and Gila rivers in Arizona and the Kern River in California. Additionally, along the lower Colorado River, the U.S. Bureau of Reclamation is currently attempting to establish riparian vegetation to expand and improve the distribution and abundance of nesting flycatchers. A variety of Tribal Management Plans in California, Arizona, and New Mexico have been established to guide conservation of the flycatchers. Additionally, during the development of the critical habitat rule, management plans were developed for some private lands along the Owens River in California and Gila River in New Mexico. These are a portion of the conservation actions that have been established across the subspecies' range.

Critical Habitat

Critical habitat has been designated along approximately 1,975 stream kilometers (1,227 stream miles). The designation includes the stream segments, with the lateral extent including the riparian areas and streams that occur within the 100-year floodplain or flood-prone areas encompassing a total area of approximately 84,569 hectares (208,973 acres). Critical habitat units have been designated in areas within California, Arizona, and New Mexico. Within these areas, the primary constituent elements of the physical and biological features essential to the conservation of the southwestern willow flycatcher are:

1. *Riparian vegetation.* Riparian habitat along a dynamic river or lakeside, in a natural or manmade successional environment (for nesting, foraging, migration, dispersal, and shelter) that is comprised of trees and shrubs (that can include Gooddings willow, coyote willow, Geyer's willow, arroyo willow, red willow, yewleaf willow, pacific willow, boxelder, tamarisk, Russian olive, buttonbush, cottonwood, stinging nettle, alder, velvet ash, poison hemlock, blackberry, seep willow, oak, rose, sycamore, false indigo, Pacific poison ivy, grape, Virginia creeper, Siberian elm, and walnut) and some combination of:

    a. Dense riparian vegetation with thickets of trees and shrubs that can range in height from about 2 meters (m) to 30 m (about 6 feet (ft) to 98 ft). Lower stature thickets (2 to 4 m or 6 to 13 ft tall) are found at higher elevation riparian forests, and tall-stature thickets are found at middle- and lower elevation riparian forests;

b. Areas of dense riparian foliage at least from the ground level up to approximately 4 m (13 ft) above ground or dense foliage only at the shrub or tree level as a low, dense canopy;

c. Sites for nesting that contain a dense (about 50 percent to 100 percent) tree or shrub (or both) canopy (the amount of cover provided by tree and shrub branches measured from the ground);

d. Dense patches of riparian forests that are interspersed with small openings of open water or marsh or areas with shorter and sparser vegetation that creates a variety of habitat that is not uniformly dense. Patch size may be as small as 0.1 hectare (ha) (0.25 acre (ac)) or as large as 70 ha (175 ac).

2. *Insect prey populations.* A variety of insect prey populations found within or adjacent to riparian floodplains or moist environments, which can include: flying ants, wasps, and bees (Hymenoptera); dragonflies (Odonata); flies (Diptera); true bugs (Hemiptera); beetles (Coleoptera); butterflies, moths, and caterpillars (Lepidoptera); and spittlebugs (Homoptera).

A complete description of the biology of the southwestern willow flycatcher (*Empidonax traillii extimus*) is contained in the *Southwestern Willow Flycatcher Recovery Plan* U. S. Fish and Wildlife Service 2002).

Northern Mexican Gartersnake

The northern Mexican gartersnake was listed as threatened under the Act on July 8, 2014 (79 FR 38678). Critical habitat was proposed on July 10, 2013 (78 FR 41550), with a final determination in preparation. Refer to these two rules for more in-depth information on the ecology and threats to the species, including references. The proposed rules are incorporated here by reference.

Description

The northern Mexican gartersnake ranges in color from olive to olive-brown or olive-gray with three lighter-colored stripes that run the length of the body, the middle of which darkens towards the tail. It may occur with other native gartersnake species and can be difficult for people without specific expertise to identify. The snake may reach a maximum length of 44 in (112 cm). The pale yellow to light-tan lateral stripes distinguish the northern Mexican gartersnake from sympatric gartersnake species because a portion of the lateral stripe is found on the fourth scale row, while it is confined to lower scale rows for other species. Paired black spots extend along the olive dorsolateral fields (region adjacent to the top of the snake's back) and the olive-gray ventrolateral fields. The scales are keeled.

Habitat and Natural History

Throughout its rangewide distribution, the northern Mexican gartersnake occurs at elevations from 130 to 8,497 feet (40 to 2,590 meters) (Rossman *et al.* 1996) and is considered a "terrestrial-aquatic generalist" by Drummond and Marcías-García (1983). The northern Mexican gartersnake is a riparian obligate (generally found near water when not dispersing) and occurs chiefly in the following habitat types: 1) Source-area wetlands (e.g., cienegas [mid-elevation wetlands with highly organic, reducing {basic or alkaline} soils], or stock tanks); 2) large-river

riparian woodlands and forests; and 3) streamside gallery forests (as defined by well-developed broadleaf deciduous riparian forests with limited, if any, herbaceous ground cover or dense grass) (Hendrickson and Minckley 1984, Rosen and Schwalbe 1988). When surveying in the upper Verde River region, Emmons and Nowak (2013) found this subspecies most commonly in protected backwaters, braided side channels and beaver ponds, isolated pools near the river mainstem, and edges of dense emergent vegetation that offered cover and foraging opportunities.

The northern Mexican gartersnake is surface active at ambient (air) temperatures ranging from 71 degrees Fahrenheit (°F) to 91 °F (22 degrees Celsius (°C) to 33 °C) and forages along the banks of waterbodies (Rosen 1991, p. 305, Table 2). While conducting visual surveys, Rosen (1991, pp. 308–309) found that northern Mexican gartersnakes spent up to 60 percent of their time moving, 13 percent of their time basking on vegetation, 18 percent of their time basking on the ground, and 9 percent of their time under surface cover. However, preliminary telemetry data from a population of northern Mexican gartersnakes at the Bubbling Ponds State Fish Hatchery show individuals were surface active during 16 percent of telemetry observations, not surface active during 64 percent of telemetry observations, and surface activity was undetermined for 20 percent of the telemetry observations (Boyarsky 2013, pers. comm.); at Tavasci Marsh along the upper Verde River, they were inactive 60 percent of the time (Emmons 2013b, pers. comm.). In the northern-most part of its range, the northern Mexican gartersnake appears to be most active during July and August, followed by June and September (Emmons and Nowak 2013, p. 14). Northern Mexican gartersnakes may use different sites as hibernacula during a single cold-season and will bask occasionally (Emmons 2014, pers. comm.).

The northern Mexican gartersnake is an active predator and is believed to heavily depend upon a native prey base (Rosen and Schwalbe 1988). Northern Mexican gartersnakes forage along vegetated banklines, searching for prey in water and on land, using different strategies (Alfaro 2002). Generally, its diet consists of amphibians and fishes, such as adult and larval (tadpoles) native leopard frogs (e.g., lowland leopard frog [*Lithobates yavapaiensis*] and Chiricahua leopard frog), as well as juvenile and adult native fish species (e.g., Gila topminnow, desert pupfish, and roundtail chub [*G. robusta*]) (Rosen and Schwalbe 1988). Drummond and Marcías-García (1983) found that as a subspecies, Mexican gartersnakes fed primarily on frogs. Auxiliary prey items may also include young Woodhouse's toads (*Anaxyrus woodhousei*), treefrogs (Family Hylidae), earthworms, deermice (*Peromyscus* spp.), lizards of the genera Aspidoscelis and Sceloporus, larval tiger salamanders (*Ambystoma tigrinum*), and leeches (Gregory *et al.* 1980, Holm and Lowe 1995, Degenhardt *et al.* 1996, Rossman *et al.* 1996, Manjarrez 1998). In situations where native prey species are rare or absent, this snake's diet may include nonnative species, including larval and juvenile bullfrogs (*Lithobates catesbeianus*), western mosquitofish (*Gambusia affinis*) (Holycross *et al.* 2006, Emmons and Nowak 2013), or other soft-rayed fishes. Venegas-Barrera and Manjarrez (2001) reported the first observation of a snake in the natural diet of any species of Thamnophis after documenting the consumption by a Mexican gartersnake (subspecies not provided) of a Mexican alpine blotched gartersnake (*T. scalaris*).

Historical Distribution

Within the United States, the northern Mexican gartersnake historically occurred predominantly in Arizona at elevations ranging from 130 to 6,150 ft (40-1,875 m). It was generally found where water was relatively permanent and supported suitable habitat. The northern Mexican gartersnake historically occurred in every county and nearly every subbasin within Arizona, from several perennial or intermittent creeks, streams, and rivers as well as lentic (still, non-flowing water) wetlands such as cienegas, ponds, or stock tanks. Northern Mexican gartersnake records exist within the following subbasins in Arizona: Colorado River, Bill Williams River, Agua Fria River, Salt River, Tonto Creek, Verde River, Santa Cruz River, Cienega Creek, San Pedro River, Babocomari River, and the Rio San Bernardino (Black Draw) (Woodin 1950, Nickerson and Mays 1970, Bradley 1986, Brennan and Holycross 2006, Cotton *et al.* 2013).

Historically, the northern Mexican gartersnake had a limited distribution in New Mexico that consisted of scattered locations throughout the Upper Gila River watershed in Grant and western Hidalgo Counties, including the Upper Gila River, Mule Creek in the San Francisco River subbasin, and the Mimbres River (Price 1980, Fitzgerald 1986, Degenhardt *et al.* 1996, Holycross *et al.* 2006).

Current Distribution and Population Status

The only viable northern Mexican gartersnake populations in the United States where the subspecies remains reliably detected are all in Arizona: 1) The Page Springs and Bubbling Ponds State Fish Hatcheries along Oak Creek, 2) lower Tonto Creek, 3) the upper Santa Cruz River in the San Rafael Valley, 4) the Bill Williams River, and 5) the upper/middle Verde River. In New Mexico, the northern Mexican gartersnake may occur in extremely low population densities within its historical distribution; limited survey effort is inconclusive with respect to determining extirpation. The status of the northern Mexican gartersnake on tribal lands, such as those owned by the White Mountain or San Carlos Apache Tribes, is poorly known due to historically limited survey access and access to any survey data. As stated previously, less is known specifically about the current distribution of the northern Mexican gartersnake in Mexico due to limited surveys and limited access to information on survey efforts and field data from Mexico. All proposed critical habitat units (see critical habitat section below) are considered occupied (78 FR 41558).

Threats to the Northern Mexican Gartersnake

Riparian and aquatic communities in both the United States and Mexico have been significantly impacted by a shift in species' composition, from one of primarily native fauna, to one being increasingly dominated by an expanding assemblage of nonnative animal species. These nonnative species have been intentionally or accidentally introduced, including crayfish, bullfrogs, and nonnative, spiny-rayed fish. Harmful nonnative species have been introduced or have spread into new areas through a variety of mechanisms, by sport stocking, aquaculture, aquarium releases, and bait-bucket release. The overall effect of these harmful nonnative species on gartersnake populations is two-fold. Harmful nonnative species contribute to starvation of gartersnake populations through competitive mechanisms, and reduce or eliminate

recruitment of young gartersnakes through predation. The threat from harmful nonnative species is the most severe and geographically pervasive of all threats affecting the northern Mexican gartersnake.

The occurrence of harmful nonnative species, such as the bullfrog, the northern (virile) crayfish (*Orconectes virilis*), red swamp crayfish (*Procambarus clarkii*), and numerous species of nonnative, spiny-rayed fish (often referred to as "warm water sportfish"), has contributed to rangewide declines in the northern Mexican gartersnake, and continues to be the most significant threat to the species and to its prey base, as a result of direct predation, competition, and modification of habitat as evidenced in a broad body of literature, the most recent of which extends from 1985 to the present (Papoulias *et al.* 1989, Inman *et al.* 1998, Knapp 2005, Luja and Rodríguez-Estrella 2008, Emmons and Nowak 2013). Tail injuries are also a concern for gartersnake populations that occur with harmful nonnative species (Willis *et al.* 1982, Rosen and Schwalbe1988, Mushinsky and Miller 1993, Fitch 2003) and can affect the majority of individuals within a population (Rosen and Schwalbe1988).

The scientific literature confirms that harmful nonnative species are the most significant and widespread factor that continues to drive further declines in and extirpations of northern Mexican gartersnake populations. Additional threats to their habitat can also contribute to population declines, but should be evaluated in the context of the presence or absence of harmful nonnative species. Researchers agree that the period from 1850 to 1940 marked the greatest loss and degradation of riparian and aquatic communities in Arizona, many of which were caused by anthropogenic (human-caused) land uses and the primary and secondary effects of those uses (Davis 1982, Stromberg *et al.* 1996, Webb and Leake 2005). Degradation of habitats is a well-recognized factor in establishment of nonnative species (Courtenay and Stauffer 1984, Arthington *et al.* 1990, Soule 1990, Aquatic Nuisance Species Task Force 1994).

The presence of water is critical for northern Mexican gartersnakes, as well as their prey base. Of all the activities that may threaten their physical habitat, none are more serious than those that reduce flows or dewater habitat over large reaches or locally. Structures or activities that can cause these effects include dams, diversions, flood-control projects, and groundwater pumping and are widespread in Arizona, largely in response to human population growth. For example, municipal water use in central Arizona increased by 39 percent from 1998 to 2006 (American Rivers 2006), and at least 35 percent of Arizona's perennial rivers have been dewatered, assisted by about 95 dams that are in operation in Arizona today (Turner and List 2007).

Flow regimes within streams are a primary factor that shape fish communities. The timing, duration, intensity, and frequency of flood events has been altered to varying degrees by the presence of dams, which effects fish communities. Specifically, Haney *et al.* (2008) suggested that flood pulses may help to reduce populations of nonnative species (Minckley and Meffe 1987) and efforts to increase baseflows may assist in sustaining native prey species for northern Mexican gartersnakes. However, the investigators in this study also suggest that, because the northern Mexican gartersnake preys on both fish and frogs, it may be less affected by reductions in baseflow of streams (Haney *et al.* 2008). Unregulated flows with elevated discharge events favor native species, and regulated flows, absent significant discharge events, favor nonnative species (Rinne and Miller 2006, Propst *et al.* 2008).

The ecology and natural history of northern Mexican gartersnakes is linked to water. As discussed above, the northern Mexican gartersnake is an aquatic species and relies largely upon other aquatic species, such as ranid frogs and native and nonnative, soft-rayed fish as prey. Therefore, these factors are likely to make northern Mexican gartersnakes vulnerable to effects of climate change and drought.

Many other factors have contributed to the decline of the northern Mexican gartersnake, and in some cases, continue to present a significant threat to low-density populations through synergistic mechanisms. These factors, and their effects to northern Mexican gartersnake populations, were discussed in detail in our 2014 rule to list the subspecies (79 FR 38678) and in the 2013 rule proposing critical habitat (78 FR 41500) which is incorporated by reference here. For more information on these additional threats, please review our rules and references cited.

Proposed Critical Habitat

Critical habitat has been proposed in portions of Arizona and New Mexico totaling 421,423 acres. Within these areas, the primary constituent elements of the physical and biological features essential to the conservation of the northern Mexican gartersnake are:

1. Aquatic or riparian habitat that includes:
    a. Perennial or spatially intermittent streams of low to moderate gradient that possess appropriate amounts of in-channel pools, off-channel pools, or backwater habitat, and that possess a natural, unregulated flow regime that allows for periodic flooding or, if flows are modified or regulated, a flow regime that allows for adequate river functions, such as flows capable of processing sediment loads; or
    b. Lentic wetlands such as livestock tanks, springs, and cienegas; and
    c. Shoreline habitat with adequate organic and inorganic structural complexity to allow for thermoregulation, gestation, shelter, protection from predators, and foraging opportunities (e.g., boulders, rocks, organic debris such as downed trees or logs, debris jams, small mammal burrows, or leaf litter); and
    d. Aquatic habitat with characteristics that support a native amphibian prey base, such as salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present at levels that do not affect survival of any age class of the northern Mexican gartersnake or the maintenance of prey populations.
2. Adequate terrestrial space (600 ft [182.9 m] lateral extent to either side of bankfull stage) adjacent to designated stream systems with sufficient structural characteristics to support life-history functions such as gestation, immigration, emigration, and brumation.
3. A prey base consisting of viable populations of native amphibian and native fish species.
4. An absence of nonnative fish species of the families Centrarchidae and Ictaluridae, bullfrogs, and/or crayfish (*O. virilis, P. clarki*, etc.), or occurrence of these nonnative species at low enough levels such that recruitment of northern Mexican gartersnakes and maintenance of viable native fish or soft-rayed, nonnative fish populations (prey) is still occurring.

Yellow-billed Cuckoo, Western Distinct Population Segment

The Western Distinct Population Segment (DPS) of the yellow-billed cuckoo was listed as a threatened species on October 2, 2014 (79 FR 59992). Critical habitat was proposed on August 15, 2014 (79 FR 48548), with a final determination expected sometime in 2015.

Physical Characteristics

Adult yellow-billed cuckoos have moderate to heavy bills, somewhat elongated bodies and a narrow yellow ring of colored bare skin around the eye. The plumage is grayish-brown above and white below, with reddish primary flight feathers. The tail feathers are boldly patterned with black and white below. They are a medium-sized bird about 12 in (30cm) in length, and about 2 oz (60 g) in weight. Males and females differ slightly; the males have a slightly smaller body size, smaller bill, and the white portions of the tail tend to form distinct oval spots. In females the white spots are less distinct and tend to be connected (Hughes 1999, 79 FR 59992).

Morphologically, the yellow-billed cuckoos throughout the western continental United States and Mexico are generally larger than individuals in the eastern United States, with significantly longer wings, longer tails, and longer and deeper bills (Franzreb and Laymon 1993). Birds with these characteristics occupy the Western DPS and are we refer to them as the "western yellow-billed cuckoo." Only the Western DPS has been proposed for listing as a threatened species (78 FR 61622). Yellow-billed cuckoos in the west arrive on the breeding grounds 4 to 8 weeks later than eastern yellow-billed cuckoos at similar latitude (Franzreb and Laymon 1993, Hughes 1999). Some information exists suggesting that the western population segment described in the scientific literature as the western yellow-billed cuckoo (Coccyzus americanus occidentalis) is distinguishable at the subspecific level; however, there is enough literature to conclude that recognition of the subspecies is not justified at this time (79 FR 59992).

Distribution

The yellow-billed cuckoo is a member of the avian family Cuculidae and is a Neotropical migrant bird that winters in South America and breeds in North America. The breeding range of the entire species formerly included most of North America from southeastern and western Canada (southern Ontario and Quebec and southwestern British Colombia) to the Greater Antilles and northern Mexico (American Ornithologists Union 1957, 1983, 1998).

Based on historical accounts, the western yellow-billed cuckoo was formerly widespread and locally common in California and Arizona, more narrowly distributed but locally common in New Mexico, Oregon, and Washington and uncommon along the western front of the Rocky Mountains north to British Columbia (American Ornithologists Union 1998, Hughes 1999). The species may be extirpated from British Colombia, Washington, and Oregon (Hughes 1999). The western yellow-billed cuckoo is now very rare in scattered drainages in western Colorado, Idaho, Nevada, and Utah, with single, nonbreeding birds most likely to occur (66 FR 38611). The largest remaining breeding areas are in southern and central California, Arizona, along the Rio Grande in New Mexico, and in northwestern Mexico U.S. Fish and Wildlife Service 2013).

The current breeding population is low, with estimates of approximately 350 to 495 pairs north of the Mexican border and another 330 to 530 pairs in Mexico for a total of 680 to 1,025 breeding pairs (U.S. Fish and Wildlife Service 2013).

Yellow-billed cuckoos spend the winter in South America, east of the Andes, primarily south of the Amazon Basin in southern Brazil, Paraguay, Uruguay, eastern Bolivia, and northern Argentina (Ehrlich *et al.* 1992, American Ornithologists Union 1998, Johnson *et al.* 2008b). The species as a whole winters in woody vegetation bordering fresh water in the lowlands to 1,500 m (4,921 ft), including dense scrub, deciduous broadleaf forest, gallery forest, secondary forest, subhumid and scrub forest, and arid and semiarid forest edges (Hughes 1999). Wintering habitat of the western yellow-billed cuckoo is poorly known.

Migration

Little is known about migratory habitat for the western yellow-billed cuckoo. Yellow-billed cuckoos may be found in a variety of vegetation types during migration, including coastal scrub, secondary growth woodland, hedgerows, humid lowland forests, and forest edges from sea level to 8,125 ft (2,500 m)(Hughes 1999). Additionally, during migration they may be found in smaller riparian patches than those in which they typically nest. This variety of vegetation types suggests that the habitat needs of the yellow-billed cuckoo during migration are not as restricted as their habitat needs when nesting and tending young.

Habitat and Life History

Yellow-billed cuckoos forage primarily by gleaning insects from vegetation, but they may also capture flying insects or small vertebrates such as tree frogs and lizards (Hughes 1999). They specialize on relatively large invertebrate prey, including caterpillars (Lepidoptera sp.), katydids (Tettigoniidae sp.), cicadas (Cicadidae sp.), and grasshoppers (Caelifera sp.) (Laymon *et al.* 1997). Minor prey include beetles (Coleoptera sp.), dragonflies (Odonata sp.), praying mantis (Mantidae sp.), flies (Diptera sp.), spiders (Araneae sp.), butterflies (Lepidoptera sp.), caddis flies (Trichoptera sp.), crickets (Gryllidae sp.), wild berries, and bird eggs and young (Laymon *et al.* 1997, Hughes 1999). Prey species composition varies geographically. Their breeding season may be timed to coincide with outbreaks of insect species, particularly tent caterpillars (Hughes 1999, 66 FR 38611) or cicadas (Johnson *et al.* 2007, Halterman 2009). In Arizona, fledging occurred at the peak emergence of cicadas (Rosenberg *et al.* 1982).

In the arid West, these conditions are usually found in cottonwood-willow riparian associations along water courses. The arrival of birds and the timing of nesting are geared to take advantage of any short-term abundance of prey. In years of high insect abundance, western yellow-billed cuckoos lay larger clutches (3-5 eggs rather than two), a larger percentage of eggs produce fledged young, and they breed multiple times (2-3 nesting attempts rather than one)(Laymon *et al.* 1997). Western yellow-billed cuckoo food availability is largely influenced by the health, density, and species of vegetation. Desiccated riparian sites produce fewer suitable insects than healthy moist sites.

Western populations of yellow-billed cuckoos breed in dense riparian woodlands, primarily of cottonwood (Populus fremontii), willow (Salix spp.), and mesquite (Prosopis spp.), along

riparian corridors in otherwise arid areas (Laymon and Halterman 1989, Hughes 1999). Dense undergrowth may be an important factor in selection of nest sites. Occupied habitat in Arizona may also contain box elder (*Acer negundo*), Arizona alder (*Alnus oblongifolia*), Arizona walnut (*Juglans major*), Arizona sycamore (*Platanus wrightii*), oak (*Quercus* spp.), netleaf hackberry (*Celtis reticulata*), velvet ash (*Fraxinus velutina*), Mexican elderberry (*Sambuccus mexicanus*), tamarisk (*Tamarix* spp.; also called salt cedar), and seepwillow (*Baccharis glutinosa*) (Corman and Magill 2000). Surveys conducted by the Arizona Breeding Bird Atlas (Corman and Wise-Gervais 2005) reported 68 percent of the yellow-billed cuckoo observations were in lowland riparian woodlands, often containing a variable combination of Fremont cottonwood, willow, velvet ash, Arizona walnut, mesquite, and tamarisk (Corman and Wise-Gervais 2005). Narrow bands of riparian woodland can contribute to the overall extent of suitable habitat. Adjacent habitat on terraces or in the upland (such as mesquite) can enhance the value of these narrow bands of riparian woodland.

Throughout the western yellow-billed cuckoo range, a large majority of nests are placed in willow trees, but alder (*Alnus* spp.), cottonwood, mesquite, walnut (*Juglans* spp.), box elder, sycamore, netleaf hackberry (*Celtis laevigata* var. *reticulata*), soapberry (*Sapindus saponaria*), and tamarisk are also used (Laymon 1980, Hughes 1999, Corman and Magill 2000 , Corman and Wise-Gervais 2005, Holmes *et al.* 2008). Tamarisk is also a riparian species that may be associated with breeding under limited conditions; western yellow-billed cuckoo will sometimes build their nests and forage in tamarisk, but there is usually a native riparian tree component within the occupied habitat (Gaines and Laymon 1984, Johnson *et al.* 2008a).

Western yellow-billed cuckoos reach their breeding range later than most other migratory breeders, often in June (Rosenberg *et al.* 1982). They construct an unkempt stick nest on a horizontal limb in a tree or large shrub. Nest height ranges from 4 ft to (rarely) 100 ft, but most are typically below 30 ft (Hughes 1999). The incubation period for the western yellow-billed cuckoo is 9 to 11 days, and young leave the nest at 7 to 9 days old. Although other species of cuckoos are often or always brood parasites of other birds, yellow-billed cuckoos do so only infrequently, possibly in response to high food resources that allow rapid egg production (Fleischer *et al.* 1985). Nesting usually occurs between late June and late July, but can begin as early as late May and continue until late September (Hughes 1999). In a study on the lower Colorado River, three nests were estimated to have first fledged young during August 25 to 28 had they not failed. If these nests had successfully fledged young, the birds may still have been present at their respective breeding sites at least until September 15 to 18 (previously discussed in McNeil *et al.* 2012).

The western yellow-billed cuckoo primarily breeds in riparian habitat along low-gradient (surface slope less than 3%) rivers and streams, and in open riverine valleys that provide wide floodplain conditions (greater than 325 ft [100 m]). In the southwest, it can also breed in narrower reaches of riparian habitat. Within the boundaries of the distinct population segment (DPS)(see Figure 2 at 78 FR 61631,) these riparian areas are located from southern British Columbia, Canada, to southern Sinaloa, Mexico, and may occur from sea level to 7,000 ft (2,154 m)(or slightly higher in western Colorado, Utah, and Wyoming) in elevation. The moist conditions that support riparian plant communities that provide western yellow-billed cuckoo habitat typically exist in lower elevation, broad floodplains, as well as where rivers and streams

enter impoundments. In southeastern Arizona, however, cuckoos were often found nesting along intermittent drainages with dense stands of velvet mesquite and netleaf hackberry (Corman and Wise-Gervais 2005, Arizona Game and Fish Department 2011). Yellow-billed cuckoos are infrequently encountered along higher mountain drainages where Arizona sycamore or Arizona alder are the dominant riparian species. Dense understory foliage appears to be an important factor in nest site selection, while cottonwood trees are an important foraging habitat in areas where the species has been studied in California U.S. Fish and Wildlife Service 2001). In the extreme southern portion of their summer range in the States of Sonora (southern quarter) and Sinaloa, Mexico, western yellow-billed cuckoos also nest in upland thorn scrub and dry deciduous habitats away from the riparian zone (Russell and Monson 1998), though their densities are lower in these habitats than they are in adjacent riparian areas.
At the landscape level, the available information suggests the western yellow-billed cuckoo requires large tracts of willow-cottonwood or mesquite forest or woodland for their nesting season habitat. Habitat can be relatively dense, contiguous stands, irregularly shaped mosaics of dense vegetation with open areas, or narrow and linear.

Canopy cover directly above the nest is generally dense and averages 89 percent and is denser at the South Fork Kern River (93 percent) and Bill Williams River (94 percent) than at the San Pedro River (82 percent). Canopy closure in a plot around the nest averages 71 percent and was higher at the Bill Williams River (80 percent) than at the South Fork Kern River (74 percent) or San Pedro River (64 percent) (Laymon *et al.* 1997, Halterman 2003, Halterman 2004, Halterman 2005, Halterman 2006).

The optimal size of habitat patches for the species are generally greater than 200 ac (81 ha) and have dense canopy closure and high foliage volume of willows and cottonwoods (Laymon and Halterman 1989) and thus provide adequate space for foraging and nesting. Tamarisk, a nonnative tree species, may be a component of the habitat, especially in Arizona and New Mexico. Sites with a monoculture of tamarisk are unsuitable habitat for the species. The association of breeding with large tracts of suitable riparian habitat is likely related to home range size. Individual home ranges during the breeding season average over 100 ac (40 ha), and home ranges up to 500 ac (202 ha) have been recorded (Laymon and Halterman 1987, Halterman 2009, Sechrist *et al.* 2009, McNeil *et al.* 2011, McNeil *et al.* 2012).

In addition to the dense nesting grove, western yellow-billed cuckoos need adequate foraging areas near the nest. Foraging areas can be less dense or patchy with lower levels of canopy cover and often have a high proportion of cottonwoods in the canopy. Optimal breeding habitat contains groves with dense canopy closure and well-foliaged branches for nest building with nearby foraging areas consisting of a mixture of cottonwoods, willows, or mesquite with a high volume of healthy foliage (U.S. Fish and Wildlife Service 2013).

Riparian habitat is dynamic, and species may move from one area to another over time. Western yellow-billed cuckoos may nest at more than one location in a year. Some individuals also roam widely (several hundred miles); apparently assessing food resources before selecting a nest site (Sechrist *et al.* 2012).

During movements between nesting attempts western yellow-billed cuckoos are found at riparian sites with small groves or strips of trees, sometimes less than 10 ac (4 ha) in extent (Laymon and Halterman 1989). These stopover and foraging sites can be similar to breeding sites, but are smaller, narrower, and lack understory vegetation when compared to nesting sites.

Habitat for the western yellow-billed cuckoo is largely associated with perennial rivers and streams that support the expanse of vegetation characteristics needed by breeding western yellow-billed cuckoos. The range and variation of stream flow frequency, magnitude, duration, and timing that will establish and maintain western yellow-billed cuckoo habitat can occur in different types of regulated and unregulated flows depending on the interaction of the water and the physical characteristics of the landscape (Poff *et al.* 1997; U. S. Fish and Wildlife Service 2002, 78 FR 61622).

Hydrologic conditions at western yellow-billed cuckoo breeding sites can vary widely between years. At some locations during low rainfall years, water or saturated soil is not available. At other locations, particularly at reservoir inlets, riparian vegetation can be inundated for extended periods in some years and be totally dry in other years. This is particularly true of reservoirs like Lake Isabella in California, Roosevelt and Horseshoe Reservoirs in Arizona, and Elephant Butte Reservoir in New Mexico, all of which have relatively large western yellow-billed cuckoo populations. This year-to-year change in hydrology can affect food availability and habitat suitability for western yellow-billed cuckoos. In some areas, managed hydrologic cycles above or below dams can create temporary western yellow-billed cuckoo habitat, but may not be able to support it for an extended time, or may support varying amounts of habitat at different points of the cycle and in different years. Water management operations create varied situations that allow different plant species to thrive when water is released below a dam, held in a reservoir, or removed from a lakebed, and consequently, varying amounts of western yellow-billed cuckoo habitat are available from month to month and year to year as a result of dam operations. During wet years, habitat within a lake and below a dam can be flooded for extended periods and stressed or killed. During dry years, habitat can be desiccated and stressed or killed because of lack of water (Poff *et al.* 1997, Greco 1999, National Academy of Sciences 2002; U. S. Fish and Wildlife Service 2002, 78 FR 61622).

Humid conditions created by surface and subsurface moisture appear to be important habitat parameters for western yellow-billed cuckoo. The species has been observed as being restricted to nesting in moist riparian habitat in the arid West because of humidity requirements for successful hatching and rearing of young (Hamilton and Hamilton 1965, Gaines and Laymon 1984, Rosenberg *et al.* 1991). Western yellow-billed cuckoos have evolved larger eggs and thicker eggshells, which would help them cope with potentially higher egg water loss in the hotter, dryer conditions (Hamilton and Hamilton 1965, Ar *et al.* 1974, Rahn and Ar 1974). A study on the South Fork Kern River showed that lower temperatures and higher humidity were found at nest sites when compared to areas along the riparian forest edge or outside the forest (Launer *et al.* 1990). Recent research on the lower Colorado River has confirmed that western yellow-billed cuckoo nest sites had significantly higher daytime relative humidity (6–13% higher) and significantly lower daytime temperatures (2–4o F [1–2o C] lower) than average forested sites (McNeil *et al.* 2011, McNeil *et al.* 2012).

Subsurface hydrologic conditions are equally important to surface water conditions in determining riparian vegetation patterns. Depth to groundwater plays an important part in the distribution of riparian vegetation and western yellow-billed cuckoo habitat. Where groundwater levels are elevated so riparian forest trees can access the water, habitat for nesting, foraging, and migrating western yellow-billed cuckoos can develop and thrive. Goodding's willows (*Salix gooddingii*) and Fremont cottonwoods do not regenerate if the groundwater levels fall below 6 ft (2 m)(Shafroth *et al.* 2000). Goodding's willows cannot survive if groundwater levels drop below 10 ft (3 m), and Fremont cottonwoods cannot survive if groundwater drops below 16 ft (5 m)(Stromberg *et al.* 1996). Abundant and healthy riparian vegetation decreases and habitat becomes stressed and less productive when groundwater levels are lowered (Stromberg *et al.* 1996).

The abundance and distribution of fine sediment deposited on floodplains is critical for the development, abundance, distribution, maintenance, and germination of trees in the riparian zone that become western yellow-billed cuckoo habitat. These sediments become seedbeds for germination and growth of the riparian vegetation upon which western yellow-billed cuckoos depend. These sediments must be accompanied by sufficient surface moisture for seed germination and sufficient ground water levels for survival of seedlings and saplings (Stromberg 2001). The lack of hydrologic processes, which deposit such sediments, may lead riparian forested areas to senesce and become degraded and unable to support the varied vegetative structure required for western yellow-billed cuckoo nesting and foraging.

Arizona

At present, it appears that the State's population could be as low as 170 pairs of yellow-billed cuckoos, and probably does not exceed 250 pairs. The population of the western yellow-billed cuckoo in Arizona is the largest in the United States (U.S. Fish and Wildlife Service 2013).

The yellow-billed cuckoo was historically widespread and locally common in Arizona (Phillips *et al.* 1964, Groschupf 1987). Although Arizona probably contains the largest remaining western yellow-billed cuckoo population among states west of the Rocky Mountains, the population has reportedly declined significantly in distribution and abundance over the past 80 years (Corman and Wise-Gervais 2005). During Arizona Breeding Bird Atlas surveys, nesting birds were found to be concentrated in western, central, and southeastern Arizona. According to Corman and Wise-Gervais (2005), western yellow-billed cuckoos were found along most of the 25 drainages where they were reported historically, but they are now much more local in distribution. It is believed that the San Pedro River likely sustains the largest single remaining population of yellow-billed cuckoos (Brand *et al.* 2009).

A 1976 study based on existing habitat and known yellow-billed cuckoo population densities estimated 846 pairs were present on the lower Colorado River and its five major tributaries in Arizona (Groschupf 1987). In a statewide survey in 1999 that covered 265 mi (426 km) of river and creek bottoms, 172 yellow-billed cuckoo pairs and 81 single birds were located in Arizona (Corman and Magill 2000). Yellow-billed cuckoo populations greater than 10 pairs are found at 12 locations in Arizona: Bill Williams River, Colorado River, Gila River, Upper Cienega Creek, Hassayampa River, San Pedro River, Santa Maria River, Verde River, Sonoita Creek, Santa Cruz

River, Altar Valley, and Agua Fria River. Sites with smaller populations are found at the Roosevelt Lake complex, Upper Tonto Creek, Pinto Creek, Sycamore Creek in Pajarito Mountains, Oak Creek, Lower Cienega Creek, Babocomari River, Pinal Creek, Bonita Creek, San Bernardino National Wildlife Refuge (NWR), Hooker Hot Springs, Big Sandy River, and many smaller drainages. However, many drainages have not been thoroughly surveyed and it is likely that some additional yellow-billed cuckoo locations will be discovered. These include, but are not limited to the mountain ranges of southeastern Arizona, Eagle Creek, and along the Gila, San Francisco, and Blue Rivers. Yellow-billed cuckoo sightings reported by birders between 15 June and 31 August, 1998 to 2012, in more than one year in southeastern Arizona mountain ranges include Walker, Madera, and Montosa canyons in the Santa Rita Mountains; Carr Canyon, Ash Canyon, Garden Canyon, Ramsey Canyon, and Miller Canyon in the Huachuca Mountains; Scotia Canyon and Sycamore Canyon in the Atascosa/Pajarito Mountains; French Joe Canyon in the Whetstone Mountains; Kitt Peak on Baboquivari Mountain; Harshaw Canyon and Paymaster Spring in the Patagonia Mountains; and a few locations in the Chiricahua Mountains (Cornell Laboratory of Ornithology 2012). Yellow-billed cuckoos are breeding in at least some of these locations, with nesting confirmed at Sycamore Canyon (AGFD, unpublished data).

Threats

The western yellow-billed cuckoo is threatened by two of the five threat factors evaluated (A and E).

Factor A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Within the three States with the highest historical number of yellow-billed cuckoo pairs, past riparian habitat losses are estimated to be about 90 to 95 percent in Arizona, 90 percent in New Mexico, and 90 to 99 percent in California (Ohmart 1994, U.S. Department of Interior 1994, Noss *et al.* 1995, Greco 2008).

The primary threat to the western yellow-billed cuckoo is loss or fragmentation of high-quality riparian habitat suitable for nesting (Corman and Wise-Gervais 2005). Habitat loss and degradation from several interrelated factors include alteration of flows in rivers and streams, encroachment into the floodplain from agricultural and other development activities, stream channelization and stabilization, diversion of surface and ground water for agricultural and municipal purposes, livestock grazing, wildfire, establishment of nonnative vegetation, drought, and prey scarcity due to pesticides (Ehrlich *et al.* 1992, Wiggins 2005, 78 FR 61622). Drought and prey scarcity (especially the loss of sphinx moth caterpillars to pesticides in the West) appear to play a role in yellow-billed cuckoo declines even where suitable nesting habitat remains (Ehrlich *et al.* 1992). These factors also contribute to fragmentation and promote conversion to nonnative plant species and increased incidence of wildfire (Krueper 1993; U. S. Fish and Wildlife Service 2001, 78 FR 61622). A potential factor contributing to declines across the species' range in North America is the loss of forested habitat on its wintering grounds in South America where little is known of its ecology or distribution (Ehrlich *et al.* 1992). The threats affecting western yellow-billed cuckoo habitat are ongoing. Such a loss of riparian habitat leads

not only to a direct reduction in yellow-billed cuckoo numbers but also leaves a highly fragmented landscape, which can reduce breeding success through increased predation rates and barriers to dispersal by juvenile and adult yellow-billed cuckoos U.S. Fish and Wildlife Service 2013).

Factor E. Other Natural or Manmade Factors Affecting Its Continued Existence

Factor E threats, including habitat rarity and small, isolated populations of the western yellow-billed cuckoo, cause the remaining populations in western North America to be increasingly susceptible to further declines through lack of immigration, chance weather events, fluctuating availability of prey populations, pesticides, collisions with tall vertical structures during migration, spread of the introduced tamarisk leaf beetle (*Diorhabda* spp.) as a biocontrol agent in the Southwest, and climate change. The ongoing threat of small overall population size leads to an increased chance of local extirpations through random events (Thompson 1961, McGill 1975, Wilcove *et al.* 1986).

Habitat for the western yellow-billed cuckoo has been modified and curtailed, resulting in only remnants of formerly large tracts of native riparian forests, many of which are no longer occupied by western yellow-billed cuckoos. Despite recent efforts to protect existing, and restore additional, riparian habitat in the Sacramento, Kern, and Colorado Rivers, and other rivers in the range of the western yellow-billed cuckoo, these efforts offset only a small fraction of historical habitat that has been lost. Therefore, we expect the threat resulting from the combined effects associated with small and widely separated habitat patches to continue to affect a large portion of the range of the western yellow-billed cuckoo. This threat is particularly persistent where small habitat patches are in proximity to human-altered landscapes, such as near agricultural fields that dominate the landscape in many areas where the western yellow-billed cuckoo occurs. As a result, the potential exists for pesticides to directly affect (poisoning individual cuckoos) and indirectly affect (reducing the prey base) a large portion of the species. These effects could ultimately result in lower population abundance and curtailment of its occupied range. Mortality from collisions with tall structures is also an ongoing, but largely unquantified effect. We recognize that climate change is a critical issue with potentially severe wide-ranging effects on the species and its habitat. The available scientific literature suggests that the effects of climate change will likely exacerbate multiple existing threats to the western yellow-billed cuckoo and its habitat.

Proposed Critical Habitat

Critical habitat units have been proposed in Arizona, California, Colorado, Idaho, New Mexico, Nevada, Texas, Utah, Wyoming totaling 242,859 acres. Within these areas, the primary constituent elements of the physical or biological features essential to the conservation of western yellow-billed cuckoo consist of three components:

1. *Riparian woodlands.* Riparian woodlands with mixed willow cottonwood vegetation, mesquite-thorn forest vegetation, or a combination of these that contain habitat for nesting and foraging in contiguous or nearly contiguous patches that are greater than 325 feet (100 meters) in width and 200 acres (81 hectares) or more in extent. These habitat patches contain one or more nesting groves, which are generally willow-dominated, have above average

canopy closure (greater than 70 percent), and have a cooler, more humid environment than the surrounding riparian and upland habitats.

2. *Adequate prey base.* Presence of a prey base consisting of large insect fauna (for example, cicadas, caterpillars, katydids, grasshoppers, large beetles, dragonflies) and tree frogs for adults and young in breeding areas during the nesting season and in post-breeding dispersal areas.
3. *Dynamic riverine processes.* River systems that are dynamic and provide hydrologic processes that encourage sediment movement and deposits that allow seedling germination and promote plant growth, maintenance, health, and vigor (e.g. lower gradient streams and broad floodplains, elevated subsurface groundwater table, and perennial rivers and streams). This allows habitat to regenerate at regular intervals, leading to riparian vegetation with variously aged patches from young to old. These dynamic riverine processes are considered essential for developing and maintaining the primary constituent elements as described above for Riparian Woodlands and Adequate Prey Base.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

Description of the Action Area

The action area for this BO is defined as a one-mile buffer on either side of the centerline of the Agency Preferred Alternative in the New Build Section and a 500-foot corridor (200 feet off of the existing 100-foot-wide ROW) (see BO Figure 1) in the Upgrade Section, as well as any identified substations, staging areas, or access roads outside those corridors.

The New Build Section of the proposed project would be located within the Mexican Highland Subprovince of the Basin and Range Physiographic Province. This area is characterized by numerous elongated, subparallel mountain ranges and intervening broad alluvial basins that formed during Late Cenozoic extension. The Upgrade Section of the proposed project would be located in the eastern edge of the Sonoran Desert Subprovince of the Basin and Range Physiographic Province. This area is dominated by basins filled with sediments separated by uplifted mountain blocks. Major basins include the Avra Valley, Tucson Basin, San Pedro Valley, and Willcox Playa (Trapp and Reynolds 1995). The San Pedro River drains the San Pedro Basin. Mountain ranges include the Tucson Mountains, west of Tucson; the Tortolita Mountains, northwest of Tucson; the Santa Catalina Mountains, northeast of Tucson; and the Rincon Mountains, east of Tucson.

The proposed project would cross six biotic communities of the Southwest (Brown and Lowe 1980), including Semidesert Grassland, Chihuahuan Desertscrub, Playa, Arizona Upland

Subdivision of Sonoran Desertscrub, Lower Colorado River Subdivision of Sonoran Desertscrub, and Madrean Evergreen Woodland.

Status and Factors Affecting the Species and Critical Habitat Within the Action Area

Lesser Long-Nosed Bat

Within the action area there are no known lesser long-nosed bat roost locations. Most records for this species in the United States are from mine or cave roosts (Findley *et al.* 1975, Hoffmeister 1986) and there are multiple roost locations within 40 miles of the action area in Hidalgo, Cochise, Pima, and Pinal counties in route groups 2, 3, and 4 (BO Figure 1). As lesser long-nosed bats are capable of foraging up to 40 miles one way from roost locations each night, it is assumed that the species could be present anywhere along the proposed project in route groups 2–4 where suitable foraging plants are present, and in urban areas where landscape plantings and hummingbird feeders provide a food source for the species. Individuals have been detected in Grant County, New Mexico, north of the project area (M. Ramsey, personal communication), and additional unknown roosts may be present within or near the action area.

Foraging Habitat in the Action Area

Forage plants utilized by lesser long-nosed bats are not uniformly distributed across the landscape in the action area. Saguaro (*Carnegiea gigantea*), *Agave palmeri*, and *Agave chrysantha* are common forage plants in the action area. *Agave parryi* may be found at higher elevations (Kearney and Peebles (1960) describe *Agave parryi* as occurring in Cochise and Pima counties at 4,500 to 8,000 feet). The distribution of saguaro includes the western portion of the action area from the San Pedro Valley extending west to the beginning of developed agricultural lands north of the Tucson Mountains (Shreve and Wiggins 1964). Slauson (2000) mapped the distribution of the lesser long-nosed bat relative to the distribution of *Agave palmeri* and *Agave chrysantha*, indicating the distribution of *A. chrysantha* in the western portion of action area, including the Winchester, Galiuro, Little Rincon, Rincon, and the north side of the Catalina Mountains. Slauson (2000) also indicates the distribution of *Agave palmeri* in the project area from approximately the Arizona-New Mexico state line west to the south end of the Rincon Mountains. Gentry (1982) indicates the distribution of *Agave palmeri* to include Hidalgo and Grant counties south of the Gila River and extreme western Luna County in Southwestern New Mexico in addition to southern Arizona, including portions of the action area. Shreve and Wiggins (1964) describe the saguaro as occurring on gravelly slopes, rocky ridges and outwash fans, the *Agave palmeri* as occurring on rocky hillsides and mesas, and *Agave chrysantha* occurring on arid foothills and mountain slopes. As described by Howell and Roth (1981), and others, *Agave palmeri* is patchily distributed. Ober *et al.* (2005) report variability between years in abundance of agave inflorescences and variation in calculated home ranges of radio telemetered lesser long-nosed bats as food resources varied. Ober *et al.* (2005) found that lesser long-nosed bats would change foraging areas upon cessation of agave nectar production and would vary activity patterns by increasing time spent foraging in periods of reduced forage availability, noting a change from a mean of 2.3 hours per night spent foraging in a relatively good year to 5.1 hours per night the following year when *Agave* inflorescences were less abundant. Since *Agave* plants die after flowering there is likely to be inter-annual variability of

availability of *Agave* nectar, which is further confounded by variability in precipitation affecting *Agave* reproduction and growth. Lesser long-nosed bats forage over large areas in response to food availability both between and within years.

Forage plants for the species include columnar cacti and paniculate agaves, which could be removed or trimmed during construction activities and as needed during maintenance. Lesser long-nosed bat foraging habitat is found predominately in the rebuild section of the project. The existing Saguaro-Tucson and Tucson-Apache 115 kV transmission lines that would be upgraded have been in place since the 1950s on a 100-foot ROW and vegetation within the ROW has been maintained to comply with conductor to vegetation clearance standards on an as needed basis. From the Saguaro Substation to the Tucson Substation saguaros are generally found in foothill and mountainous areas although individual plants can occur on the valley floor. More specifically, saguaros occur as individuals or in groups of 2-3 from Twin Peaks Road to Silverbell Road and west of Silverbell Road in undeveloped areas. From the Tucson Substation eastward Saguaros occur as scattered individuals from Silverbell Road to Anklam Road, across the Tumamoc Hill property to Starr Pass Boulevard, and in open areas to Ajo Way. From Ajo Way to Mission Road the existing line to be replaced is a very high span from Ajo Way to the top of a ridge in Tucson Mountain Park then down again as a high span, with clumps of saguaro occurring west of Mission Road. From Swan Road to Wentworth Road saguaros occur as scattered individuals. Because of the scattered nature of saguaro distribution impacts to foraging habitat will be localized. Paniculate agaves are localized in hilly terrain east of Highway 83 to Apache Substation. Impacts to saguaros and paniculate agaves may occur from offsetting the ROW for the rebuild section to allow construction while maintaining service on the existing lines and from vegetation maintenance along the rebuilt transmission line.

In the new build section of the project, impacts to lesser long-nosed bat paniculate agave based foraging habitat are most likely where the route crosses mountainous terrain, particularly crossing the Peloncillo Mountains, east to the Hidalgo Substation.

Mexican Long-nosed Bat

Within the action area there are no known Mexican long-nosed bat roost locations. However, there are multiple roost locations in the boot heel of New Mexico that the species utilizes along with the lesser long-nosed bat within 40 miles of the project area. The nearest known roost location is approximately 10 miles south of the proposed project area along segment LD4. Because Mexican long-nosed bats are capable of foraging up to 40 miles one way from day roost locations each night, it is assumed that the species could be present anywhere along the preferred alternative in route groups 1 and 2 (BO Figure 1) where suitable forage plants (agaves) are present, and in urban areas where landscape plantings and hummingbird feeders provide a food source for the species. Individuals have been detected in Grant County, New Mexico, north of the project area (M. Ramsey, personal communication), and additional unknown roosts may be present within or near the action area. See discussion of agave foraging habitat in the action area under lesser long-nosed bat.

Pima Pineapple Cactus

The portions of the action area that could support the Pima pineapple cactus are, generally, from the area of the Pantano Substation, between Cienega Creek and Davidson Canyon and the area of Del Bac Substation, near Interstate 19 and Valencia Road. Roller (1996) mapped the known distribution of Pima pineapple cacti, locating the species in the vicinity of Vail north and south of Interstate 10 and east and west of State Route 83 and west of Interstate 19 south of Tucson. Baker (2006b) surveyed lands along a portion of the proposed project route and modelled predicted habitat based on sightings of Pima pineapple cacti. Based on Baker (2006b) polygons within 500 meters of known individual Pima pineapple cacti and of predicted habitat overlay the proposed project route. Pima pineapple cacti have been found in the vicinity of the Nogales Substation within the area of the proposed project (Johnida Dockens, Pers. Comm.).

Southwestern Willow Flycatcher

Within the action area at the proposed crossings of the San Pedro River and Cienega Creek, there is no southwestern willow flycatcher nesting habitat. These areas lack a permanent or semi-permanent water source and water is likely only present in the area as a result of precipitation events. A review of Google Earth images of the proposed crossing of the San Pedro River for November 14, 1992, May 31, 1996, October 5, 2002, September 20, 2003, December 22, 2005, October 1, 2006, June 20, 2007, May 23, 2009, September 9, 2010, April 29, 2011, and June 11, 2011 showed water in the river channel only on October 1, 2006. A review of Google Earth images of the proposed crossing of Cienega Creek for November 14, 1992, May 31, 1996, September 20, 2003, May 30, 2005, June 15, 2006, June 20, 2007, September 9, 2010, and June 11, 2011 showed no water in the creek channel.

No southwestern willow flycatcher designated critical habitat is present in the action area. Critical habitat is found along the San Pedro River approximately 10 airline miles north (downstream) of the proposed project area and along Cienega Creek approximately 4.9 airline miles south (upstream) of the proposed project area.

The proposed crossing of the San Pedro River floodplain is approximately 850 feet wide, including an open, active, channel approximately 100 feet wide. A stand of salt cedar (*Tamarix ramossisma*) occurs on the west-side floodplain. There is a density gradient within the stand with the densest areas of salt cedar occurring on the western edge of the floodplain on a point bar, extending approximately 400 feet to the east. The eastern bank of the San Pedro River channel is a high cut bank with little streambank vegetation. Velvet mesquite (*Prosopis velutina*)–dominated shrublands occur east of the eastern bank. The proposed crossing lacks a permanent or semi-permanent source of water or saturated soils that are typically found in areas utilized by southwestern willow flycatcher for breeding, but the area provides migratory and foraging habitat for southwestern willow flycatcher.

At the proposed crossing of Cienega Creek, the active, open, channel of the creek is approximately 215 feet wide with a band of velvet mesquite trees on the west bank approximately 40-45 feet wide. The proposed crossing lacks a permanent or semi-permanent source of water or saturated soils that are typically found in areas utilized by southwestern

willow flycatcher for breeding but the area provides migratory and foraging habitat for southwestern willow flycatcher.

The proposed crossings of the Santa Cruz River occur within urban habitats and are generally in areas of limited to no riparian vegetation that are not habitat for the species. In areas where riparian vegetation is present within the project area, habitat may be suitable for migrating southwestern willow flycatchers. In the Saguaro Substation-Tucson Substation segment within the action area, the proposed project route parallels riparian habitat, supported by sewage effluent, including a total of approximately 2.5 linear miles of project length, between El Camino del Cerro and Ina Road, east of Silverbell Road. However, there are no records of the species from the Santa Cruz River in the action area.

No southwestern willow flycatcher populations are known in the action area in New Mexico.

Northern Mexican Gartersnake

Northern Mexican gartersnakes were historically found in most permanent rivers and streams in southern and central Arizona, including Cienega Creek and the San Pedro River. Vegetation and habitat conditions at the proposed crossings of the San Pedro River and Cienega Creek are described under southwestern willow flycatcher above. Habitat at the proposed crossings of the San Pedro River and Cienega Creek does not include perennial or semi-permanent aquatic habitat (see discussion of water in the stream under southwestern willow flycatcher above). The project area is considered occupied because the project area crosses proposed critical habitat (78 FR 41558). We anticipate that individuals occur intermittently in the project area when dispersing to areas with perennial water or when prey are conspicuously present in the project area. Most use by individuals would be in the riparian area, but some use may occur outside the riparian area within the dryer terrestrial habitat. Within the San Pedro River and Cienega Creek, northern Mexican gartersnakes are more likely to occur in those areas with appropriate prey species (native fish) and less likely to occur in areas with non-native predators/competitors (bullfrogs, spiny-rayed fish).

The FWS is proposing critical habitat for this species along both Cienega Creek and the San Pedro River (78 FR 41549) in areas that would be crossed by the proposed project. The proposed project would cross proposed critical habitat in the Cienega Creek Subbasin Critical Habitat Unit and the San Pedro River Subbasin Critical Habitat Unit.

Yellow-billed Cuckoo

No species-specific surveys have been conducted for yellow-billed cuckoo for the purposes of this proposed project. However, the yellow-billed cuckoo is known from the San Pedro River to the south and north of the action area (79 FR 48565). The San Pedro River at the proposed crossing location is approximately 850 feet wide with a thick stand of saltcedar (*Tamarix* sp.) trees in the channel and velvet mesquite (*Prosopis velutina*)–dominated shrublands on the eastern bank. This area lacks a permanent or semi-permanent water source and water is likely only present in the area as a result of precipitation events. The riparian vegetation in this area lacks the multiple layers of canopy and subcanopy and well developed understory preferred as

breeding habitat by the yellow-billed cuckoo. Also lacking are the native tree species that are important components to breeding habitat. Foraging and migratory habitat in the form of sparse riparian deciduous and upland mesquite vegetation is present at the proposed crossing of the San Pedro River and Cienega Creek. Large blocks of riparian vegetation utilized by the species for breeding are not present in the project area, but the area along Cienega Creek downstream are consistently used for breeding (79 FR 48565).

The proposed crossings of the Santa Cruz River occur within urban habitats and are generally in areas of limited to no riparian vegetation that are not habitat for the species. In areas where riparian vegetation is present within the project area, habitat may be suitable for migrating yellow-billed cuckoo. There are records of the species from the Santa Cruz River near the study area, but no records of breeding.

No yellow-billed cuckoo populations are known in the study area in New Mexico, but the species could occur where the Gila River watershed overlaps with the study area. Thus some individual birds could follow drainages within the study area during migration.
The San Pedro River is not a regulated river but flows are subject to depletion through groundwater pumping. Entrenchment of the upper San Pedro and deposition of alluvium downstream has altered the river from the pre-settlement period, apparently due to historic heavy livestock use and flooding (Hereford 1993). These factors constrain development of physical and biological features of habitat for yellow-billed cuckoo. The San Pedro River from San Manuel upstream to St. David has not been well surveyed for yellow-billed cuckoo and much of it is private land. However, suitable habitat exists in this reach. Yellow-billed cuckoos are documented at the Three Links conservation property approximately 12 miles north of the proposed project crossing. Although the number of breeding territories at the Three Links site is unknown, repeated yellow-billed cuckoo detections a) during at least 2 of 3 southwestern willow flycatcher survey periods in 2004, 2005, 2006, 2008, 2009, 2010, 2011, and 2013 and b) during yellow-billed cuckoo breeding season playback surveys in 2012 and 2013 indicate a breeding population exists (Tucson Audubon, unpublished data; USBR, unpublished data). The area beginning approximately nine miles south of the proposed project crossing and extending southward is one of the largest remaining breeding groups of the western yellow-billed cuckoo and is consistently occupied by a large number of pairs (79 FR 48563).

Proposed critical habitat occurs in lower Cienega Creek in Unit 38. There is very little habitat for cuckoos within this area, but portions of Unit 38 downstream of the project area are consistently occupied by cuckoos during the breeding season (79 FR 48565).

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, which will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Emergency maintenance may be needed during the life of the permit in order continue transmission of power. This may include repair of transmission lines or repair or replace damaged equipment. Effects to habitat will be the same as the installation and regular maintenance of the transmission line. Emergency actions may occur during breeding seasons, which may affect migrating or foraging individuals, which are addressed for each species.

While changes to vegetation and water availability may occur during the 50-year life of the permit, we do not expect these changes to be substantial so the condition of the action area will not change substantially for the species addressed, e.g., breeding habitat for riparian species will not develop where there is no breeding habitat now. Climate change will continue to limit increases in water flow, riparian vegetation development, and, possibly, upland vegetation development, and maintenance activities will continue to limit development of large trees along the line.

Lesser Long-Nosed Bat

There are no known mines, caves, or lesser long-nosed bat roost sites within the action area. The nearest known lesser long-nosed bat roost site is approximately 10 miles from the proposed project. As such, no impacts on known roost sites or individual bats at roost sites from the proposed project are anticipated. Recent ongoing research has detected additional roosts in southern Arizona and New Mexico, and other roosts may be present and undetected thus far.

Potential impacts on the lesser long-nosed bat from the proposed project would include the loss or alteration of suitable foraging habitat. Forage plants for the species, including columnar cacti and paniculate agaves, would be removed or trimmed during construction activities and as needed during maintenance. Approximately 1,084 acres of disturbance would occur to vegetation communities where suitable forage plants for the lesser long-nosed bat would be present in route groups 2–4 (BO Figure 1). This would be approximately 25 percent of the 4,270 acres of available habitat within the proposed ROW and less than 2 percent of the approximately 68,856 acres of available habitat within the action area (500-foot -wide corridor on rebuild and 2-mile-wide corridor on new build).

As forage plants are not present throughout the entire area to be disturbed, the total area of lesser long-nosed bat foraging habitat impacted would be less than the area of disturbance. Within the area to be disturbed, areas with saguaros (*Carnegiea gigantea*) and paniculate agaves would be avoided where possible. Where removal of these plants would be required they would be transplanted outside of the area of ground disturbance and would be used in reclamation activities. Agave and saguaros would be augmented as necessary to achieve a goal of no net loss of mature flowering plants. Mortality of some plants would be expected during transplanting operations and, despite mitigation, a temporary loss of foraging plants would occur during the establishment of salvaged and additional agaves and saguaros used to achieve no net loss of mature flowering plants. Foraging by lesser long-nosed bats would continue in the general area at current levels because of the relatively small area of forage that will be affected.

Mexican Long-nosed Bat

There are no known mines, caves, or Mexican long-nosed bat roost sites within the ROW for the proposed project. The nearest known Mexican long-nosed bat roost site is approximately 10 miles from the proposed project. As such, no impacts on known roost sites or individual bats from the proposed project are anticipated. Recent ongoing research has detected additional roosts in southern Arizona and New Mexico, and other roosts may be present and undetected thus far.

Potential impacts on the Mexican long-nosed bat from the proposed project would include the loss or alteration of suitable foraging habitat and potential noise and vibration impacts. Forage plants for the species, including columnar cacti and paniculate agaves, would be removed or trimmed during construction activities and as needed during maintenance. Approximately 509 acres of disturbance would occur in vegetation communities where suitable forage plants for the Mexican long-nosed bat are present in route groups 1 and 2. This would be approximately 23 percent of the 2,215 acres of available habitat within the proposed ROW. As foraging plants are not present throughout the entire area to be disturbed, the total area of Mexican long-nosed bat foraging habitat impacted would be less than the area of disturbance. Within the area to be disturbed, areas with paniculate agaves would be avoided where possible. Where removal of these plants would be required, they would be transplanted outside of the area of ground disturbance and used in reclamation activities. Agave and saguaros would be augmented as necessary to achieve a goal of no net loss of mature flowering plants. Mortality of some plants would be expected during transplanting operations and, despite mitigation, a temporary loss of foraging plants would occur while salvaged and additional agaves and saguaros used to achieve no net loss of mature flowering plants become established. Foraging by Mexican long-nosed bats would continue in the general area at current levels because of the relatively small area of forage that will be affected.

Pima Pineapple Cactus

Potential impacts on the Pima pineapple cactus from the proposed project include direct loss of individual plants and changes to habitat from the establishment and spread of invasive plants. Ground disturbance to Pima pineapple cactus habitat would occur during the construction phase of the proposed project from the construction of new access roads, pulling and tensioning sites, and structure work areas. Ground disturbance may directly affect the Pima pineapple cactus through direct loss of individual plants and may indirectly affect the species by facilitating the establishment and spread of invasive plant species. Ground disturbance would occur on approximately155 acres of Pima pineapple cactus habitat within the project ROW. This would be approximately 28 percent of the 554 acres of habitat within the 150-foot-wide ROW and 8 percent of the approximately 1,845 acres of habitat in the 500-foot-wide action area. Ground-disturbing activities could lead to increased establishment and spread of invasive plant species, which can compete with the Pima pineapple cactus for space and resources and could modify fire regimes in habitat that could lead to increased mortality for the species and degradation of habitat. Measures to minimize the establishment and spread of invasive plant species would minimize the potential for indirect effects on the Pima pineapple cactus from the proposed project. Effects to individuals will be minimized through implementation of conservation

measures, including purchasing credits in a FWS-approved conservation bank for Pima pineapple cactus, corresponding to the area of disturbance to Pima pineapple cactus habitat; flagging individuals prior to the commencement of work to avoid accidental damage during construction; and relocating any Pima pineapple cactus that cannot be avoided, if possible.

Southwestern Willow Flycatcher

Nesting habitat for the southwestern willow flycatcher is not currently present at the proposed crossings of the San Pedro River, Santa Cruz River, or Cienega Creek. Surface water at the proposed crossings is present ephemerally and only in response to precipitation events. We do not expect that the conditions at these crossings will change during the life of the permit. Thus, no impacts from the proposed project on nesting southwestern willow flycatchers are anticipated.

Habitat at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River is suitable for foraging and migrating southwestern willow flycatchers. Construction activities would avoid ground disturbance and would not place structures or access roads in riparian woodlands. The areas with riparian woodland vegetation would be spanned by the proposed transmission line. All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and the Santa Cruz River would take place between September 15 and March 1, to avoid disturbance of southwestern willow flycatchers.

Vegetation within the ROW would be managed to maintain clearance between vegetation and transmission lines. This could include removing vegetation or topping of trees in the ROW. This maintenance would occur as needed, likely every three to five years. To avoid impacts on or disturbance to southwestern willow flycatcher, any vegetation management at the crossings of the San Pedro River and Cienega Creek would occur outside of the breeding season with the exception of emergency situations, and would be limited to the minimum vegetation removal required to maintain clearance between vegetation and the transmission lines. Emergency maintenance may occur during the breeding season, which may result in migrating or foraging southwestern willow flycatchers to be displaced temporarily. This displacement will not affect their survival, and individuals will likely resume normal behavior after the emergency maintenance is complete. We anticipate that vegetation conditions will remain that provide foraging and migrating habitat.

The presence of a larger set of cables (from 3 conductors and 2 shield wires on the existing transmission line to 6 conductors and 2 shield wires on the rebuilt line) replacing the existing line across the San Pedro River, Cienega Creek, and the Santa Cruz River could increase the potential for southwestern willow flycatcher collisions with the transmission lines. However, the likelihood of collisions increasing would be small due to the size and maneuverability of the species. In order to minimize the potential risk for bird collisions with transmission lines, the lines and structures would be designed in accordance with "Reducing Avian Collision with Power Lines" (APLIC 2012) and line marking devices would be placed at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River.

No designated critical habitat for the southwestern willow flycatcher is present in the action area. The nearest designated critical habitat is approximately 9 miles north of the action area

(downstream) on the San Pedro River and approximately 12 miles north (upstream) of the action area along the Gila River in New Mexico. As no designated critical habitat is present in the proposed project area and there would be no impacts downstream, no effects from the proposed project on southwestern willow flycatcher designated critical habitat are anticipated.

Northern Mexican Gartersnake

Potential direct effects to individuals would include being harmed or killed by vehicles and other equipment used during installation and maintenance activities outside the riparian area. Considering that individuals would occur intermittently and that ground actions would occur outside the riparian area in the drier terrestrial areas, we are reasonably certain that the likelihood of individuals being directly affected would be small. We do not expect changes to the habitat in the area to occur that would change use by the northern Mexican gartersnakes to be other than intermittent in the future.

No ground disturbance would occur in riparian areas at the proposed crossings of Cienega Creek and the San Pedro River. Habitat upslope of riparian areas may be affected within the right-of-way to maintain clearance between vegetation and transmission lines. This maintenance would occur as needed, likely every three to five years. To minimize impacts on northern Mexican gartersnake habitat and proposed critical habitat, any vegetation management at the crossings of the San Pedro River and Cienega Creek would be limited to the minimum vegetation removal required to maintain clearance between vegetation and the transmission lines, maintaining some habitat characteristics for northern Mexican gartersnakes.

The proposed action would not affect any of the proposed critical habitat PCEs for aquatic or riparian habitat that would preclude development for gartersnakes, but may affect the PCE of adequate terrestrial space by removing some vegetation. None of these actions are expected to preclude development of habitat in the general area if water availability changes.

Yellow-billed Cuckoo

Yellow-billed cuckoo nesting habitat is not present within the project area, but is present downstream of the project area at Cienega Creek. No impacts from the proposed project on nesting yellow-billed cuckoos are anticipated because nesting habitat will not be affected and we do not anticipate that nesting habitat will develop within the project area during the life of the permit.

Habitat at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River is likely suitable as foraging and/or migratory habitat for the species. Siting of the proposed transmission line would be done in a way that no ground disturbance, structures, or access roads would occur within riparian woodlands. Vegetation would be managed within the ROW to maintain vertical clearance between vegetation and transmission lines. This could include removing vegetation in the ROW. This maintenance would occur as needed, likely every three to five years. To avoid impacts on yellow-billed cuckoo any vegetation management at the crossings of the San Pedro River, Cienega Creek, and Santa Cruz River would occur outside of the breeding season with the exception of emergency situations, and would be limited to the minimum vegetation removal required to maintain clearance between vegetation and the

transmission lines. Emergency maintenance may occur during the breeding season, which may result in migrating or foraging yellow-billed cuckoos to be displaced temporarily. This displacement will not affect their survival, and individuals will likely resume normal behavior after the emergency maintenance is complete.

The presence of a larger set of cables (from 3 conductors and 2 shield wires on the existing transmission line to 6 conductors and 2 shield wires on the rebuilt line) replacing the existing line across the San Pedro River, Cienega Creek, and the Santa Cruz River could increase the potential for southwestern willow flycatcher collisions with the transmission lines. In order to minimize the potential risk for bird collisions with transmission lines the lines and structures would be designed in accordance with "Reducing Avian Collision with Power Lines" (APLIC 2012) and line marking devices would be placed at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River.

Proposed critical habitat

Maintenance of the line may affect riparian woodlands along the line within the project area because vegetation, including trees, will be managed to maintain clearance between the lines and vegetation. This may involve the trimming or removal of trees, which will limit canopy cover. The action area outside the project area will not be affected, so that the size of riparian woodlands, in general, will continue to increase and decrease under current processes which will not be affected by the proposed action.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Lesser Long-Nosed Bat and Mexican Long-nosed Bat

Livestock grazing on private property and on lands managed by the ASLD and New Mexico State Land Office may affect foraging habitat for the long-nosed bats. Other unregulated activities including trespass livestock, inappropriate off-highway vehicle (OHV) use, and cross-border activities could impact lesser long-nosed bat habitat.

Pima Pineapple Cactus

Habitat for the Pima pineapple cactus includes areas of private lands and lands managed by the ASLD where livestock grazing could occur. Livestock grazing activities could lead to direct mortality of Pima pineapple cactus and modification of habitat through the establishment and spread of invasive plant species. Other, unregulated, activities, including trespass livestock, inappropriate OHV use, and cross-border activities, could impact Pima pineapple cactus habitat.

Southwestern Willow Flycatcher

The proposed crossing of the San Pedro River is located on private land and cattle grazing on these lands could impact habitat for the species. Upstream water use and groundwater pumping in the area limit opportunities for development of quality habitat for southwestern willow flycatcher in the vicinity of the proposed crossing. The proposed crossing of Cienega Creek is on Arizona State Trust Land and cattle grazing could impact habitat for the species. Inappropriate off-high-vehicle (OHV) use could impact southwestern willow flycatcher habitat.

Northern Mexican Gartersnake

The proposed crossing of the San Pedro River is located on private land and cattle grazing on these lands could directly impact or impact habitat for the species. Upstream water use and groundwater pumping in the area limit opportunities for development of quality habitat for northern Mexican gartersnake in the vicinity of the proposed crossing. The proposed crossing of Cienega Creek is on Arizona State Trust Land and cattle grazing could directly or indirectly impact habitat for the species. Inappropriate off-high-vehicle (OHV) use could impact northern Mexican gartersnake habitat.

Yellow-billed Cuckoo

Cumulative impacts to habitat at the San Pedro River and Cienega Creek crossing are similar to the southwestern willow flycatcher.

CONCLUSION

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the Act to complete the following analysis with respect to critical habitat.

Lesser Long-nosed Bat

After reviewing the current status of the lesser long-nosed bat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS's biological opinion that the proposed action is not likely to jeopardize the continued existence of the lesser long-nosed bat. No critical habitat has been designated for the lesser long-nosed bat, therefore, none will be affected. We base these conclusions on the following reasons:

1. No lesser long-nosed bat roosts would be affected.
2. Forage plants will not be affected to the extent that would preclude bat foraging within the action area because of the relatively small area of forage that will be affected.

3. Forage plants will be avoided where possible, and some plants will be transplanted and used in reclamation activities to achieve a goal of no net loss of mature flowering bat forage plants.

Mexican long-nosed bat

After reviewing the current status of Mexican long-nosed bat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS's biological opinion that the proposed action is not likely to jeopardize the continued existence of the Mexican long-nosed bat. No critical habitat has been designated for the lesser long-nosed bat, therefore, none will be affected. We base these conclusions on the following reasons:

1. No known Mexican long-nosed bat roosts would be affected.
2. Forage plants will not be affected to the extent that would preclude bat foraging within the action area because of the relatively small area of forage that will be affected.
3. Forage plants will be avoided where possible, and some plants will be transplanted and used in reclamation activities to achieve a goal of no net loss of mature flowering bat forage plants.

Pima pineapple cactus

After reviewing the current status of Pima pineapple cactus, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS's biological opinion that the proposed action is not likely to jeopardize the continued existence of the Pima pineapple cactus. No critical habitat has been designated for the lesser long-nosed bat, therefore, none will be affected. We base these conclusions on the following reasons:

1. Individual plants will be avoided when possible. If avoidance is not possible, individual plants will be relocated.
2. Credits will be purchased in a FWS-approved conservation bank, corresponding to the area of disturbance to Pima pineapple cactus habitat resulting from the proposed action.

Southwestern willow flycatcher and critical habitat

After reviewing the current status of southwestern willow flycatcher, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS's biological opinion that the proposed action is neither likely to jeopardize the continued existence of the southwestern willow flycatcher, nor likely to destroy or adversely modify designated critical habitat for southwestern willow flycatcher. We base these conclusions on the following reasons:

1. Breeding will not be affected because there is no breeding habitat within the project area, and breeding habitat is not expected to develop during the term of the permit.
2. Most migrating and foraging individuals will not be affected during development or regular maintenance because proposed actions will occur at the crossings of the San Pedro River and

Cienega Creek only outside of the breeding season. Emergency maintenance may affect migrating or foraging individuals, but this will not affect their survival, and individuals will resume their normal activities after the emergency maintenance.

3. Habitat within riparian areas would only be affected by maintenance actions which would require the removal of vegetation to maintain line clearance. This would affect trees within the project area, but would not affect trees within the remainder of the action area.
4. Critical habitat would not be affected because none occurs within the action area.

Northern Mexican gartersnake and proposed critical habitat

After reviewing the current status of the northern Mexican gartersnake, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS's biological opinion that the proposed action is not likely to jeopardize the continued existence of the northern Mexican gartersnake, and it is our conference opinion that the proposed action is not likely to destroy or adversely modify proposed critical habitat for the northern Mexican gartersnake. We base these conclusions on the following reasons:

1. The likelihood of individuals being directly affected would be small, considering that significant populations of known prey species are not known within the proposed action's footprint, individuals would occur intermittently in the project area (likely only during dispersal or flooding events), ground-disturbing actions would occur outside the riparian area in the dryer terrestrial areas, and no changes to the habitat in the action area are expected to occur that would change use by the northern Mexican gartersnakes to be other than intermittent in the future.
2. No ground disturbance would occur in riparian habitat at the proposed crossings of the San Pedro River and Cienega Creek. Maintaining clearance between vegetation and transmission lines may affect some habitat characteristics, but this would be limited to only what is necessary, maintaining some habitat characteristics.
3. Proposed critical habitat PCEs of aquatic or riparian habitat will not be affected. Some characteristics of adequate terrestrial space may be affected by removing vegetation, but none of these actions are expected to preclude development or maintenance of habitat in the general area.

Yellow-billed cuckoo western distinct population segment and proposed critical habitat

After reviewing the current status of yellow-billed cuckoo, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS's biological opinion that the proposed action is not likely to jeopardize the continued existence of the yellow-billed cuckoo, and it is our conference opinion that the proposed action is not likely to destroy or adversely modify proposed critical habitat for yellow-billed cuckoo. We base these conclusions on the following reasons:

1. Breeding will not be affected because there is no breeding habitat within the project area, and breeding habitat is not expected to develop during the term of the permit.
2. Most migrating and foraging individuals will not be affected during installation or regular maintenance because proposed actions will occur at the crossings of the San Pedro River and Cienega Creek only outside of the breeding season. Emergency maintenance may affect migrating or foraging individuals, but this will not affect their survival, and individuals will resume their normal activities after the emergency maintenance.
3. Habitat within riparian areas would only be affected by maintenance actions which would require the removal of vegetation to maintain line clearance. This would affect trees within the project area, but would not affect trees within the remainder of the action area.
4. While maintenance of the line may affect the riparian woodlands PCE of proposed critical habitat within the project area, the action area outside of the project area will not be affected, so that the size of riparian woodlands, in general, will continue to increase and decrease under current processes, which will not be affected by the proposed action.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm," is defined (50 CFR 17.3) and means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. "Harass" is defined (50 CFR 17.3) and means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Federal action agencies so that they become binding conditions of any grant or permit issued to Southline Transmission, LLC, as appropriate, for the exemption in section 7(o)(2) to apply. The Federal action agencies have a continuing duty to regulate the activity covered by this incidental take statement. If the Federal action agencies (1) fails to assume and implement the terms and conditions or (2) fails to require Southline Transmission, LLC to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the

impact of incidental take, the Federal action agencies or Southline Transmission, LLC must report the progress of the action and its impact on the species to the FWS as specified in the incidental take statement. [50 CFR § 402.14(i)(3)].

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally-listed endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any regulation of any State or in the course of any violation of a State criminal trespass law.

AMOUNT AND EXTENT OF TAKE

Lesser long-nosed bat and Mexican long-nosed bat

We do not anticipate that implementation of the proposed action is reasonably certain to result in the incidental take of any lesser long-nosed bat or Mexican long-nosed bat because:

1. No known bat roost would be affected, and
2. Forage plants will not be affected sufficient to preclude bat foraging from the action area because of the relatively small area of forage that will be affected.

Southwestern willow flycatcher and proposed yellow-billed cuckoo

We do not anticipate that implementation of the proposed action is reasonably certain to result in incidental take of any southwester willow flycatcher or yellow-billed cuckoo because:

1. Breeding will not be affected because there is no breeding habitat within the project area, and breeding habitat is not expected to develop during the term of the permit.
2. Most migrating and foraging individuals will not be affected during installation or regular maintenance because proposed actions will occur at the crossings of the San Pedro River and Cienega Creek only outside of the breeding season. Emergency maintenance may affect migrating or foraging individuals, but this will not affect their survival, and individuals will resume their normal activities after the emergency maintenance.

Northern Mexican gartersnake

We do not anticipate that implementation of the proposed action is reasonably certain to result in incidental take of any northern Mexican gartersnake because 1) significant populations of known prey species are not known within the proposed actions' footprint; 2) individuals would occur intermittently in the project area (likely only during dispersal or flooding events); 3) ground-disturbing actions would occur outside the riparian area in the dryer terrestrial areas; and 4) no changes to the habitat in the area are expected to occur that would change use by the northern Mexican gartersnakes to be other than intermittent in the future.

The Fish and Wildlife Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-

668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 4901 Paseo del Norte NE, Suite D, Albuquerque, New Mexico, 87113, telephone (505) 248-7889, within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

Lesser Long-nosed Bat

- We recommend that the Federal action agencies work with us, Arizona Game and Fish Department (AGFD), and New Mexico Department of Game and Fish (NMDGF) to implement recovery actions for lesser long-nosed bat.

Mexican long-nosed bat

- We recommend that the Federal action agencies work with us, AGFD, and NMDGF to implement recovery actions for Mexican long-nosed bat.

Southwestern willow flycatcher

- We recommend that the Federal action agencies work with us, AGFD, and NMDGF to implement recovery actions for Southwestern willow flycatcher.

Northern Mexican Gartersnake

- We recommend that the Federal action agencies work with us, AGFD, and NMDGF to participate in recovery planning and implementation of conservation actions for northern Mexican gartersnake, particularly on efforts to remove harmful nonnative species from occupied northern Mexican gartersnake habitat.
- We recommend that Federal action agencies and Southline refrain from using erosion control products, such as wattles, that contain a mesh size of 0.5" (or 1.27 cm) within proposed critical habitat for the northern Mexican gartersnake. This mesh size has been documented in the literature as being associated with direct mortality, via entanglement, in numerous species of snakes, including those in the gartersnakes genus *Thamnophis*. Alternatively, please

consider using the smallest mesh size possible (<0.5") or preferably, products that do not contain any mesh- or net-like attributes near occupied northern Mexican gartersnake habitat.

Yellow-billed cuckoo

- We recommend that the Federal action agencies work with us, AGFD, and NMDGF to participate in recovery planning and implementation of conservation actions for yellow-billed cuckoo.

Pima Pineapple Cactus

- We recommend that the Federal action agencies coordinate with the Arizona-Sonoran Desert Museum in salvaging for their collection some individual cacti that cannot be relocated for some reason.

In order for the FWS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the FWS requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes the conference for the Southline Transmission Project. You may ask the FWS to confirm the conference opinion as a biological opinion issued through formal consultation if the proposed species is listed or critical habitat is designated. The request must be in writing. If the FWS reviews the proposed action and finds there have been no significant changes in the action as planned or in the information used during the conference, the FWS will confirm the conference opinion as the biological opinion for the project and no further section 7 consultation will be necessary.

After listing as threatened or endangered and any subsequent adoption of this conference opinion, the Federal agency shall request reinitiation of consultation if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect the species in a manner or to an extent not considered in the conference opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the species that was not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action.

This concludes formal consultation on the actions outlined in the request. As provided in 50 CFR '402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances

where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The FWS appreciates the Federal action agencies' and Western's efforts to identify and minimize effects to listed species from this project. For further information please contact Scott Richardson (x242). Please refer to consultation number 02EAAZ00-2014-F-0140 in future correspondence concerning this project.

Steven L. Spangle

cc: Field Supervisor, Fish & Wildlife Service, Phoenix, AZ (2 copies)
Jean Calhoun, Assistant Field Supervisor, Fish & Wildlife Service, Tucson, AZ
New Mexico Ecological Services Office, Albuquerque, NM (Attn: Patricia Zenone)
Tim Shannon, District Manager, Gila District, Bureau of Land Management, Tucson, AZ

Alexa Sandoval, Director, New Mexico Department of Game and Fish, Santa Fe, NM
Larry Voyles, Director, Arizona Game and Fish Department, Phoenix, AZ

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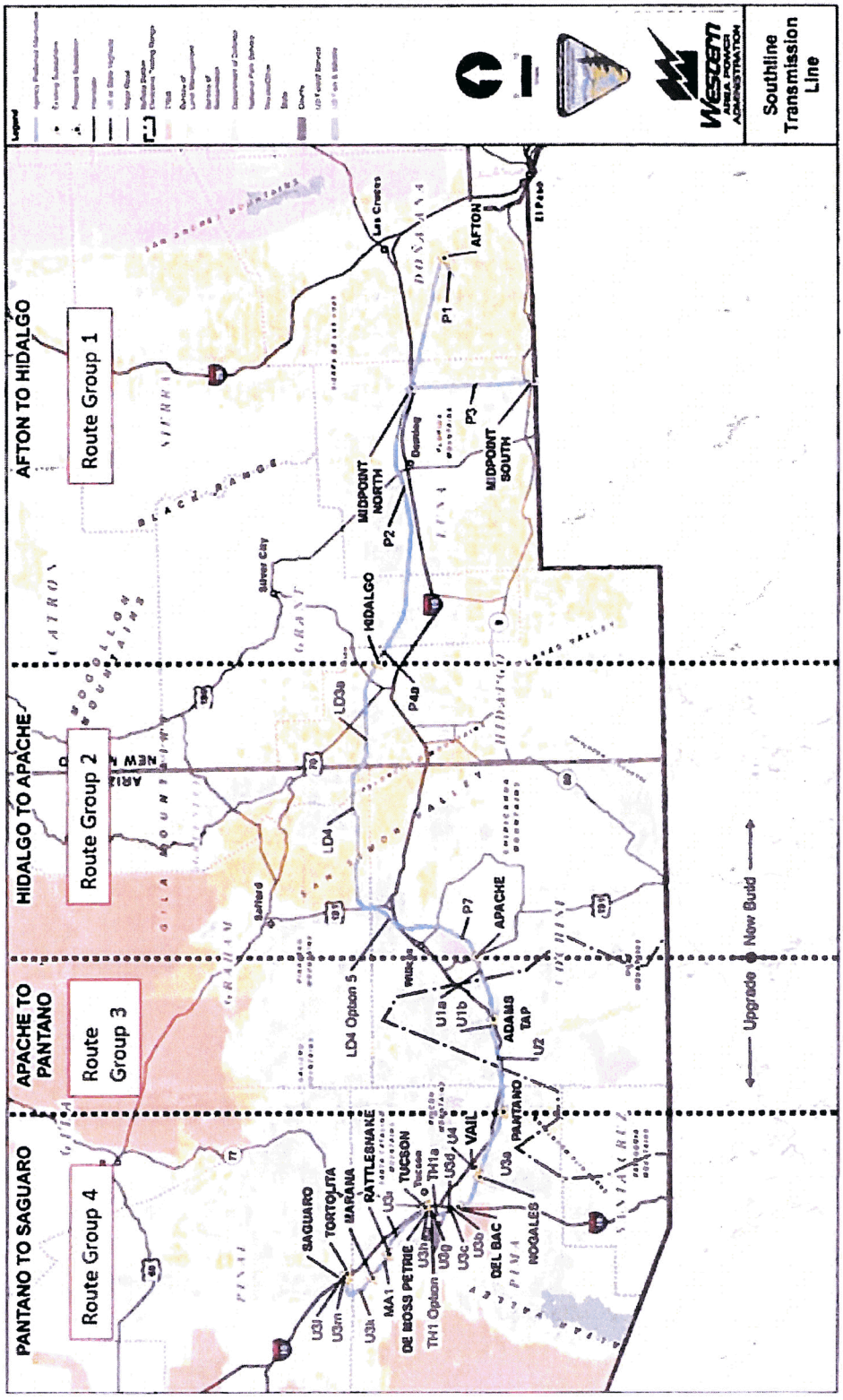
Figure 1. Action Area



Gila chub

We listed the Gila chub as endangered with critical habitat on November 2, 2005 (70 FR 66664). Historically, Gila chub were recorded from rivers, streams, and spring-fed tributaries throughout the Gila River basin in southwestern New Mexico, central and southeastern Arizona, and northern Sonora, Mexico. Today the Gila chub is restricted to small, isolated populations scattered throughout its historical range. Critical habitat includes approximately 160 miles of stream reaches in Arizona and New Mexico, organized into seven river units. Decline of the Gila chub is due to habitat loss from past and current dewatering of rivers, springs, and cienegas (e.g. from diversions, impoundments, and groundwater pumping), poor land management practices (e.g. excessive livestock grazing) resulting in erosion and arroyo formation, and the concomitant introduction of predacious and competing non-indigenous fish species. Life history information can be found in the final rule and references cited therein.

No species-specific surveys have been conducted for the Gila chub for the purposes of this proposed project. The Gila chub does not occur within the project area where it would cross the San Pedro River and Cienega Creek. Both the San Pedro River and Cienega Creek lack a permanent or semi-permanent water source at the proposed crossings and water is likely only present in response to precipitation events. Designated critical habitat for the Gila chub occurs approximately 2.5 miles downstream (north) of where the proposed Project would cross Cienega Creek.

No impacts on Gila chub individuals are anticipated because no individuals are present in the proposed project area. No ground disturbance would occur within Gila chub designated critical habitat because none occurs in the project or study areas. However, ground-disturbing activities as a result of construction and maintenance would occur on the banks, and possibly within 300 feet, of the Cienega Creek stream channel approximately 2.5 miles upstream of designated critical habitat. These ground-disturbing activities may result in an increase in erosion and sedimentation, indirectly impacting some of the PCEs of Gila chub designated critical habitat. These impacts would be temporary and minimal, and we expect that the quality and quantity of PCEs will return to pre-disturbance conditions and be maintained in the long-term.

CONCLUSION

We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the Gila chub or its critical habitat. Our concurrence is based on the following:

1. There will no effect to individuals because none occur in the project area, and habitat does not occur in the project area.
2. Critical habitat downstream of the project area may be affected indirectly through actions in the project area, but these effects will be insignificant, and the quality and quantity of PCEs will return to pre-disturbance conditions.

Huachuca water-umbel

The Huachuca water-umbel was listed as an Endangered species in 1997 (62 FR 3),with critical habitat designated in 1999 (64 FR 37441). A total of 51.7 miles of critical habitat was designated at seven locations along streams and rivers in Cochise and Santa Cruz counties in Arizona. The nearest designated critical habitat for the species is approximately 12 miles south of the proposed project along the San Pedro River in Cochise County.

No species-specific surveys have been conducted for Huachuca water-umbel for the purposes of this proposed project. However, the only locations in the study area that could support the Huachuca water-umbel are at the proposed crossings over the San Pedro River and Cienega Creek (segments U2 and U3a). These proposed crossings lack a permanent or semi-permanent source of water and water is likely only present in response to precipitation events. The proposed crossings lack the perennial surface water required by the species. The nearest designated critical habitat for the species is approximately 12 miles south (upstream) of the proposed project along the San Pedro River in Cochise County.

The proposed project would not disturb habitat for the Huachuca water-umbel because none occurs in the project area. The proposed project would not occur in or near designated critical habitat; therefore, the proposed project would have no effect on designated critical habitat for the species.

CONCLUSION

We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the Huachuca water umbel or its critical habitat. Our concurrence is based on the following:

1. Effects to individuals or habitat are discountable because none occurs in or near the project area.
2. Effects to critical habitat are discountable because the nearest critical habitat is approximately twelve mile upstream of the project area.

Appendix B - Conference Report – Northern Aplomado Falcon

Consultation History

- March 4, 2014 Biological assessment and request for conference received by Service from the BLM

Description of the Proposed Action

The proposed action is: for the BLM to issue a right-of-way grant to Southline Transmission, LLC (Southline) for the construction and operation of a 345 kV transmission line from the Afton Substation in New Mexico to the Apache Substation in Arizona (Figure1); for Western Area Power Administration (Western) to authorize and participate with Southline in the upgrade an existing Western transmission line and associated facilities from 115 kV to 230 kV from Apache Substation to Saguaro Substation in Arizona (BO Figure 1); for the U.S. Forest Service to authorize the upgrade of the Western line across Forest Service managed land in Cochise County, Arizona; and for the U.S. Bureau of Reclamation (Reclamation) to authorize the upgrade of the Western line across Reclamation managed lands in Pima and Pinal counties, Arizona. Because multiple Federal agencies have actions that are required by the project, this Conference Report evaluates all of these proposed actions and provides section 7 compliance for all of these agencies' actions. The BLM is acting as the lead action agency with regard to this conference.

The Southline Transmission Line Project (project) is a proposed electrical transmission line project that would consist of two sections. The first section would entail construction of approximately 240 miles of new double-circuit 345-kilovolt (kV) transmission line in a 200-foot right-of-way (ROW) between the Afton Substation, south of Las Cruces in Doña Ana County, New Mexico, and Western's Apache Substation, south of Willcox in Cochise County, Arizona (New Build Section). The second section would entail the upgrade of approximately 120 miles of Western's existing Saguaro–Tucson and Tucson–Apache 115-kV transmission lines to a double-circuit 230-kV transmission line in a 100-foot existing ROW (Upgrade Section). The Upgrade Section would originate at the Apache Substation and terminate at the Saguaro Substation northwest of Tucson in Pinal County, Arizona (BO Figure 1). Both new permanent ROW and temporary construction ROW would be required in the New Build Section and in some portions of the Upgrade Section for the transmission line, substations, access roads, and other permanent and temporary project components; the anticipated ROW width for the Upgrade Section 230-kV transmission line would be 150 feet. The proposed project would also include installation of new communications equipment, and connect to 14 substations distributed throughout southern New Mexico and Arizona, including expanding/upgrading existing substations and potentially constructing a new substation in Luna County, New Mexico. The proposed project would also include installation of new communications equipment to facilitate operations. The proposed action includes proponent committed environmental measures, best management practices (BMPs), and additional proposed species-specific conservation measures (BA Table 3-7, included herein by reference).

Conservation measures

AF-1: Preconstruction surveys would take place in habitat classified as moderate or high suitability for the northern aplomado falcon within the proposed ROW and a 1-mile buffer.

Surveys should be conducted several times from January 15 to June 30 in order to detect breeding activity.

AF-2: All existing raptor nests or other large nests found during preconstruction surveys would be preserved in place, if possible, or relocated if necessary. No relocation of active nests would occur, and no nests would be relocated until after consultation with the Federal action agencies and FWS.

AF-3: Construction would not take place within 1 mile of occupied northern aplomado falcon nests between January 15 and September 1. Aplomado falcons are frequently observed on their breeding territories in southern New Mexico in January. Therefore, January 15 is the start date for seasonal restrictions.

Status of the Species in the Action Area

Aplomado falcons in Arizona and New Mexico are part of a non-essential population (NEP) established in 2006 (71 FR 42298), and as such are subject to advisory conference with the USFWS under Section 7(a)(4) of the ESA rather than consultation under Section 7(a)(2), when outside of the National Park Service and NWR systems. No portion of the project would cross National Park or NWR lands; thus, conference rather than consultation is required for the aplomado falcon. Critical habitat is not designated for NEPs.

A broad area of northern aplomado falcon habitat occurs within the action area. For the purposes of analysis, all of the grassland vegetation types within the study area in route groups 1–3 (see Figure 1 in BO) were considered habitat for the northern aplomado falcon. No northern aplomado falcons have been seen in Arizona since an observation in Cochise County in 1977 (AGFD 2001a). Future recovery of the species may allow for dispersal into habitat in Arizona. In southern New Mexico, there are numerous sightings each year in a variety of locations, and breeding pairs were observed in 2013 and 2014.

Effects of the Action

The proposed project would result in temporary and permanent northern aplomado falcon habitat loss and degradation. The proposed project would disturb approximately 624 acres of habitat for the species. This would be approximately 23 percent of the 2,713 acres of habitat within the ROW and 0.5 percent of the approximately 114,089 acres of habitat within the study area. Areas of temporary disturbance would be restored; however, restoration in arid environments is difficult and slow and may require 50 to 100 or more years. As such, impacts from ground disturbance on northern aplomado falcon would be long-term. Habitat loss could reduce overall prey abundance; however, the species utilizes large home ranges which would reduce the potential effects of habitat loss and degradation on northern aplomado falcon prey species.

Conclusion

After reviewing the proposed action, with included conservation measures, we conclude the project is not likely to jeopardize the continued existence of the 10(j) non-essential, experimental population of northern aplomado falcon. Because of the northern aplomado falcon's status as a non-essential experimental population in New Mexico and Arizona, they are treated as proposed for listing for section 7 consultation purposes. By definition, a nonessential experimental population is not essential to the continued existence of the species. Thus, no proposed action impacting a population so designated could lead to a jeopardy determination for the entire species. With full implementation of the proposed conservation measures, the presence of large areas of available unoccupied habitat, and the naturally low densities of aplomado falcons, there should be only insignificant effects resulting from the proportionately small areas of habitat loss.

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Appendix C: Technical Guidance

Sonoran Desert Tortoise

Conservation measures for the Sonoran desert tortoise would include proponent proposed measures (see Appendix D Mitigation and Avoidance Measures) and:

DT-1: Pre-construction desert tortoise surveys would be conducted in suitable habitat. A worker education program including information on desert tortoises would be implemented. Any desert tortoises encountered during preconstruction surveys or during construction activities would be handled in accordance with the AGFD "Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects" (AGFD 2007).

In addition, we recommend that BLM and Western coordinate with the FWS prior to initiation of biological field work for the latest recommendations for Sonoran desert tortoise surveys and monitoring protocols.

Sprague's Pipit

Project-wide Mitigation and Avoidance Measures described in the BA would minimize ground disturbance and the potential for the establishment and spread of non-native grass and other invasive plant species within habitat for Sprague's pipit. We also recommend that Federal action agencies and the applicant minimize disturbance in all potential Sprague's pipit wintering habitat through use of existing access roads, avoid vegetation clearing, and avoid locating pull sites in potential habitat. Implementation of the Avian Protection Plan (APP) will further protect individual birds.

Literature Cited

Arizona Game and Fish Department (AGFD). 2007. *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects.* Accessed online at http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf on January 23, 2014.

Appendix D: Mitigation and Avoidance Measures

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Standard Mitigation				
The boundaries of construction activities would be predetermined and staked or flagged prior to any construction activity. No paint or permanent markings would be applied to rocks or vegetation.	X			
Prior to construction, all construction personnel would be instructed on the protection of cultural and ecological resources.	X			
All vehicle movement would be restricted to designated access, contracted acquired access, or public roads.	X	X	X	X
To limit disturbance, existing access roads would be used to the extent practicable, providing that doing so does not additionally impact resource values. Widening and grading of roads would be kept to the minimum required for access by Project construction equipment.	X	X	X	X
Structures and/or ground wire would be marked with high-visibility devices such as vibration dampers, where required by government agencies such as the FAA.	X	X	X	
Transmission line materials would be designed and tested to minimize audible noise, radio interference, electromagnetic interference (EMI), and television interference due to corona.	X	X	X	
No widening or upgrading of existing roads would be undertaken in the area of construction and operations, where soils and vegetation are sensitive to disturbance, in areas of critical habitat for vegetation or wildlife, in areas of habitat for BLM special status species, or where archaeological sites are present.		X	X	
During operation of the transmission lines, the ROW would be maintained free of non-biodegradable debris. Desert vegetation would be crushed in place to promote seeding and revegetation, and reduce erosion potential.			X	
BLM and Western road construction specifications would be followed where unimproved spur roads cannot be employed.		X	X	
Unimproved spur roads would be used to the extent practicable in areas where no grading would be warranted to access work areas, within the approved ROW. Unimproved spur roads would be used to access a site without specifically blading a road or significantly modifying the landscape. All vehicle movement would be restricted to designated access, even if that is unimproved access. Vegetation would be crushed, not cut. For all access types, soil would be compacted, but not removed.		X	X	X
Structures would be placed to avoid, and/or to allow conductors to span, sensitive features such as riparian areas, waterways, roads, trails, and cultural sites within limits of standard transmission line structure design. This would minimize the amount of sensitive features disturbed and/or reduce visual contrast.	X	X	X	

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Clearing of trees in and adjacent to the ROW would be minimized to the extent practicable to satisfy conductor-clearance requirements (NESC and up to 10 years' timber growth). Trees and other vegetation would be selectively removed to blend the edge of the ROW into adjacent vegetation patterns, as appropriate.		X	X	
Separation between transmission lines and existing utilities, roads, and railroads would be minimized to the extent practicable. Opportunities to share portions of adjacent ROWs would also be explored.	X			
All construction vehicle movement would be restricted to predesignated access, contractor-acquired access, and public roads.		X		
The width of construction and new temporary access roads would be sited to keep to the minimum needed to avoid sensitive areas and to limit ground disturbance.		X		
Surface elevations would be returned to approximate pre-Project conditions, as practicable.		X		X
A WEAP would be prepared. All construction crews and contractors would be required to participate in WEAP training prior to starting work on the Project. The WEAP training would include a review of the special status species; WUS; riparian habitat; cultural, paleontological, and other sensitive resources that could exist in the project area; the locations of sensitive biological resources and their legal status and protections; and measures to be implemented for avoidance of these sensitive resources. A record of all trained personnel would be maintained during the construction period.	X	X		
The process by which the BLM, Western, and Southline and its construction contractor would conduct environmental monitoring, compliance, and reporting activities during construction would be described in a project compliance plan that would be prepared by the compliance inspection contractor (CIC) after they have been selected. After issuance of the notice to proceed, a CIC, designated by the BLM and Western, would provide environmental oversight and compliance monitoring during Project construction to ensure compliance with all design features and mitigation measures.	X	X		
Reclamation				
A Reclamation, Vegetation, and Monitoring Plan would be developed and implemented.		X	X	X
Reclamation would be accomplished with native species, unless otherwise approved.		X	X	X
Seeding would occur between November and March to ensure a greater chance of success. This would be tied to replacement of conserved topsoil with its natural seed stock.		X	X	X
Air Quality and Climate Change				
Project activities would be in compliance with all applicable Federal, State, and local laws and regulations concerning prevention and control of air pollution during construction and operation.		X	X	

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
An Erosion, Dust Control, and Air Quality Plan would prepared as part of the final POD. The plan would be developed and implemented to minimize and mitigate potential air quality and climate change impacts.	X	X	X	X
All necessary air quality permits would be obtained prior to construction or operating equipment that would result in regulated atmospheric or fugitive dust emissions.	X			
Dust control measures consistent with all applicable State or local standards, as outlined in the Erosion, Dust Control, and Air Quality Plan, would be implemented; these include the following reasonable precautions: 1) frequent watering (trucked in, no new water sources) or stabilization of excavations, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other) if construction activity causes visible emissions of fugitive dust beyond the work area; 2) reduction in the amount of disturbed area where possible; 3) planting of vegetative ground cover, as appropriate, in disturbed areas after construction activities have ended, and treatment of actively disturbed areas with BLM-approved dust palliatives.		X		
Trackout control devices such as grizzly bars, wheel washers, and gravel pads would be located at all entrances and exits.		X		
Haul-truck cargo beds would be covered with tarps and travel speeds would be limited to no more than 15 miles per hour on unpaved roads.		X		
Combustion emissions from mobile sources would be minimized by proper maintenance and tune-up of equipment.		X	X	
To reduce the potential for greenhouse gas emissions, only properly trained Project personnel would handle sulfur hexafluoride, and a sulfur hexafluoride recovery and recycling program would be implemented.		X	X	X
Cultural Resources				
Cultural resources would continue to be considered during post-EIS phases of work. Specific cultural resource inventory, protection, and mitigation measures to be employed would be outlined in the Project-specific Programmatic Agreement, in accordance with Section 106 of the NHPA. The final POD would include the signed Programmatic Agreement.	X	X	X	X
The area of potential effects will be defined, consisting of the approved alternative corridor and all areas and ancillary features that sustain ground disturbance (access roads, construction yards, etc.) will be subject of 100% pedestrian cultural resources survey in order to identify all cultural resources that may be adversely impacted by the Project. Survey and reporting requirements would follow BLM Handbook 8110 and 8111 requirements for a Class III Intensive Field Survey (BLM 2004).	X			

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
An HPTP would be developed and implemented to avoid, minimize, and mitigate the adverse effects of the Project on known cultural resources. Mitigation measures may range from avoidance and preservation in place to data recovery excavations conducted before the destruction of a site if avoidance is not a feasible option. The HPTP would include a monitoring and discovery plan detailing procedures to be followed in the inadvertent discovery of a potentially significant archaeological site or human remains.	X	X	X	
To the extent practical, all ground-disturbing activities and other Project components would be micro-sited to avoid or minimize impacts on cultural resources listed as or potentially eligible for listing as, unique archaeological sites, historical resources, or historic properties.	X	X		
Before construction, and as described in the WEAP, Southline and its construction contractor would provide cultural resources sensitivity training to all construction personnel so that Project personnel understand the procedures in the monitoring and discovery portion of the HPTP.	X			
Hazardous Materials and Waste				
Several framework plans prepared as part of the final POD would be developed and implemented to minimize and mitigate potential hazardous materials and waste; plans include SWPPP, SPCC, Soil Management, and Hazardous Materials Management. These plans would include requirements by the EPA, OSHA, Arizona Department of Environmental Quality, and the New Mexico and Arizona Departments of Transportation.	X	X	X	X
The SWPPP would include BMPs to address the storage and handling of hazardous materials and sediment runoff during construction activities to minimize the risk of an accidental release. The SWPPP is required by, and enforced by, the EPA in New Mexico, and the Arizona Department of Environmental Quality in Arizona.	X	X	X	
All construction, operation, and maintenance crew members would be properly trained to deal with a spill, and appropriate spill containment material would be on hand at every work site. Careful handling and designation of specific equipment repair and fuel storage areas, as outlined in the SPCC Plan, would reduce the potential for oil and fuel spills. In the event that there is an oil or fuel spill, immediate measures would be taken to control the spill, and the BLM, National Response Center, and/or Arizona Department of Environmental Quality or New Mexico Environment Department would be notified immediately as defined in the SPCC Plan.	X	X	X	X
The Soil Management Plan would provide guidance for the proper handling, on-site management, and disposal of contaminated soil, if encountered during construction, operation, and maintenance activities. Appropriately trained personnel would be on-site during preparation, grading, and related earthwork activities to monitor the soil conditions encountered.	X	X	X	X

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
The Project-specific Hazardous Materials Management Plan and program would outline proper hazardous materials use, storage, and transport requirements and applicable handling procedures. EPA procedures for handling and storage of hazardous materials, OSHA requirements for proper storage and labeling on the job site, and New Mexico and Arizona Department of Transportation requirements for transportation of hazardous materials would be followed.	X	X	X	X
Personnel, contractors, and transporters involved with hazardous materials management would be required to comply with Federal and State regulations established for the transportation, storage, handling, and disposal of hazardous substances, materials, and wastes. "Hazardous material" means any substance, pollutant, or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended.		X	X	X
New or expanded substation locations that involve the purchase or long-term leasing of land, purchased transmission line ROWs, and any other property to be acquired would be screened for environmental liabilities. The degree and level of screening would be based on knowledge or information available on the property to determine the probability of contaminants of concern or other environmental impairment. A Phase I Environmental Site Assessment would be conducted if preliminary screening indicates a reasonable risk that such environmental conditions may exist on the property and the property continues to be targeted for acquisition by the Project, consistent with American Society for Testing and Materials Standard E1527-05.	X			
In the event of a spill, workers in the immediate area would cease work, begin spill cleanup operations, and notify appropriate agencies as required by law and specified in the SPCC Plan. Southline and its construction contractor is responsible for cleanup and assumes liability for any and all releases of hazardous substances disposed on public land, in accordance with State, Federal, and local laws and regulations. Southline would immediately notify the BLM authorized officer of any and all releases of hazardous substances on public land.		X	X	X
If backfill material to be used is derived from a site that could possibly have contamination, it would be sampled and determined to be free of regulated contaminants before it is used to fill excavations. The results of any tested soils should be shared with the appropriate surface managing agency. No contaminated soils would be used as fill material for the Project.		X		
All construction and demolition waste, including trash and litter, garbage, and other solid waste, would be removed and transported to an appropriately permitted recycling or disposal facility. Southline and its construction contractor would prepare a construction waste disposal plan for all nonhazardous wastes generated during construction of the Project. The plan would contain a description of all nonhazardous solid and liquid construction wastes, recycling plans, and waste management methods to be used for each type of waste.		X		X
Southline or the applicable contractors would maintain all vehicles in good working order. Equipment would be properly tuned and maintained to avoid leaks of fluids.		X	X	X

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Service and refueling procedures would not be conducted within 500 feet of a seep, wash, or other water body. Routine service of any vehicles or equipment would not be done within the ROW.		X	X	X
Health and Human Safety				
The HASP and Fire Protection Plan prepared as part of the final POD would be developed and implemented to minimize and mitigate potential health and human safety impacts. Southline and its contractors would work with the appropriate surface managing agencies to incorporate any fire restrictions that are put into effect during construction, operation, and decommissioning of the project.	X	X	X	X
The HASP would address potential situations that workers could encounter during construction and maintenance. The purpose and goal of the worker safety and environmental training would be to communicate Project-related environmental and safety concerns and appropriate work practices to all field and construction personnel prior to the start of construction, including spill prevention, emergency response measures, accident prevention, use of protective equipment, medical care of injured employees, safety education, and fire protection. Training would encompass environmental training related to road designations and speed limits, promote "good neighbor" policies, and institute BMPs for construction. The training would emphasize site-specific physical conditions to improve hazard prevention in accordance with OSHA requirements (29 CFR 1910).	X	X	X	
Southline and its construction contractor would locate overhead and underground utilities that may reasonably be expected to be encountered during construction. If a utility service interruption is known to be unavoidable, Southline and its construction contractor would coordinate with the service provider to notify members of the public, the jurisdiction, and the service providers affected by the interruption via letters and newspapers notices published no later than 7 days prior to the first interruption. Copies of the notices would be provided to the BLM and Western following notification.	X	X		
All permanent metallic objects within the Project's transmission line ROWs would be grounded in accordance with industry standards.	X	X	X	
Farmlands and Grazing				
Fences and gates would be repaired or replaced to their original, predisturbed condition (or better), as required by the landowner, BLM authorized officer, or other land managing entity if they are damaged or destroyed by construction activities. New temporary and/or permanent gates would be installed only with the permission of the landowner or the BLM. Temporary gates not required for postconstruction access control would be removed following construction completion and in accordance with the POD.		X		X

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Water facilities (e.g., tanks, developed springs, water lines, wells, etc.) would be repaired or replaced to their predisturbed condition if they are damaged or destroyed by construction, operation, or maintenance activities, as required by the landowner of land management agency. Temporary watering facilities would be provided for wildlife and livestock until permanent repair or replacement is complete.		X	X	X
On agricultural land, ROWs would be aligned, in so far as practicable, to reduce the impact to farm operations and agricultural production. This would typically be done in conjunction with negotiating ROW agreements with landowners.	X	X		
Military Operations				
The transmission line operator would work with Buffalo Soldier Electronic Testing Range (BSETR) to coordinate, and possibly limit, interconnections to the proposed Project to the extent allowed by the Federal Energy Regulatory Commission.	X			
Southline and Western would work with BSETR to identify micro-siting opportunities during Project design.	X			
The transmission line operator would coordinate with BSETR during the design phase of the proposed Project to limit EMI. The proposed Project would be constructed using the best available construction techniques and technology (i.e., use of grounding, selective conductor type and arrangement, and conductor surface gradients), to the extent feasible and reasonably economical, in order to minimize EMI.	X			
The transmission line operator would coordinate with BSETR to allow for an updated measure of the "floor value" of the proposed Project, once the proposed line is energized. Such cooperation could include provision of real-time operating and load information to BSETR to help calibrate the floor value of EMI.	X	X	X	
The transmission line operator would coordinate with BSETR to develop reporting standards, for potential inclusion in the transmission line maintenance and inspection program, to the extent allowable by the Federal Energy Regulatory Commission. While normal inspection maintenance would take care of typical EMI issues, specific incidents such as storm damage or vandalism would need to be responded to outside of the normal maintenance cycle. If not detectable through transmission line monitoring, the operator would need to hear from someone experiencing interference in order to respond.	X	X	X	
The transmission line operator would coordinate planned outages (curtailment of power line operations for BSETR to implement testing) with BSETR to the extent feasible in order to meet necessary contractual commitments, utility mandates, laws and regulations, and power system requirements. The operator is very limited in the timing and duration of potential outages; outages stress the rest of the system, which can cause system failures.	X		X	

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Noise				
Construction would comply with local noise ordinances. There may be a need to work outside the local ordinances to perform work during available line outage windows in order to take advantage of low electrical draw periods during nighttime hours. The construction contractor would comply with variance procedures required by local authorities.		X		
Construction equipment would be maintained in good working order in accordance with manufacturer's recommendations.		X		X
Idling of construction equipment and vehicles would be minimized during construction.		X		
Workers would be provided with appropriate hearing protection, if necessary, as described in the HASP.		X	X	X
Paleontology				
In consultation with appropriate land management agencies, Southline and its contractor would participate in the preparation of a Monitoring Plan, paleontological surveys, personnel education, monitoring ground disturbance for fossils, curation of fossils, and deposition of fossils in a paleontological repository, as necessary in areas of highest likelihood of encountering resources.	X	X		
If significant fossils are encountered during construction, construction activities would be temporarily diverted away from the discovery. The monitor would notify all concerned parties and collect matrix for testing, processing, and documentation, as directed by the authorized officer of the BLM.		X		
Recreation				
Southline and its contractor would coordinate with the BLM to display appropriate "closed" signage at the entrance to new spur roads to structure locations and access roads located on BLM-managed lands. This includes temporary signs during the construction phase of the Project and permanent signs and/or vehicle barriers that would close the spur routes to public travel during the operational phase. Signs would be removed as appropriate upon decommissioning.	X	X	X	X
If temporary short-term closures to recreational areas are necessary for construction activities, Southline and its contractor would coordinate those closures with recreational facility owners. To the extent practicable, Southline and its construction contractor would schedule construction activities to avoid heavy recreational use periods (e.g., holidays or tournaments). Southline and its construction contractor would coordinate with the facility owner to post notice of the planned closure on-site 14 calendar days prior to the closure.	X	X	X	X

If the Arizona National Scenic Trail must be temporarily closed during construction, an alternate trail route (detour) would be provided during the closure. If it is necessary for trail users to leave the trail during the temporary closure, trail users would need to obtain permission from the ASLD.	X	X		X

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Soils				
As appropriate and feasible, Southline and its construction contractor would implement topsoil segregation and conservation practices at substation sites and as directed by the BLM and Western.		X		
In construction areas (i.e., temporary use areas, structure sites, access roads, etc.) where grading is required, surface restoration would be implemented as required by the landowner or BLM authorized officer. The method of restoration would normally consist of returning disturbed areas back to their normal contour, replacing topsoil, reseeding (where required), installing cross drains for erosion control, placing water bars in the road, and filling ditches. The Reclamation, Vegetation, and Monitoring Plan would include final details on the details of restoration.		X		
Transportation				
Prior to the start of construction, Southline and its construction contractor would prepare a Traffic and Transportation Management Plan for the Project to address the timing and routing of Project trips in an effort to minimize Project impacts on local streets, highways, and railroad operations.	X			
At least 90 days prior to any helicopter use on the Project, Southline and its construction contractor would coordinate with the FAA for review and approval of plans for any helicopter flights that would take place during construction and operation. Southline and its construction contractor would then provide information to the BLM and Western regarding the intended need and use of helicopters during construction and operation of the Project, including the Flight and Safety Plan; the estimated number of days and hours that the helicopter would operate; the type and number of helicopters that would be used; the location, size, and number of staging areas for helicopter takeoffs and landings; and written approval from property owners for use of helicopter staging areas.	X	X	X	
Transmission structures would be identified with high-visibility markers in areas where they intersect or parallel military training routes.			X	
Gates and fencing would be provided in areas where off-highway-vehicle use would be restricted due to military operations, or to protect sensitive resources.		X	X	X
Vegetation				

Preconstruction native plant inventories and surveys for noxious weed species as stipulated by the appropriate land managing agency would be conducted once transmission line centerline, access road, and transmission line structure sites have been located.	X

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Every effort would be made to minimize vegetation removal and permanent loss at construction sites to the extent practicable. Access would not be graded unless necessary for erosion control or other engineering reason. Final structure and spur road locations would be selected to avoid sensitive vegetation to the greatest extent feasible.		X		
In construction areas where grading is not required, vegetation would be left in place wherever possible, and original contours would be maintained to avoid excessive root damage and allow for regrowth. All existing roads would be left in a condition that is equal to or better than their condition before the construction of the transmission lines, as determined by the appropriate land managing agency.		X		
Southline and its construction contractor would develop a Reclamation, Vegetation, and Monitoring Plan that would guide restoration and revegetation activities for all disturbed lands associated with construction of the Project and its eventual termination and decommissioning. The plan would address all land disturbances, regardless of ownership. It would be developed in consultation with appropriate agencies and landowners and would be provided to these entities for review and concurrence. The plan would provide details on topsoil segregation and conservation, vegetation treatment and removal, salvage of appropriate species, and revegetation methods, including use of native seed mixes, application rates, transplants, and criteria to monitor and evaluate revegetation success.	X	X	X	X
Special status plants, including the Pima pineapple cactus, would be avoided. Where avoidance is not possible, special status plants would be conserved by relocating plants and/or reseeding, replacing topsoil with existing topsoil that was removed, and regrading in compliance with local ordinances (Pima County). Measures to conserve special status plants would be implemented through the Reclamation, Vegetation, and Monitoring Plan.	X	X		X
Removal of riparian scrubland vegetation would be avoided where possible. Natural regeneration of native plants would be supported by selectively cutting vegetation with hand tools, mowing, trimming, or using other removal methods that allow root systems to remain intact.		X	X	X
Southline and its construction contractor would provide training to all personnel working in the project area to identify noxious weeds and prevent spread. Training would discuss known invasive and noxious weed species, known locations, identification methods, and treatment protocols. Training materials and a list of Project personnel completing the course would be provided to the BLM and Western.		X		
In consultation with local BLM field offices and local resource agencies, Southline and its construction contractor would develop and implement a Noxious Weed Management Plan.	X	X	X	X
Invasive and noxious weed populations would be mapped and reported to BLM/Western. BLM and Western will determine in which areas vehicle washing would be required, based on the results of the invasive/noxious weed surveys.	X	X		

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
As required, equipment would be cleaned before ingress to minimize the potential for the spread of invasive species. These details would be described in the Noxious Weed Management Plan. Buffelgrass would be specifically addressed in the plan, which would outline efforts to eliminate it from within areas disturbed by the proposed Project to ensure that it does not spread to adjoining lands.	X	X	X	X
Visual Resources				
In order to restore disturbed areas to an appearance that would blend back into the overall landscape, seeding and/or planting would be conducted in any area that has been cleared or disturbed during construction. Seed mix would be tailored to an area's soil type, existing vegetation, and native species.		X		X
The Project would incorporate nonspecular conductors into the Project design to decrease reflectivity and visibility of Project features, where specified by the BLM authorized officer.	X	X		
Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted in earth tones or in a color designed to reduce color contrasts with the surrounding landscape. A dark, neutral color, such as the BLM Standard Environmental Color, "Carlsbad Canyon," or similar is recommended because the hue tends to blend into desert landscape at varying distances.		X	X	
"Dulled" metal or self-weathering finish structures would be used to reduce visual impacts, if specified by the BLM authorized officer.	X	X		
The alignment of any new access roads (including unimproved spur roads) would stay within the designated access ROW and would follow the designated area's landform contours and avoid steep areas as much as feasible, provided that such alignment does not additionally impact resource values. This would minimize ground disturbance and/or reduce scarring (visual contrast).	X	X		
Aerial markers or warning lights would be required for conductors or structures, in keeping with FAA, U.S. Customs and Border Protection, and Department of Defense regulations for structures over 130 feet. The use of red strobe lighting would reduce potential impacts from artificial night lighting and would reduce impacts from night brightness and viewing of night skies. The minimum number and intensity of lights would be used, given that the tallest structures are under the 200-foot FAA requirement (FAA Advisory Circular 70/7460-1K (FAA 2007)). Exterior lights installed on conductors or other facilities would be aviation warning lights, or FAA L-864 aviation red-colored flashing lights with 20 to 40 flashes per minute standard flashing range.		X	X	

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Water Resources				
A Project-specific construction SWPPP would be prepared prior to the start of construction of the transmission line and substations in compliance with CWA Section 402, if required. The SWPPP would use BMPs to address the storage and handling of hazardous materials and sediment runoff during construction activities to minimize the risk of an accidental release. As part of the SWPPP, soil disturbance at structure construction sites and access roads would be the minimum necessary for construction and would be designed to prevent long-term erosion, through activities such as restoration of disturbed soil, revegetation, and/or construction of permanent erosion control structures. A Department of the Army permit application would be prepared prior to the start of construction of the transmission line and substations for the discharge of dredged or fill material in compliance with CWA Section 404, if required. Activities in and around streams and wetlands would be designed to avoid, minimize, and mitigate impacts to WUS.	X	X		
Roads would be built as close as possible to right angles to the streams and washes. Culverts or temporary bridges would be installed where conditions warrant. All construction and operations activities shall be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks.		X		
To the extent practicable, structures would be sited with a minimum distance of 200 feet from streams.	X			
Construction equipment would be kept out of flowing stream channels. Structures would be located to avoid active drainage channels, especially downstream of steep slope areas, to minimize the potential for damage by flash flooding and mud and debris flows.	X	X		X
Flood control devices would be located where required to protect structures or other Project structures from flooding or erosion. Appropriate design of structure foundations would be used to prevent scour or inundation by a 100-year flood to avoid disturbed areas. The locations of transmission structures would be designed to avoid steep, disturbed, or otherwise unstable slopes. If drainages cannot be avoided by structure placement, Southline and its construction contractor would design drainage crossings to accommodate estimated peak flows and ensure that natural volume capacity can be maintained throughout construction and upon postconstruction restoration.	X	X		
Wildlife				
In consultation with the BLM and Western, Southline and its construction contractor would prepare and implement a Biological Monitoring Plan prior to issuance of a notice to proceed and prior to construction that would specify the level of biological monitoring to be provided throughout construction activities in all construction zones with the potential for presence of sensitive biological resources. The number of monitors and monitoring frequency would be specified for each work zone.	X	X		

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Preconstruction surveys would be required in areas where Sonoran desert tortoise (now a separate species: Morafka's desert tortoise (*Gopherus morafkai*)), Gila monster, and Tucson shovel-nosed snake are expected to occur. In consultation with the BLM and Western, Southline and its construction contractor would hire qualified biologists to conduct preconstruction surveys in ground disturbance areas within suitable habitat for appropriate special status species.	X			
To reduce impacts on the Sonoran (Morafka's) desert tortoise, known to exist in the western portion of the project area, only authorized biologists with a valid Arizona Game and Fish Department (AGFD) permit would handle desert tortoises if encountered within the project area, following the most current desert tortoise handling guidelines published by the AGFD.		X		X
Preconstruction surveys for species listed under the ESA or specified by the appropriate land management agency as sensitive or of concern would be conducted in areas of known occurrences or suitable habitat. Timing of the surveys would be determined by FWS approved species-specific survey protocol.	X			
Monitoring of construction activities would be required in some areas to ensure that effects on these species are avoided during construction. If bald eagle or golden eagle nests are identified during preconstruction surveys, seasonal restrictions on construction within a specified buffer would be implemented where applicable, according to FWS protocols, to comply with the Bald and Golden Eagle Protection Act. Preconstruction nesting-season surveys for migratory birds and surveys for burrowing owls in suitable habitat would be conducted as needed to comply with the Migratory Bird Treaty Act.		X		
Surveys for bat roosts would be conducted within 0.25 mile of the Project ROW in areas that potentially contain caves, karst features, or mines. Occupied bat roosts would be avoided.	X			
Access roads in Tucson shovel-nosed snake habitat would be posted closed to off-road-vehicle use and gated if appropriate to decrease the potential for vehicles striking the subspecies.		X	X	
Where appropriate, protective drift fencing would be placed along access roads and disturbance areas in suitable Tucson shovel-nosed snake habitat during the active season of the snake to limit the potential for vehicle strikes.		X	X	
In Tucson shovel-nosed snake habitat, temporarily disturbed areas will be revegetated with native shrubs, grasses, and forbs to reduce impacts on habitat for prey populations of the Tucson shovel-nosed snake.		X		X
Tucson shovel-nosed snake identification and avoidance measures would be included in the worker training program. If during construction activities Tucson shovel-nosed snakes are discovered in or near areas being disturbed, biological monitors would be required to be present on-site during construction activities.	X	X		

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
To reduce impacts on migratory birds and raptors, especially near the Willcox Playa: 1) Southline and its construction contractor would consult with the appropriate agencies (BLM or FWS) on a case-by-case basis when active nests are found in project areas, unless directed to do otherwise by these same agencies; 2) active bird nests would not be moved during breeding season, in compliance with the Migratory Bird Treaty Act, unless the Project is expressly permitted to do so by the FWS or BLM, depending on the location of the nest; 3) all active nests and disturbance or harm to active nests would be reported to the FWS or BLM, upon detection; and 4) work would halt if it is determined that active nests would be disturbed by construction activities, until further direction or approval to work is obtained from the appropriate agencies.	X	X		
Clearing, grubbing, blading, and access road improvements occurring within identified sensitive areas would be conducted outside the breeding season for most desert-nesting migratory birds.	X	X		
Construction holes left open overnight would be appropriately fenced or covered to prevent damage to wildlife or livestock.		X		
To reduce impacts on golden eagles and other raptors, Southline and its construction contractor would develop and implement an APP, in coordination with the BLM and Western for approval. The plan would be prepared in accordance with guidance provided by the FWS and in consultation with best practices such as the "Suggested Practices for Avian Protection on Power Lines" (APLIC 2006).	X	X	X	X
Southline and its construction contractor would follow Pima County guidelines for surveys prior to disturbance in priority conservation areas located in Pima County for western burrowing owls.	X	X		
Final structure and spur road locations would be adjusted to avoid sensitive wildlife resources to the greatest extent feasible.	X	X	X	
Additional Avoidance and Mitigation Measures for Special Status Species				
Lesser long-nosed bat and Mexican long-nosed bat				
All paniculate agaves (*Agave palmeri*, *A. parryi*, and *A. chrysantha*) and saguaros (*Carnegiea gigantea*) would be inventoried within the proposed ROW, and the potential to avoid or salvage each plant would be assessed. The priority would be avoidance when feasible.	X			
All suitable (e.g., healthy, undamaged, not flowering) paniculate agaves that could not be avoided would be salvaged using methods approved by the BLM/Western and FWS, but larger agaves would be given preference for avoidance when feasible. Plants salvaged from areas of permanent disturbance would be used to reclaim areas of temporary disturbance, or replanted outside disturbed areas if necessary.	X	X		

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Saguaros less than 15 feet in height would be salvaged, unless prevented by site-specific conditions or poor plant health. Plants salvaged from areas of permanent disturbance would be used to reclaim areas of temporary disturbance, or replanted outside of disturbed areas if necessary. Larger saguaros would be avoided whenever feasible, but would be topped or removed if necessary.	X	X		
Agave and saguaro salvage would be augmented, as necessary, within 3 years after completion of initial restoration activities. Augmentation would occur within the ROW in areas of higher value to bats (e.g., in the vicinity of active roosts, within areas of high concentration agaves) to achieve a goal of no net loss of forage plants. Stocks from local sources or approved nursery-grown plants would be used.	X	X		
Salvaged plants would be monitored following reclamation for a period of 3 years, as described in the POD. Supplementary water would be provided, if monitoring indicates that rainfall is insufficient to achieve the goal of no net loss of forage plants. Plant survival through the monitoring period would be reported annually to the BLM/Western and FWS.		X	X	
Northern Aplomado Falcon				
Preconstruction surveys would take place in habitat classified as moderate or high suitability for the northern aplomado falcon within the proposed ROW and a 1-mile buffer.	X			
All existing raptor nests or other large nests found during preconstruction surveys would be preserved in place, if possible, or relocated if necessary. No relocation of active nests would occur, and no nests would be relocated until after consultation with the BLM and FWS.	X	X		
Construction would not take place within 1 mile of occupied northern aplomado falcon nests between February 1 and September 1.		X		
Yellow-billed Cuckoo				
All non-emergency Construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and the Santa Cruz River would take place between September 15 and March 1, to avoid disturbance of yellow-billed cuckoos.		X	X	
Line marking devices would be placed at the proposed crossings of the San Pedro River and Cienega Creek to minimize the potential for avian collisions with transmission lines.		X		
Southwestern Willow Flycatcher				
All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and the Santa Cruz River would take place between September 15 and March 1, to avoid disturbance of southwestern willow flycatchers		X	X	
Line marking devices would be placed at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River to minimize the potential for avian collisions with transmission lines.				
Pima Pineapple Cactus				

For Pima pineapple cactus that cannot be avoided, Southline will purchase credits in an FWS-approved conservation bank for Pima pineapple cactus, corresponding to the area of permanent disturbance to occupied habitat. Alternative, Southline may purchase suitable mitigation lands within Pima County's Pima pineapple cactus priority conservation areas.		X	X	

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Any Pima pineapple cactus that are not within the area of permanent disturbance but are present within the Project vicinity shall be flagged by a qualified biologist prior to the commencement of work to avoid accidental damage during construction.	X	X		
Plant species protected under the Arizona Native Plant Law (cactus, yucca, and native trees) shall be avoided to the extent practicable during construction. If impacts to native plants cannot be avoided, the plants shall be treated in accordance with state law. All Pima pineapple cactus within the area of permanent disturbance shall be salvaged and replanted on Conservation Lands north of the substation footprint by a biologist with previous experience transplanting Pima pineapple cactus. Transplantation would be accomplished in accordance with the cactus transplantation methodology described by the University of Arizona (2009).	X	X		
Prior to construction, protocol-level surveys for Pima pineapple cactus shall be conducted to identify any individuals that could be affected by construction activities. These surveys would be limited to areas of suitable habitat that could be disturbed by construction and maintenance activities.	X			

Appendix L

PROGRAMMATIC AGREEMENT

Programmatic Agreement
Among
The Bureau of Land Management,
Las Cruces District, New Mexico
Arizona State Historic Preservation Officer
New Mexico State Historic Preservation Officer
Advisory Council on Historic Preservation
Tohono O'odham Nation
United States Coronado National Forest
Bureau of Indian Affairs
United States Army Corps of Engineers
New Mexico State Land Office
Arizona State Land Department
Arizona State Museum
University of Arizona
City of Tucson
Pima County
National Park Service
Western Area Power Administration
and
Southline Transmission, LLC
Regarding the
Southline Transmission Project

1. **Whereas,** Southline Transmission, LLC (Applicant), intends to construct, operate and maintain the Southline Transmission Project (Undertaking) in New Mexico and Arizona according to general parameters contained in the project Plan of Development (POD), summarized in the Undertaking Description (Attachment 1); and

2. **Whereas,** the Las Cruces District of the Bureau of Land Management (BLM) intends to issue a right-of-way (ROW) grant to Southline, LLC for the construction, operation and maintenance of the Undertaking, and the ROW grant will reference this Programmatic Agreement (PA); and

3. **Whereas,** this PA and the Historic Properties Treatment Plan (HPTP) that will be developed pursuant to this PA will be incorporated into the POD; and

4. **Whereas,** the Las Cruces District Office of the (BLM) has been designated to serve as the lead federal agency for the Undertaking, is a Signatory to this PA and in consultation with other parties has determined that the Undertaking will have an adverse effect upon historic properties as defined in 36 CFR 800.16.l(1), identified and not yet identified within the APE; and

5. **Whereas,** the BLM has consulted with the New Mexico State Historic Preservation Officer and the Arizona State Historic Preservation Officer (SHPO), and the Tohono O'odham Nation Tribal Historic Preservation Officer (THPO) pursuant to Section 800.6 of the regulations (36 CFR part 800)

implementing Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. 306108) as revised in 2004 and they are Signatories to this PA; and

6. **Whereas,** the BLM has notified the Advisory Council on Historic Preservation (ACHP) pursuant to 36 CFR § 800.6(a) (1)(i)(C) that the Undertaking will have adverse effects on historic properties and be resolved through a PA (3-4-13) and the ACHP has agreed to participate to resolve adverse effects and is a Signatory to this PA (3-19-13); and

7. **Whereas,** the Tohono O'odham Nation has assumed the role as Tribal Historic Preservation Office (THPO) for lands within their reservation boundaries and this Undertaking crosses lands under their jurisdiction (San Xavier District); and

8. **Whereas,** no provision of this PA will be construed by any of the Signatories as abridging or debilitating any sovereign powers of the Tohono O'odham Nation; affecting the trustee-beneficiary relationship between the Secretary of the Interior and Tohono O'odham Nation or individual Indian landowners; or interfering with the government-to-government relationship between the United States and the Tohono O'odham Nation; and

9. **Whereas,** the Bureau of Indian Affairs (BIA) is the agency responsible for issuing permits and approving rights-of-ways on tribal and allotted lands of the Tohono O'odham Nation, San Xavier District, and the BLM has consulted with the BIA about the effects of the Undertaking on historic properties and has invited them to be an Invited Signatory to this PA; and

10. **Whereas,** Western Area Power Administration (Western), an agency within the Department of Energy, owns and maintains transmission lines on rights-of-way in Arizona that may be upgraded as part of this Undertaking if Western transmission lines are utilized as part of the Undertaking; and

11. **Whereas,** the Applicant has applied for, and Western is considering providing Federal funding for the Undertaking, as authorized under the 2009 amendments to the Hoover Power Plant Act of 1984; and

12. **Whereas,** this PA is not applicable to Western's ongoing routine maintenance of its existing infrastructure which is instead governed by *Programmatic Agreement Among Western Area Power Administration, the Advisory Council on Historic Preservation, and the Arizona State Historic Preservation Officer, Regarding Maintenance and Minor Construction Activities at Existing Western Transmission Lines, Facilities and Properties in Arizona*; and

13. **Whereas,** should Western elect to acquire the land rights for the new build portion of the Undertaking in Arizona and New Mexico as part the Undertaking, Western will obtain temporary access rights as well as later permanent land rights in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, where land rights across each non-federal land ownership parcel are appraised pursuant to federal standards, and BLM has invited Western to participate as an Invited Signatory to this PA; and

14. **Whereas,** the Applicant has participated in consultations and BLM has invited them to be an Invited Signatory to this PA; and

15. **Whereas,** the Undertaking crosses lands under the jurisdiction of the U.S. Coronado National Forest (CNF) and the BLM has consulted with the CNF and has invited them to be an Invited Signatory to this PA; and

16. **Whereas,** the Undertaking crosses lands under the jurisdiction of the Arizona State Land Department (ASLD) and the New Mexico State Land Office (NMSLO); and the ASLD may use provisions of this PA to address the applicable requirements of the Arizona State Historic Preservation Act (ARS § 41-861 et seq.) and the Arizona Antiquities Act (AAA) (ARS § 41-841 et seq.) on state trust lands in Arizona; and the NMSLO may use the provisions of this PA to address the applicable requirements of the Cultural Properties Act (§§ 18-6-1 et seq. NMSA 1978) and the Cultural Properties Protection Act (§§ 18-6A-1 et seq. NMSA 1978); and the BLM has consulted with these agencies about the effects of the Undertaking on historic properties and has invited them to be Invited Signatories to this PA; and

17. **Whereas,** the BLM has consulted with the New Mexico Department of Transportation (NMDOT) and the Arizona Department of Transportation (ADOT), which may issue rights-of-ways to the Applicant for access to and construction of certain components of the Undertaking, has invited them to be Invited Signatories to this PA, and both NMDOT and ADOT have declined to sign; and

18. **Whereas,** the United States Army Corps of Engineers (USACE), will be responsible for issuing permits under Section 404 of the Clean Water Act for the Undertaking and the BLM has consulted with them about the effects of the Undertaking on historic properties and has invited them to be an Invited Signatory to this PA; and

19. **Whereas,** the Undertaking crosses lands under the jurisdiction of the City of Tucson and Pima County and the BLM has consulted with them about the effects of the Undertaking on historic properties and has invited them to be Invited Signatories to this PA; and

20. **Whereas,** the Department of the Interior (DOI), through the National Park Service (NPS), is responsible for National Historic Landmarks (NHLs) under Section 101 of the NHPA and consults with agencies on undertakings adversely affecting those NHLs; and

21. **Whereas,** the Undertaking crosses the Desert Laboratory National Historic Landmark (NHL) and the Tumamoc Hill Archaeological National Register (NR) District, which are nearly identical in location, and may affect this NHL and NR District; and the BLM will follow 36 CFR § 800.10 and the provisions contained in this PA, and the BLM has consulted with the NPS, which administers the NHL Program, and has invited the NPS (NHL Program) to be an Invited Signatory to this PA; and

22. **Whereas,** the Undertaking crosses the Desert Laboratory NHL and the Tumamoc Hill Archaeological NR District which are properties owned by Pima County and the Arizona Board of Regents (University of Arizona) and the BLM has consulted with these entities about the effects of the Undertaking on these historic properties and has invited them to be Invited Signatories to this PA; and

23. **Whereas,** the Arizona State Museum (ASM) has been invited to participate pursuant to 36 CFR § 800.6 (c)(2)(iii), as it has mandated authority and responsibilities under the Arizona Antiquities Act (AAA), ARS § 41-841 et seq., that apply to that portion of the Undertaking on state lands in Arizona (state, county and city); and mandated authority and responsibilities under ARS § 41-865 that apply to that portion of the Undertaking on private lands and BLM has invited them to be an Invited Signatory to this PA; and

24. **Whereas,** the BLM is responsible for government-to-government consultation with Indian tribes pursuant to section 101(d)(6)(B) of the NHPA, 36 CFR § 800.2(c)(2)(ii), the American Indian Religious Freedom Act (42 § USC 1996) (AIRFA), Executive Order 13175, and section 3(c) of the Native American Graves Protection and Repatriation Act (25 USC §§ 3001-13) (NAGPRA), and has formally invited the 21 Indian tribes listed below to participate in consultations regarding the

potential effects of the Undertaking on properties to which they ascribe traditional religious and cultural significance; and

25. **Whereas,** the Gila River Indian Community, Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, Hopi Tribe, Tonto Apache Tribe, Yavapai-Apache Nation, Pascua Yaqui Tribe, San Carlos Apache Tribe, Mescalero Apache Tribe, White Mountain Apache Tribe, Navajo Nation, Pueblo of Acoma, Pueblo of Laguna, Pueblo of Isleta, Pueblo of Tesuque, Pueblo of Zuni, Comanche Indian Tribe, Fort Sill Apache Tribe of Oklahoma, Kiowa Tribe of Oklahoma, and the Ysleta del Sur Pueblo, have been contacted, invited to engage in consultations and invited to be Concurring Parties to this PA; and

26. **Whereas,** the Tohono O'odham Nation, Gila River Indian Community, Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, San Carlos Apache, Fort Sill Apache, Mescalero Apache, Pueblo of Isleta, Pueblo of Zuni, Hopi Tribe, and the Pueblo of Ysleta del Sur have participated in consultations for this Undertaking and the development of this PA; and

27. **Whereas,** the Butterfield Trail is an historic trail that is Under National Trail Feasibility Study, in accordance with the National Trails System Act (P.L. 90-543, as amended through P.L. 111-11), by the NPS, National Trails Intermountain Region (NTIR), and the BLM has coordinated and consulted with the NPS about this trail and has invited the NPS (NTIR) to be a Concurring Party to this PA; and

28. **Whereas,** the following have participated in consultations as Consulting Parties in accordance with 36 CFR § 800.2(c)(5) and 800.3(f)(1) and (3): the National Trust for Historic Preservation, Archaeology Southwest, and the Town of Marana and BLM has invited these entities to be Concurring Parties to this PA; and

29. **Whereas,** the Juan Bautista de Anza National Historic Trail (NHT) is administered by the NPS, Pacific West Regional Office, and the BLM has determined that this NHT is not a historic property where it occurs in the Undertaking's APE, nor are there any trail-related historic properties in the APE, and the BLM has consulted with the NPS regarding these conclusions; and

30. **Whereas,** the BLM has provided the public opportunities to comment on the Undertaking and participate in the National Environmental Policy Act (NEPA) process through a Notice of Intent to Prepare an Environmental Impact Statement (EIS) published in the Federal Register on 4-4 2012 for the development of the EIS; held six public scoping meetings in May 2012; published the Draft EIS on April 11, 2014 and held six public meetings in May 2014. Public meeting materials included information about the NHPA and the Section 106 process and BLM considered comments received through the NEPA and NHPA processes concerning cultural resources in the development of this PA; and

31. **Whereas,** Human Remains, Associated/Unassociated Funerary Objects, Sacred Objects, and Objects of Cultural Patrimony recovered within or on federal and tribal land will be treated in accordance with NAGPRA pursuant to 25 U.S.C. §3001–13, and with the American Indian Religious Freedom Act (AIRFA) pursuant to 42 U.S.C. §1996; and

32. **Whereas,** Human Remains and Funerary Objects discovered on state and private land in New Mexico will be treated in accordance with § 18-6-11.2 NMSA 1978; and in Arizona, in accordance with ARS §41-844 (state lands) and ARS §41-865 (private lands).

33. **Whereas,** the BLM is using the provisions of this PA to address applicable requirements of the Archaeological Resources Protection Act (ARPA) (16 U.S.C. §470aa), the American Indian Religious

Freedom Act (AIRFA) (42 U.S.C. §1996), and the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. §3001–13); and

Now, therefore, the parties to this PA agree that the Southline Transmission Line Project shall be completed in accordance with the stipulations established in this PA in order to take into account the effects of the Undertaking on historic properties.

UNDERTAKING DESCRIPTION

The Undertaking encompasses the construction phase of the proposed transmission line project that takes place after the BLM ROW grant is issued and includes associated project facilities as well as reclamation of areas used during construction but not necessary for operation and maintenance of the facilities. The Undertaking may include surveys, geotechnical testing, engineering, mitigation planning and design, or other activities initiated prior to construction of project facilities. The potential effects to historic properties will be the most extensive and substantial during the construction phase. The Undertaking also encompasses those activities necessary to operate and maintain the transmission line over the life of the project. Operation and maintenance activities are approved in the ROW grant and confined to the ROW. Changes to approved operations and maintenance activities, including new actions outside of the approved BLM ROW grant, require BLM approval and may necessitate a separate Section 106 review and additional ROWs. This PA stipulates the process necessary to comply with Section 106 obligations for construction and reclamation as well as operation and maintenance of the proposed transmission line and associated facilities. If decommissioning takes place in the future, it will be considered a separate undertaking when it occurs.

DETAILED DESCRIPTION OF UNDERTAKING: see Attachment 1
LOCATION OF UNDERTAKING: see Attachment 2 for a map of the Undertaking
DEFINITIONS USED IN THIS PA: see Attachment 3

STIPULATIONS

BLM shall ensure that the Undertaking is carried out in accordance with the following stipulations in order to take into account the effect of the Undertaking on historic properties:

I. Identification, Evaluation, and Determination of Effects

A. **The Areas of Potential Effects (APE)** (see Attachments 2 and 3) are defined as:

1. **Direct effects:** The APE for direct effects during construction and reclamation for the new build portion of the Undertaking (from the Afton substation to the Apache substation) will include all areas likely to be affected by construction and reclamation activities. This APE will be the 200-foot-wide permitted ROW corridor for one 345 kV transmission line and access roads (within corridor) plus 100 feet on either side of the corridor (400' total width). This width will allow for adjustments in transmission line or access road placement to avoid when possible any natural, cultural, or modern features such as outcrops, historic properties, petroglyph sites, and structures. For the upgrade portion of the Undertaking (from Apache substation to Saguaro substation) from an existing 115 kv to a 230 kv transmission line, the APE will be the 150 foot wide permanent ROW plus 100 feet on either side of the corridor (350' total width).

   a. Proposed new access routes and existing roads requiring improvement outside the transmission line ROW will have a 150-foot wide APE (75 feet from centerline).

b. The APE for staging areas, borrow areas, substations and other transmission infrastructure will include the footprint of the facility and a buffer of 250 feet around the footprint of the proposed activity/facility.

c. The APE for pulling/tensioning sites that fall outside the ROW will be the footprint of the site plus a 250-foot radius around these points.

d. Direct effects from operation and maintenance activities will be confined to the ROW.

2. **Indirect effects**: The APE for indirect effects shall be areas visible and within 5 miles of any project component (including conductors and access roads) or to the visual horizon, whichever is closer, or where consultation identifies a need to expand this APE in certain locations.

   a. BLM will use a Geographic Information System (GIS) view shed analysis to identify areas in the indirect effects APE from which the Undertaking may be visible.

   b. The indirect effects APE may extend beyond the 5-mile convention to encompass properties that have traditional religious and cultural importance, including traditional cultural properties (TCPs), or other geographically extensive historic properties such as trails, when effects have been determined to extend beyond this distance.

3. **Cumulative effects**: The APE for cumulative effects shall be the same as that for direct and indirect effects combined.

B. The Applicant shall complete a cultural resources inventory to identify historic properties that could be affected by the Undertaking. This inventory will include:

1. A Class I, Existing Data Inventory of all previously recorded cultural resources within 0.25 mile of the APEs described in I.A.1, and the entire APE described in I.A.2 which shall include a review of historical maps, including 15-minute topographic maps, General Land Office maps and survey notes, and other archival sources for properties that are over 45 years old that may be affected by the Undertaking.

2. A Class III, Intensive Field Inventory of the direct effects APE as defined in Stipulation I.A.1. The Class III Inventory will be conducted with sensitivity for locations or other features identified as important through tribal consultation or ethnographic studies.

   a. For the direct effects APE as defined in I.A.1, all historic linear cultural resources such as canals, roads, trails, and railroads will be identified and recorded where they intersect the APE and will be fully recorded within the APE. For the indirect effects APE as defined in I.A.2, all historic linear cultural resources such as canals, roads, trails, and railroads will be identified and evaluated where the Undertaking would be visible to such linear cultural resources.

   b. All previously recorded cultural resources within the direct effects APE will be re-visited with the associated records updated and revised as appropriate, including NRHP eligibility recommendations and determinations. Previously

recorded cultural resources and newly recorded cultural resources whose boundaries lie partially within, or straddle the APE will be fully recorded outside the APE, to the extent practical, regardless of surface ownership.

c. Previously recorded and newly recorded cultural resources will be referenced by permanent site numbers with Universal Transverse Mercator (UTM) coordinates.

d. An assessment of visual impacts will be conducted for historic properties within the direct and indirect effects APEs that could be considered visually sensitive and potentially affected by the Undertaking which meet the following criteria:

1) View shed analysis indicates that the Undertaking would be visible from the historic property;

2) The historic property is eligible for the NRHP under criteria listed at 36 CFR 60 "(a), (b), or (c)". Under special circumstances, historic properties eligible only under criterion d may be included (e.g., an archaeological site with standing architecture). Inclusion of such properties will be at the discretion of the BLM in consultation with involved land managing agencies and the SHPO/THPO.

3) Not less than 60 days prior to commencement of the visual analysis, the BLM will provide a proposed methodology for review and comment by Consulting Parties. The BLM, in consultation with land managing agencies and SHPO/THPO will consider all comments in refining the methodology prior to implementation.

C. The Applicant shall prepare a comprehensive Inventory Report incorporating findings from the existing Class I Data Inventory and the Class III, Intensive Field Inventory for each state. This report shall include NRHP eligibility recommendations and assessments of direct, indirect, and cumulative effects within the APE of the Undertaking as described in I.A.

D. The Applicant shall submit drafts of the Inventory Report for each state to the BLM. The BLM will provide the reports to the appropriate land managers, the ASM, and concerned tribes within each state for review, concurrent with BLM review. These parties will provide written comments to the BLM within 60 calendar days regarding:

1. The adequacy of the identification effort;
2. The NRHP eligibility of the cultural resources identified;
3. The assessment of effects of the Undertaking on the historic properties identified,
4. The presence of TCPs or any properties of traditional religious or cultural importance to tribes that were not identified in the inventory that may be affected by the Undertaking.

The BLM shall ensure that comments received within 60 calendar days are considered in development of the revised Inventory Reports. The BLM will submit the revised Inventory Reports to the appropriate SHPO/THPO, tribes, and Consulting Parties for a 60-calendar-day review and will request SHPO/THPO concurrence on determinations of NRHP eligibility and BLM's assessments of effects to each historic property identified.

BLM will notify the Consulting Parties via electronic mail of the submittal and the date that comments are due. In New Mexico, one appendix to the Inventory Report shall include a data compendium with copies of the appropriate New Mexico Cultural Resource Information System (NMCRIS) and Laboratory of Anthropology (LA) archaeological site and Historic Cultural Properties Inventory (HCPI) forms and maps.

E. The Inventory Report will accomplish and provide the following:

1. Completion of the Identification of Historic Properties (except properties found during possible future Variances and Discoveries).
2. Determinations of Eligibility (except undetermined cultural resources and properties found during possible future Variances and Discoveries).
3. Determinations of effects to historic properties by the Undertaking (except undetermined cultural resources and properties found during possible future Variances and Discoveries).
4. Recommendations for treatment measures to be applied to historic properties affected by the Undertaking (except undetermined cultural resources and properties found during possible future Variances and Discoveries).

F. As part of its identification efforts, the BLM has consulted with Indian tribes whose aboriginal territories included portions of the Undertaking area or who have previously expressed interest in undertakings within the APE. The BLM shall continue to consult with Indian tribes regarding properties of traditional religious and cultural importance to them that might be affected by the Undertaking and shall provide opportunities for review and comment on draft and final versions of the Inventory Report. The consultation process will remain open for any tribe that expresses a desire to participate.

G. When making determinations of NRHP eligibility, the BLM will consider sites, districts, buildings, structures and objects that are significant and meet the integrity criteria. For properties that have traditional cultural values, the BLM shall take into consideration values expressed by the consulted tribes. The BLM shall make NRHP eligibility determinations, and provide this documentation to appropriate Consulting Parties to provide comment, taking into consideration all comments received from the Consulting Parties. If a SHPO/ THPO, land managing agency or any tribe disagrees with the BLM's determinations of eligibility, the BLM shall consult with the SHPO/ THPO, the land managing agency, and/or tribe to resolve the objection. If a resolution cannot be agreed upon, the BLM shall forward the required documentation to the Keeper of the National Register for final determinations. The BLM shall ensure that the Applicant prepares a revised Inventory Report incorporating BLM's eligibility determinations, or the Keeper's determination, if requested.

H. Any cultural resources for which eligibility cannot be determined during the inventory phase of the Undertaking shall be identified in the Historic Properties Treatment Plan (HPTP), and treated as eligible until a determination is made. Additional studies such as testing, archival research and oral histories will be completed for all such resources that will be affected by the Undertaking to enable the BLM in consultation with the land manager, and the SHPO/THPO to make an eligibility determination. The BLM's eligibility determinations for such resources will be submitted via electronic and regular

mail to the respective SHPO/THPO and land manager with a Summary report describing the results of the additional studies, and a request for concurrence on the determination of eligibility. The SHPO/THPO will review these eligibility determinations and respond to the BLM within 30 calendar days. If the SHPO/THPO does not respond to the BLM within 30 calendar days, the BLM will assume concurrence with the determination(s) of NRHP eligibility.

II. Avoiding and Minimizing Adverse Effects of the Undertaking on Historic Properties

A. The BLM shall, if possible, avoid adverse effects to historic properties, with input from Consulting Parties.

1. Avoidance measures for historic properties may include (but are not limited to) realignment of the transmission line, fencing of sites during construction, monitoring of construction near site areas, or placing towers, maintenance roads and ancillary facilities outside of site boundaries.

2. The BLM shall develop avoidance measures for any properties of traditional religious and cultural importance in consultation with the SHPO/THPO and affected tribes or Native American groups who ascribe traditional religious and cultural importance to the properties.

3. The BLM shall identify measures to avoid adverse effects from operation and maintenance activities to those historic properties remaining within the ROW, and shall incorporate these measures in the HPTP in accordance with Stipulation III.A.

B. Where avoidance is not possible, the BLM shall minimize or mitigate adverse effects to historic properties to the degree possible with input from Consulting Parties.

C. If any Indian tribe or other Native American groups have expressed concerns about effects on properties to which they ascribe traditional religious and cultural importance, BLM shall consult with them and the appropriate SHPO/THPO about possible measures to resolve the adverse effects and ensure that those measures are properly considered in the development of the HPTP.

D. For state and private land in New Mexico, if the adverse effect is to a property listed in the State Register of Cultural Properties or NRHP, the agency or political subdivision shall determine whether § 18-8-7 NMSA 1978 of the Prehistoric and Historic Sites Preservation Act applies. The agency or political subdivision should contact the New Mexico SHPO for assistance in making this determination and satisfying the requirements of 4.10.12 New Mexico Administrative Code (NMAC).

III. Resolution of Adverse Effects: Development of the HPTP

A. The BLM shall ensure that the Applicant prepares an HPTP for each state that will address the effects of the proposed Undertaking on historic properties, including properties of traditional religious and cultural importance, and traditional cultural properties (TCPs) as discussed in National Register Bulletin No. 38. The HPTP shall address potential direct, indirect and cumulative effects from construction and reclamation as well as from operation and maintenance of the proposed transmission line and associated facilities. The HPTP will be incorporated into the POD as an appendix and will:

1. Identify the nature of the effects to historic properties and describe the strategies proposed to avoid, minimize, or mitigate those effects.
2. Identify cultural resources that will be affected by the Undertaking for which NRHP eligibility determinations could not be made, and will specify the strategy for determining eligibility. It will further specify the strategy that will be used in the event that these cultural resources are determined eligible as a result of the testing/study phase. Stipulations I.G and I.H will be followed for determining eligibility.
3. Be consistent with the Secretary of the Interior's Standards and Guidelines (48 CFR 44716-44742); the ACHP's handbook, Section 106 Archaeology Guidance (http://www.achp.gov/archguide); the rules implementing the AAA and 36 CFR§ 800.13, Post-Review Discoveries, and in so doing will incorporate provisions for monitoring and inadvertent Discoveries.
4. At a minimum, the HPTP will specify and include:
    a. The historic properties to be affected by the Undertaking and the nature of those effects.
    b. The historic properties to be avoided and applicable avoidance measures, pursuant to Stipulation II.
    c. The historic properties where harm will be minimized and applicable measures to minimize harm.
    d. The properties at which adverse effects will be mitigated through scientific data recovery or other means.
    e. For archaeological resources, research questions and goals that are applicable to the Undertaking area and which can be addressed through data recovery and archival studies, along with an explanation of their relevance and importance. These research questions and goals will incorporate the concept of historic contexts as defined in National Register Bulletin 16.
    f. Fieldwork and analytical methods and strategies applicable to the Undertaking area, along with an explanation of their relevance to the research questions when dealing with archaeological resources. Treatment methods will be developed for each class of property identified in the Inventory report and may include, but are not limited to, excavation, scientific studies outside of the ROW, archival research, off-site interpretation, remote sensing, ethnographic studies, and oral history, as appropriate.
    g. The level of effort to be expended on the treatment of each property. For archaeological resources this will include methods of sampling, i.e., sample size, and rationale for specific sample unit selection.
    h. Data management and dissemination methodologies, including a proposed schedule of reports.
    i. A stand-alone Monitoring and Discovery Plan which will be an appendix to the HPTP. It will contain:

1) A monitoring plan to be used during construction and reclamation.

2) A discovery plan consistent with Stipulation VI to be used during the entire Undertaking.

3) If appropriate, a monitoring plan to be used during operations and maintenance will be developed in accordance with Stipulation III.E in consultation with the Consulting Parties and added after treatment activities are concluded. Any reports resulting from post-construction monitoring will be submitted to the Consulting Parties in accordance with the monitoring plan.

4) All monitoring shall follow clearly stated objectives and methodologies for achieving those objectives, such as to ensure impact avoidance or minimization during construction and reclamation; to measure the effectiveness of avoidance, minimization and mitigation measures; to assess the effects of operations and maintenance activities, or to help define treatments for historic properties with long-term concerns.

j. A Project Termination Plan with provisions for the following programs to be implemented in the event that the Undertaking is terminated for any reason:

1) A program outlining the steps to be taken in order to complete any data recovery or other treatment measures that are in progress at the time of project termination; and

2) A component outlining how analysis, interpretation, reporting, and curation for all historic properties will be completed.

k. Plans which include methods and procedures for the discovery and/or treatment of human remains, associated funerary objects, and sacred objects that reflect any concerns and/or conditions identified as a result of consultations between the BLM and the appropriate Tribes and :

1) A NAGPRA (of 1990 (25 § USC 3002) Plan of Action (POA) which will be consistent with 36 CFR § 800.13, NAGPRA (43 CFR Part 10).

2) In Arizona on state and private land, methods and procedures will be consistent with ARS § 41-844 and ARS § 41-865 and their implementing rules.

3) In Arizona, the Cultural Resources Contractor (CRC), working through the ASM, shall obtain "burial agreements" with Indian tribes pursuant to ARS § 41-844 and ARS § 41-865, that govern Discoveries of human remains and funerary objects on state and private lands.

4) On lands within the exterior boundaries of the Tohono O'odham Nation (TON), the BIA and the TON THPO will be contacted and consulted to ensure compliance with NAGPRA.

5) In New Mexico unmarked human burial grounds, including human remains and associated funerary objects discovered on state and private land, shall receive appropriate and respectful treatment and disposition in accordance

with § 18-6-11.2 NMSA 1978 and in accordance with the methods and procedures in 4.10.11 NMAC.

l. A strategy for cultural resource law and sensitivity training for all Undertaking personnel (including new, added, and replaced personnel) and contractors involved in transmission line construction, construction zone rehabilitation, and operation and maintenance of this transmission line. Instruction will be to a degree commensurate with their involvement in the Undertaking and will include information on the statutes protecting cultural resources, resource sensitivity, and requirements to avoid damage to historic properties and to report Discoveries of cultural resources in accordance with the Monitoring and Discovery Plan. Indian tribes will be provided opportunities to participate in the training program, which could be offered by a variety of means including training sessions, field visits, video programs, or printed materials.

m. A strategy for a public outreach program to disseminate information about the results of the cultural resource work to the general public. This program may include, but is not limited to, the following: a short report written specifically for the public, a brochure, exhibits for use at public outreach venues such as archaeology awareness fairs, slide or PowerPoint presentations, presentations to local historical and archaeological societies, lesson plans and educational materials for use in schools, podcasts, website and/or social media content or a traveling museum exhibit.

n. For the new build portion of the Undertaking, a variance review process to be used during operation and maintenance to address any changes in procedure that could have an adverse effect on historic properties in the ROW.

o. For the new build portion of the Undertaking, a list of operation and maintenance activities that will not require additional Section 106 review.

p. For the new build portion of the Undertaking, a list of operation and maintenance activities that will require additional Section 106 review.

B. Process for Developing the Historic Property Treatment Plan

1. The Applicant shall submit the draft HPTP to the BLM for initial review and comments. The BLM shall provide the SHPO/ THPO and other Consulting Parties within each state a copy for review, requesting comments on the adequacy of the proposed treatment measures. These parties will be notified of the review period via electronic mail and will have 45 calendar days to review and comment on the plan. If no comments are received by the BLM within the 45-calendar-day review period, concurrence with the draft HPTP will be assumed.

   a. During this review period, if necessary, the ASM will develop a burial agreement or agreements to provide for the treatment and disposition of human remains discovered on state or private lands in Arizona. The ASM will provide appropriate tribes, the BLM, and the Applicant with a draft of the burial agreement for a 30-calendar-day review.

   b. The BLM will convene at least one consultation meeting in each state with all interested Consulting Parties during the 45-day period.

2. The BLM shall consolidate the comments from Consulting Parties in each state and advise the Applicant of necessary revisions to the draft HPTP. The BLM shall ensure that all comments are taken into consideration in finalizing the HPTP and that the revised HPTP is distributed to all Consulting Parties for a 21-calendar-day review period. The BLM, in consultation with the SHPO/THPO, shall approve the final HPTP. The BLM will notify the Applicant and the Consulting Parties when the final HPTP has been approved.

C. The Applicant shall provide the BLM a Summary Report of treatment completed at each site. The Summary Report will include a brief characterization of site assemblage/contents, the types of analyses yet to be completed, a brief description of how the provisions of the HPTP were implemented, and any deviations from the HPTP that were implemented and the reasons for such deviations.

D. The BLM shall review the Summary Report of treatment that has occurred at each site and provide a copy via electronic and regular mail to the appropriate SHPO/ THPO and other Consulting Parties for review, requesting comments and concurrence with eligibility determinations for previously undetermined cultural resources and Discoveries, within 15 calendar days. The BLM shall consider comments submitted during the review period and shall consult with the appropriate reviewer(s) to resolve differences and/or disagreements. If no comments are received within the 15-calendar-day review period, concurrence with the adequacy of the treatment described in the preliminary summary will be assumed.

E. The BLM shall ensure that the Applicant prepares draft Treatment Reports for each state that incorporate the results of all the site-specific preliminary summaries into a comprehensive regional overview for each state. The Final Treatment Reports also will include:

1. Post-treatment eligibility recommendations for historic properties that have been subjected to treatment measures.

2. A listing of historic properties for which post-construction monitoring would be appropriate, and the reasons for this (i.e., proximity to Undertaking components with the potential for damage from operation and maintenance, percentage of property remaining in ROW, sensitivity of the property, a property identified as being of particular importance to a tribe(s), etc.).

3. The objectives that monitoring could achieve as part of the effort to avoid, minimize and/or mitigate adverse effects to those properties.

F. The BLM shall review the draft Treatment Reports and provide a copy to the appropriate SHPO/ THPO and other Consulting Parties for a 60-calendar-day review and comment period. The BLM will notify these parties of the submittal and review periods via electronic mail. The BLM shall consider comments received during the review period and shall consult with the appropriate reviewer(s) to resolve differences and/or disagreements. If no comments are received within 60 calendar days, concurrence with the adequacy of the Treatment Report will be inferred.

G. The BLM shall ensure that the Applicant prepares a revised Treatment Report that considers comments received on the draft Treatment Report. The BLM shall review the

revised Treatment Report and provide copies to the appropriate SHPO/ THPO and other Consulting Parties for a 30-calendar-day review period. The BLM will notify these parties of the submittal and review periods via electronic mail. The BLM shall consider comments submitted during the review period and shall consult with the appropriate reviewer(s) to resolve differences and/or disagreements. If no comments are received within 30 calendar days, concurrence with the adequacy of the revised Treatment Report will be assumed and the revised Treatment Report shall be considered the final Treatment Report. The BLM shall notify the Applicant when the final Treatment Report has been accepted and will distribute it to the Consulting Parties, if necessary.

H. During the Treatment phase, if deviations to the approved plan are warranted, the Applicant will submit proposed deviations from the HPTP to the BLM for review prior to implementation. The BLM shall provide copies of the proposed deviation via electronic mail to the appropriate SHPO/ THPO, the tribes, the ASM and land manager(s) within the respective state for a 15-calendar-day review. The BLM shall consider comments received within the review period and shall determine the adequacy of the proposed deviation. The BLM will notify the Applicant when the deviation has been approved.

IV. Construction Variance Review Process

A. All construction needs cannot be anticipated in advance and areas required for additional work space, access roads, ancillary facilities, reroutes, etc. may be identified at any time following the acceptance of the Inventory Report(s) by the appropriate SHPO/THPO and land managing agencies. If any newly identified construction needs would result in ground disturbing activities outside of the surveyed areas identified in the Inventory Report, the Applicant will request a variance review from the BLM.

1. The APEs of all variance areas will be consistent with those defined in Stipulation I.A.
2. A Class I Existing Data Inventory review and a Class III Intensive Field Inventory will be performed on all variance areas.
3. If the proposed variance will affect more than 10 acres of land or more than 1 mile of road, the BLM will provide the Consulting Parties with a description and map of the variance.

B. The following process for review and approval of construction Variances will be used.

1. If no cultural resources or properties of traditional cultural or religious importance to tribes are present within the variance APE, the results of the Class I and Class III inventories will be reported on SHPO Survey Report Summary Form (SRSF) (for Arizona) or the New Mexico Cultural Resource Information System (NMCRIS) Investigation Abstract Form (NIAF) (for New Mexico) prior to any access or use. The BLM will provide an expedited review of the variance request, not to exceed 2 working days following receipt, and will provide the Applicant's CRC with written approval/disapproval of the variance via electronic mail.
2. If cultural resources or properties of traditional cultural or religious importance to tribes are present within the variance APE, the Applicant's CRC will prepare an inventory report, as defined in Stipulation I.C, above, and submit it via electronic

mail to BLM and the appropriate SHPO/THPO, tribes, and land manager for review. Because variance requests may be necessary in the midst of construction activities, the agencies and tribes will provide an expedited review within 5 working days or less. If no objections to the variance are received, at the end of the 5-day period, BLM shall provide the Applicant's CRC with written approval of the variance via electronic mail. If objections are received, additional consultation regarding the variance will ensue in accordance with Stipulation XIII of this PA.

a. If historic properties exist in the variance APE and cannot be avoided, a Supplemental Treatment Plan for those properties will be developed and shall be consistent with the HPTP developed pursuant to Stipulation III of this PA.

b. Review procedures shall follow Stipulation III.B.

c. The supplemental Treatment Plan shall be appended to the HPTP and after the completion of these treatment measures, a preliminary Summary Report will be prepared and distributed in accordance with Stipulation III.D.

d. The BLM shall ensure that the results of such treatment efforts are reported in the final Treatment Report for the Undertaking.

e. Once the BLM determines that the approved treatment has been completed, the BLM shall provide the Applicant's CRC with written approval of the variance via electronic mail.

V. Authorization of Construction

Requests for authorizations of construction will be approved only if such authorizations will not restrict subsequent measures to avoid, minimize or mitigate the adverse effects to historic properties through rerouting of the corridor or placement of ancillary facilities.

A. Upon the BLM's acceptance of the final Inventory Report for each state, as described in Stipulation III, the BLM, at its discretion and pending compliance with all other applicable laws and regulations, may authorize the Applicant to begin construction on lands under any ownership or jurisdiction, subject to the appropriate jurisdiction's right-of-entry and ROW requirements, where **there are no historic properties present**.

B. Upon the BLM's acceptance of the final HPTP for each state, the BLM, at its discretion and pending compliance with all other applicable laws and regulations, may authorize the Applicant to begin construction on lands under any ownership or jurisdiction, subject to the appropriate jurisdiction's right-of-entry and ROW requirements, **where all effects to historic properties and unevaluated cultural resources will be avoided** (as described in the approved HPTP).

C. Following acceptance of the Summary Report of treatment that has occurred at each site described in Stipulation III.D, the BLM, at its discretion and pending compliance with all other applicable laws and regulations, may authorize the Applicant to begin construction on lands under any ownership or jurisdiction, subject to the appropriate jurisdiction's right-of-entry and ROW requirements **where provisions of the HPTP have been implemented**.

VI. Discoveries during the Undertaking

A. If potential historic properties are discovered, or unanticipated effects occur to known historic properties, the BLM will implement the Monitoring and Discovery Plan. This plan will be included as a standalone appendix to the HPTP (see Stipulation III.A.4.i) and will incorporate the following:

1. The Applicant shall ensure that all surface-disturbing activities within 100 feet of the discovery immediately cease and that measures are taken to protect the cultural resources. The Applicant shall notify the BLM of the discovery within 24 hours. The BLM shall immediately notify the appropriate SHPO/THPO, tribe(s), ASM (in Arizona) and any other agency having jurisdiction over the land involved.
2. If the discovered cultural resource is subsequently identified by an Indian tribe as a property of traditional religious and cultural importance, the BLM shall consult with the appropriate tribe(s).
3. In Arizona on state and private land, the BLM shall ensure that the Discoveries are treated according to ARS § 41-841 et seq. and 41-865.
4. In New Mexico on state and private land, the BLM shall ensure that Discoveries follow the process in 4.10.8.20 NMAC.

B. Treatment of the discovered cultural resources shall be consistent with the HPTP developed pursuant to Stipulation III of this PA and shall consider NRHP eligibility of the resource in accordance with 36 CFR § 800.13(c), which assumes eligibility.

1. A preliminary Summary Report with eligibility recommendations(s) will be prepared and distributed in accordance with Stipulation III.D. The BLM shall ensure that the results of such treatment efforts are reported in the final Treatment Report for the Undertaking.
2. Once the BLM determines that the approved treatment has been completed, the Applicant may resume construction upon receiving written authorization from the BLM.

C. If human remains, funerary objects, or objects of cultural patrimony are discovered, BLM will follow the provisions of applicable federal, state and local laws, any agreements and/or the NAGPRA POA for the Undertaking, which will be included as an appendix to the HPTP.

1. In Arizona, the Applicant shall promptly report the discovery of human remains to the BLM, who shall notify the SHPO and the ASM Repatriation Coordinator pursuant to ARS § 41-844 (state lands), and pursuant to ARS § 41-865 (private lands).
2. In New Mexico, the Applicant shall report the discovery of human remains to the BLM and local law enforcement and treat such Discoveries of human remains on state and private lands consistent with § 18-6-11.2 of the Cultural Properties Act NMSA, 1978 and 4.10.11 NMAC.
3. On lands of the TON, the Applicant shall report the discovery of human remains to the BLM and the TON THPO.

4. Once the BLM has verified that the requirements of NAGPRA or of state laws governing nonfederal and nontribal lands have been met, the BLM may authorize the Applicant to proceed with construction.

VII. Standards for Conducting and Reporting Work

A. The BLM shall ensure that all work and reporting performed under this PA meets, at a minimum, the *Secretary of the Interior's Standards and Guidelines for Archaeological and Historic Preservation* (48 CFR 44716-44742, September 23, 1983) (the Secretary's Standards) and takes into consideration the ACHP's handbook, Section 106 Archaeology Guidance (http://www.achp.gov/archguide); *Procedures For Performing Cultural Resource Fieldwork On Public Lands in the Area of New Mexico State BLM Responsibilities* BLM Manual Supplement H-8100-1; *Guidelines for Identifying Cultural Resources* BLM Manual H-8110 and Guidelines for Evaluating and Documenting Traditional Cultural Properties, National Register *Bulletin 38*, 1989.

1. In Arizona, on state land, including municipalities, counties and other political subdivisions, all activities and documentation shall be consistent with AAA ARS § 41-841 et seq. and the Arizona State Historic Preservation Act ARS § 41-861 et seq. along with rules for implementing the AAA and AZ SHPO guidance on implementing the Arizona State Historic Preservation Act, and shall conform to specifications and guidelines contained in *Guidelines for State Historic Preservation Act*, available online at: http://azstateparks.com/SHPO/review.html.

   Additionally, *AZ SHPO Standards for Documents Submitted for SHPO Review in Compliance with Historic Preservation Laws* (Revised December 2012) shall guide reports for all work done in Arizona, available online at: http://azstateparks.com/SHPO/downloads/SHPO_Guidelines_SHPA.pdf
2. In New Mexico, on state land all activities and documentation shall be consistent with the standards in Title 4, Chapter 10 of the New Mexico Administrative Code (NMAC). All activities and documentation on state land shall be consistent with the appropriate state standards found in rules 4.10.8 NMAC, Permits to Conduct Archaeological Investigations on State Land; 4.10.15 NMAC, Standards for Survey and Inventory; 4.10.16 NMAC, Standards for Excavation and Test Excavation; and 4.10.17 NMAC, Standards for Monitoring. The rules are available online at:

   http://www.nmcpr.state.nm.us/nmac/parts/title04/04.010.0008.htm
   http://www.nmcpr.state.nm.us/nmac/parts/title04/04.010.0015.htm
   http://www.nmcpr.state.nm.us/nmac/parts/title04/04.010.0016.htm
   http://www.nmcpr.state.nm.us/nmac/parts/title04/04.010.0017.htm

B. In Arizona, the Applicant shall ensure that its CRC obtains an AAA project-specific permit from the ASM prior to excavating sites on state, city and county lands pursuant to ARS § 41-841 et seq.

C. In New Mexico, the Applicant shall ensure that its CRC obtains a Project-specific excavation permit or other appropriate permit from the Cultural Properties Review Committee prior to excavating sites on state lands owned, operated or controlled by the State of New Mexico pursuant to § 18-6-5 NMSA 1978of the Cultural Properties Act. For NMSLO lands the Applicant shall obtain the appropriate rights-of-entry from the NMSLO concurrently with the permit application. The Applicant shall ensure that its

CRC obtains a permit prior to excavating unmarked human burials on state or private land pursuant § 18-6-11.2 NMSA 1978 of the Cultural Properties Act (4.10.11 NMAC) or conducting mechanical excavation of archaeological sites on private land in the State of New Mexico pursuant to § 18-6-11 NMSA 1978 of the Cultural Properties Act (4.10.14 NMAC). The rules are available online at:

http://www.nmcpr.state.nm.us/nmac/parts/title04/04.010.0011.htm
http://www.nmcpr.state.nm.us/nmac/parts/title04/04.010.0014.htm

D. On lands of TON, the Applicant shall ensure that its CRC obtains a Project-specific excavation permit from the TON. This is a permit under the TON Archeological Resources Protection Ordinance. Once secured, the CRC shall approach the BIA for an ARPA permit.

VIII. Confidentiality of Records

A. BLM will maintain confidentiality of sensitive information regarding historic properties to which a tribe attaches religious or cultural significance to the maximum extent allowed by federal and state law. However, any documents or records the BLM has in its possession are subject to the Freedom of Information Act (FOIA) (5 USC § 552 et seq.) and its exemptions, as applicable. In the event that a FOIA request is received for records or documents that relate to a historic property to which an Indian tribe attaches religious or cultural significance and that contain information that BLM is authorized to withhold from disclosure by other statutes including Section 304 of the NHPA and the Archaeological Resources Protection Act, then, the BLM will consult with such tribe prior to making a determination in response to such a FOIA request not to withhold particular records and/or documents from disclosure.

B. All Parties to this PA agree that, to the extent consistent with Section 304 of the NHPA, and the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-mm)(ARPA) 27 Section 9(a), cultural resource description and locational data from this project will be treated as confidential by all Consulting Parties and is not to be released to any person, organization, or agency not a Consulting Party to this PA.

IX. Curation

A. On all lands other than that of TON, the Applicant shall arrange curation agreements with repositories approved by the BLM. The BLM shall ensure that all artifacts and records resulting from the inventory and treatment program are curated in accordance with 36 CFR Part 79, except as determined through consultations with Indian tribes carried out in accordance with federal and state laws pertaining to the ownership of artifacts and treatment and disposition of Native American human remains and funerary objects.

1. All artifacts recovered from state land in New Mexico, including associated records and documentation, shall be curated at the Museum of New Mexico, Museum of Indian Arts and Culture.

2. All artifacts recovered from lands owned, controlled or operated by the State of Arizona, including associated records and documentation, shall be curated at the Arizona State Museum and in accordance with the standards and guidelines required by ASM.

3. All artifacts recovered from lands of the TON, including associated records and documentation, shall be curated at the TON Cultural Center.

4. Artifacts that are not associated with human remains recovered from private lands are the property of the private landowner. It is understood that private landowners are not required to follow this Stipulation and may retain ownership and control of artifacts recovered from their private land.

X. Undertaking Monitoring, Annual Reporting and Evaluation

A. The BLM will be responsible for monitoring activities associated with this Undertaking on all jurisdictions during construction and reclamation.

1. In consultation with interested tribes, the BLM will select a 10 percent sample of cultural resources found during the inventory and conduct field inspections while accompanied by the CRC and interested tribal members to provide input regarding NRHP eligibility and possible future treatment options.

2. In consultation with interested tribes, the BLM will select a 25 percent sample of historic properties identified for mitigation of adverse effects, and conduct field inspections at those historic properties to ensure adequate implementation of the HPTP for those historic properties. Interested tribal members will be invited to attend these field inspections.

3. The lead BLM office shall prepare an annual letter report of cultural resources activities pertaining to this Undertaking for all Consulting Parties by December 31 for the duration of this PA. The annual letter report will include an update on project schedule, status, and any ongoing relevant cultural resources monitoring or mitigation activities, discovery situations, or outstanding tasks to be completed under this PA or the HPTP. The implementation and operation of this PA shall be evaluated on an annual basis by the Consulting Parties who will review and comment on the annual letter report within 30 days of receipt. This evaluation, to be conducted after the receipt of the BLM letter report, may include in-person meetings or conference calls among these parties, and suggestions for possible modifications or amendments to this PA.

4. The BLM shall monitor activities pursuant to this PA. Should the Applicant or its CRC fail to comply with any provision of this PA, the BLM may, at its discretion, counsel the Applicant and/or its CRC regarding performance requirements or suspend the permit under which this PA is executed. Such suspension would result in the issuance of a "stop work" order for the entire Project.

5. The BLM will remain responsible to inspect for compliance with the terms and conditions of the BLM ROW grant pertaining to historic properties for the life of the grant, and will ensure that the appropriate BLM cultural resources specialist participates in these compliance reviews.

XI. Operation and Maintenance of the Transmission Line and Facilities

A. After construction of the transmission line, the Applicant (ROW grant holder) will be required to follow all of the terms, conditions and stipulations concerning the operation and maintenance of the lines which are included in the Plan of Development (POD) and

the ROW grants. These terms, conditions and stipulations will include any provisions identified in the HPTP that resolve potential adverse effects to historic properties identified within the ROW.

1. The BLM will be responsible for ensuring that the stipulations in the BLM ROW grant are enforced.
2. The ASLD will be responsible for ensuring that the stipulations in their ROW grant are enforced on ASLD administered lands.
3. The NMSLO will be responsible for ensuring that the stipulations in their ROW grant are enforced on NMSLO administered lands.
4. The BIA and TON will be responsible for ensuring that the stipulations in their ROW grant are enforced on TON.
5. In accordance with *Programmatic Agreement Among Western Area Power Administration, the Advisory Council on Historic Preservation, and the Arizona State Historic Preservation Officer, Regarding Maintenance and Minor Construction Activities at Existing Western Transmission Lines, Facilities and Properties in Arizona*, Western is the lead agency for compliance with Section 106 for Western's maintenance program activities on existing lines in Arizona .

B. Post-construction evaluation and management of historic properties are described in Stipulation III.E.1–III.E.3.

C. Should any variance be necessary during operation and maintenance, the Applicant will follow the variance procedure in the HPTP and a BLM cultural resource specialist will review the action and make recommendations regarding potential effects and appropriate actions to avoid, minimize, or mitigate any adverse impacts (e.g., using hand tools if mechanical vegetation treatments are proposed in sensitive areas).

XII. Decommissioning

Should decommissioning of the transmission line and associated facilities be deemed necessary at any point, the ROW grant shall stipulate and the BLM shall ensure that it will be considered a new action for Section 106 review, and that historic properties potentially affected by decommissioning will be considered in the BLM-approved Termination and Reclamation Plan in accordance with the pertinent laws, regulations, and policies extant at the time.

XIII. Dispute Resolution

A. Should any Consulting Party to this PA object at any time to any actions proposed or the manner in which the terms of this PA are implemented, that party shall notify BLM in writing expressing its concern, including proposed modifications. The BLM shall consult with such party to resolve the objection. If the BLM determines that such objection cannot be resolved, BLM will notify Consulting Parties of the dispute and will:

1. Forward all documentation relevant to the dispute, including the BLM's proposed resolution, to the ACHP, asking that office to provide BLM with its advice on the resolution of the objection within 30 days of receiving adequate documentation. Prior to reaching a final decision on the dispute, BLM shall prepare a written response that

takes into account any timely advice or comments regarding the dispute from the ACHP and Consulting Parties, and provide them with a copy of this written response. BLM will then proceed according to its final decision.

2. If the ACHP does not provide its advice regarding the dispute within the 30-day period, the BLM may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the BLM shall prepare a written response that takes into account any timely comments regarding the dispute from the Consulting Parties, and provide them and the ACHP with a copy of such written response.
3. The BLM will be responsible for carrying out all other actions subject to the terms of this PA that are not the subject of the dispute.

XIV. Amendments and Termination

A. Any Signatory or Invited Signatory to this PA may request that it be amended by informing BLM in writing of the reason for the request and the proposed amendment language, whereupon BLM shall inform the other parties and request their views concerning the proposed amendment. The amended PA shall take effect upon final signature by the ACHP.

B. Pursuant to 36 CFR § 800.6(c) (8), if any Signatory or Invited Signatory to this PA determines that the terms of the PA cannot be or are not being carried out, then such party must provide written notice to the BLM and the other Signatories and Invited Signatories stating the reasons for the determination and requesting consultation to resolve the stated concerns through amendment of the PA or other means. The Signatories and Invited Signatories shall consult regarding potential amendments to the PA to resolve the stated concerns within 30 calendar days of the written request. If the Signatories and Invited Signatories are unable to amend the PA or agree on other actions to resolve the concerns, and it has been determined that the terms of the PA cannot be or are not being carried out, provided that they consult during the 30-calendar-day period, the objecting party may terminate the PA by providing written notice to the Signatories and Invited Signatories.

C. In the event that this PA is terminated, the BLM shall comply with 36 CFR § 800.6 (c) (8) and will take reasonable steps to avoid adverse effects to historic properties until another PA has been executed or will request, take into account, and respond to Council comments, in accordance with 36 CFR § 800.7. BLM will notify all parties to this PA as to the course of action it will pursue.

D. At any point after the execution of this PA, and after providing written notice to the other Signatories and Invited Signatories, Western may decide to continue complying with its Section 106 responsibilities for the undertaking independently through a separate Programmatic Agreement per 36 CFR § 800.14 (b) or, failing that, through its request, consideration, and response to the formal comments of the ACHP per 36 CFR § 800.7(c). Such a decision by Western will not affect this PA with regard to its other parties.

XV. Term of the PA

This PA will expire if the Undertaking has not been initiated within 5 years of the signing of this PA, or the BLM ROW grant expires or is withdrawn. Otherwise, this PA shall take

effect from the date of execution and will remain in effect for 15 years or until acceptance of the final Treatment Reports by the Signatories.

XVI. Non-Endorsement Clause

Nothing in this PA should be interpreted to imply that any party endorses the Southline Transmission Project. The parties will not take any action or make any statement that suggests or implies such an endorsement based on signing this PA.

The Execution and Implementation of this PA evidences that the BLM, as lead federal agency, has satisfied its Section 106 responsibilities with regard to the construction, operation, and maintenance of the Southline Transmission Project.

ATTACHMENT 3: DEFINITIONS FOR TERMS USED IN THIS PA

Adverse Effect – Alteration of the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register of Historic Places.

Area of Potential Effects (APE) – The geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR §800.16(d)).

Authorized Officer – The Authorized Officer for this Undertaking is the BLM Las Cruces District Manager and/or his or her delegated representative.

Consultation – The process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matter that arise in the section 106 process. The Secretary's "Standards and Guidelines for Federal Agency Preservation Programs pursuant to the National Historic Preservation Act" provide further guidance on consultation.

Consulting Party – Any party that has participated in the development of this PA and has indicated intent to participate in consultations during its implementation either by signing in concurrence or by written notification to the Agency Official. The refusal of any party invited to sign the PA, other than the Signatories, does not invalidate the PA. Consulting Parties include:

Signatory – Parties who have legal or financial responsibilities for completions of stipulations of the PA. The signatories have sole authority to execute the PA, and together with the invited signatories, to amend or terminate the PA.

Invited Signatory – The authorized official may invite additional parties to sign the PA and upon signing, they have the same rights with regard to amendments and termination as the signatories. These parties have legal responsibility in terms of the Undertaking, such as the issuance of a permit, license or ROW, and they have a compliance responsibility under the NHPA or a state cultural resource statute.

Concurring Party – A party who signs this PA but is not legally or financially responsible for completion of stipulations set forth in the PA.

Construction and Reclamation– The construction phase begins when BLM has issued a ROW grant to the proponent for the Undertaking. It includes all activities related to construction of the Undertaking, including activities required to be completed in advance of construction, as well as all activities completed in order to reclaim lands disturbed during construction for two years after construction is completed or until cost recovery agreements related to construction expire.

Cultural Resource – Any location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, landscapes, buildings, structures, objects, and places that possess historic and/or cultural significance as well as places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups. Cultural resources may be but are not necessarily eligible for the NRHP; these properties have not been evaluated for NRHP eligibility.

Cultural Resource Consultant/Contractor (CRC) – A qualified and permitted professional consultant in cultural resources (archaeologist, historian, ethnographer, historic architect, architectural historian, or anthropologist) who is responsible for implementing cultural resource inventories and who prepares cultural resource documents, reports, analysis, records, and professional literature. CRCs must meet the Secretary of the Interior's Professional Qualification Standards and hold appropriate permits from land managing agencies.

Cultural Resource Inventory (from H-8100-1) –

Class I – Existing data inventory: Large-scale review of known cultural resource data

Class II – Sampling field inventory: Sample oriented field inventory

Class III – Intensive field survey: A complete surface inventory of a specific area involving a systematic field examination of an area to gather information regarding the number, location, condition, distribution, and significance of cultural resources present, typically requiring a systematic pedestrian review of an area with transect intervals that shall not exceed 50 feet (15 meters).

Decommissioning – The action in which the transmission line(s) and/or related facilities such as substations are taken out of commission (cease to operate) and are physically dismantled

Discovery – A previously unknown cultural resource identified in the APE during construction, subsequent to the Class III Inventory.

Effects are alterations to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP –

Direct effects are caused by the Undertaking and occur at the same time and place.

Indirect effects are also caused by the Undertaking and are effects that may be visual, atmospheric, or audible that could diminish the integrity of the properties.

Cumulative effects are the impacts on cultural resources which results from the incremental impact of the Undertaking when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions [per 40.CFR § 1508.7]. Cumulative effects may be direct or indirect and result from incremental effects related to the Undertaking over time (e.g. increased access because of new roads, future transmission lines along the

same corridor, new projects feeding into the Undertaking, etc.). Additional roads and visitors to the area (construction personnel, recreationists, etc.) also increase opportunities for effects from pot hunting, vandalism of historic properties, and disruption of spiritually important sites.

Eligible (for Inclusion in the National Register) – Includes both properties formally determined as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the National Register criteria as determined by the Federal Agency in consultation with the SHPO/THPO and other parties.

Historic Property – Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

Historic Property(ies) Treatment Plan (HPTP) – A document that details the procedures and techniques for resolving adverse effects to historic properties within the APE through avoidance, minimization, and/or mitigation

Indian Tribe – Any Indian tribe, band, nation, or other organized group or community, including a native village, regional corporation, or village corporation, as those terms are defined in section 3 of the Alaska Native Claims Settlement Act (43 USC 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

Integrity – Refers to location, design, setting, materials, workmanship, feeling and association as defined in 36 CFR Part 60.

Interested tribal members – Tribal members who have identified themselves either as individuals or a group, through consultations with the BLM or through the THPO or the tribal member designated to participate in consultations concerning this Undertaking, as being interested in attending field inspection visits with the BLM and/or the CRC.

Inventory Report – The inventory report documents the results of the cultural resources inventory detailing the areas surveyed, the methodologies used, the cultural framework of the project area and the cultural resources discovered and documented. It includes assessments of direct, indirect, and cumulative effects within the APE of the Undertaking. It also provides recommendations on National Register eligibility of all of the cultural resources within the inventoried area.

Monitoring and Discovery Plan – The Monitoring and Discovery Plan is a component of the HPTP and (1) provides a detailed plan to monitor compliance with stipulations of the HPTP to avoid, minimize, or mitigate adverse effects of the Undertaking, (2) may include specific plans where monitoring is necessary to help resolve adverse effects to historic properties, (3) establishes procedures to follow in the event that previously undiscovered cultural resources are encountered during the Undertaking, and (4) includes a POA developed specifically to address the handling of human remains pursuant to the Native American Graves Protection and Repatriation Act (NAGPRA) and applicable state laws. All monitoring plans shall explicitly state the objectives of the monitoring and provide a methodology for attaining these objectives.

Monitoring Report – A document that summarizes the results of monitoring activities performed as outlined within the HPTP.

NAGPRA Plan of Action (POA) – A written document that establishes procedures for ensuring the proper treatment of Native American remains and related grave goods encountered on Federal lands pursuant to 43 CFR Part 10.

National Register of Historic Places – The official list of the Nation's prehistoric and historic places worthy of preservation including districts, cultural resources, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture and is maintained by the Secretary of the Interior.

National Register Criteria – The criteria of significance established by the Secretary of the Interior for use in evaluating the eligibility of properties for inclusion in the National Register (36 CFR Part 60).

Operation and Maintenance – Activities associated with operation and maintenance of the approved ROW grant over the life of the ROW grant. This includes all activities related to the functioning of the Undertaking after construction and reclamation are completed and prior to any activities related to decommissioning of the Undertaking, per Stipulation XI. Activities during this this time are generally infrequent, predictable, and routine. Any actions not specifically approved in the ROW grant, such as changes in equipment used or actions outside the ROW require approval of the BLM.

Plan of Development (POD) – The Final POD is a BLM approved document that will be an enforceable term and condition as part of the BLM approved ROW authorization. Contributors in the development of the Final POD prior to construction will include the Arizona State Land Department and New Mexico State Land Office. The Arizona and New Mexico surface managing agencies will be responsible for developing and enforcing their respective stipulations as they deem necessary to mitigate natural and cultural resource impacts, on state administered lands. Should the Arizona and New Mexico agencies choose to adopt the terms, conditions, and special stipulations as outlined in the Final POD on their respective state authorized rights-of-ways, responsibility to enforce these Final POD terms, conditions, and stipulations is strictly their sole responsibility. Enforcement will be between the state agency and the applicant.

Programmatic Agreement (PA)– A document that records the terms and conditions agreed upon to resolve the potential adverse effects of a Federal agency program, complex Project or other situations in accordance with 36 CFR § 800.14(b).

Reclamation – The activities necessary to restore lands disturbed by construction to as close to a pre-construction condition as possible. This may include ripping and re-seeding temporary access roads and staging areas, removal of wooden poles no longer in use and re-seeding of the abandoned transmission corridor(s).

Right-of-Way (ROW) – The public lands BLM authorizes to use or occupy under a grant. The PA and the HPTP are appended to the POD which is an essential component of the ROW grant.

Section 106 – Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the ACHP. Revised regulations, "Protection of Historic Properties" (36 CFR Part 800), became effective August 5, 2004.

State Historic Preservation Officer (SHPO) – The official appointed or designated pursuant to section 101(b) (1) of the act to administer the State Historic Preservation Program or a representative designated to act for the State Historic Preservation Officer.

State Lands of New Mexico - Lands owned, operated or controlled by departments, agencies, institutions or political subdivisions of the state of New Mexico.

Summary Report – A document that summarizes results of treatment activities undertaken on an individual historic property for the purposes of informing the agency and Consulting Parties for the purposes of gaining approval for the Project to go forward prior to the acceptance of the final Treatment Report.

Termination and Reclamation Plan – A document that addresses the removal of project facilities from permitted areas and addresses reclamation procedures identified by land management agencies in conjunction with project owners, prior to decommissioning.

Transmission line new build - The portion of the Southline Project that will be constructed in a completely new ROW: from the Afton substation to the Apache substation.

Transmission line upgrade – The portion of the Southline Project that will be constructed in an existing ROW corridor to replace and upgrade an existing line that will be subsequently decommissioned: from the Apache substation to the Saguaro substation.

Treatment Report – A document that presents the complete results of the treatment activities performed on all historic properties (and any undetermined cultural resources for which additional studies were performed to determine eligibility), addresses the research questions developed in the Treatment Plan and synthesizes the results into a regional overview of the Project Area.

Tribal Historic Preservation Officer (THPO) – the tribal official appointed by the tribe's chief governing authority or designated by a tribal ordinance or preservation program who has assumed the responsibilities of the SHPO for purposes of section 106 compliance on tribal lands in accordance with section 101(d) (2) of the NHPA.

Undertaking – A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval. The Undertaking may include surveys, geotechnical testing, engineering, mitigation planning and design, or other activities initiated prior to construction of project facilities.

Appendix K

VISUAL SIMULATIONS

KOP P1-01. Existing view toward the representative ROW east of Afton substation along Afton Road.

FIGURE B-1
KOP P1-01. View from Afton Substation
Southline Transmission Project

A. KOP P2-01. Existing view toward the representative ROW from Aden Hills OHV trail.

B. KOP P2-01. Simulated view toward the representative ROW from Aden Hills OHV trail.

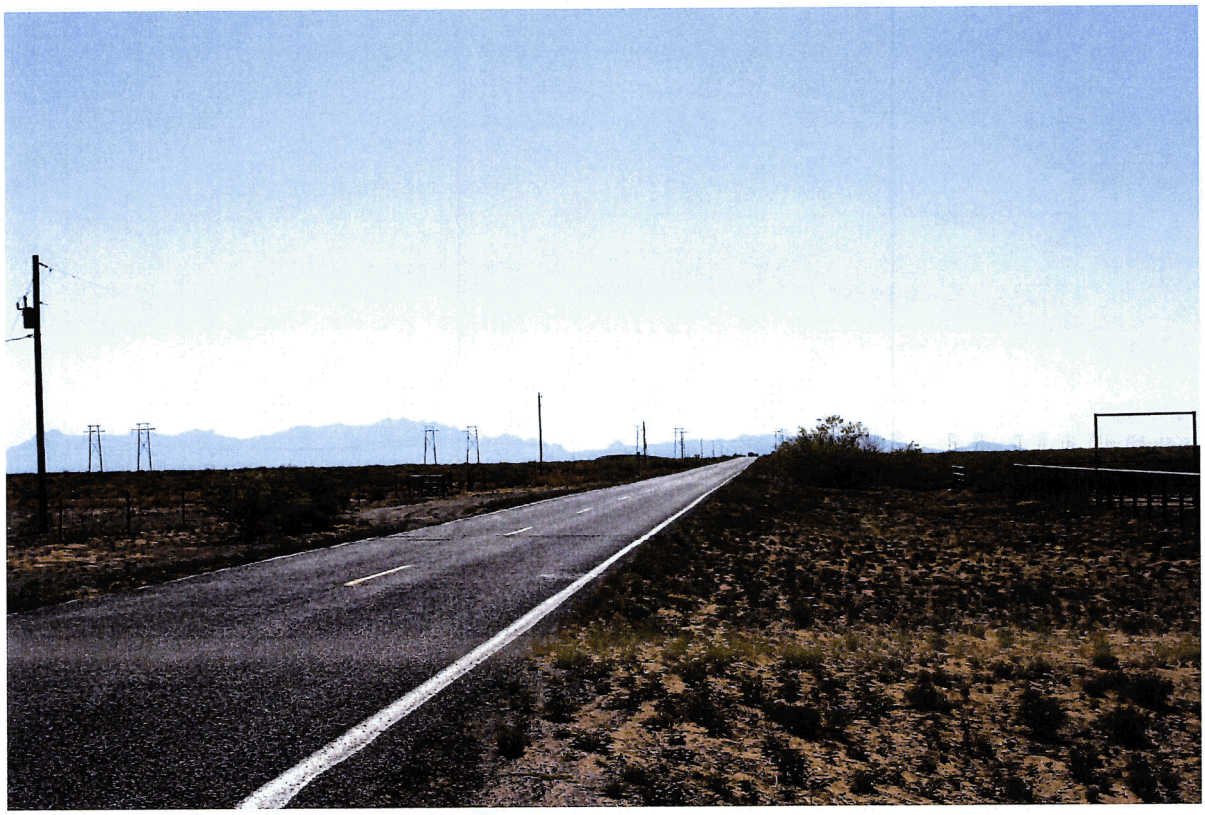
FIGURE B-2
KOP P2-01. View from Aden Hills OHV
Southline Transmission Project

CH2MHILL

KOP P2-02. Existing view toward the representative ROW from West Potrillo Mountains.

FIGURE B-3
KOP P2-02. View from West Potrillo Mountains
Southline Transmission Project

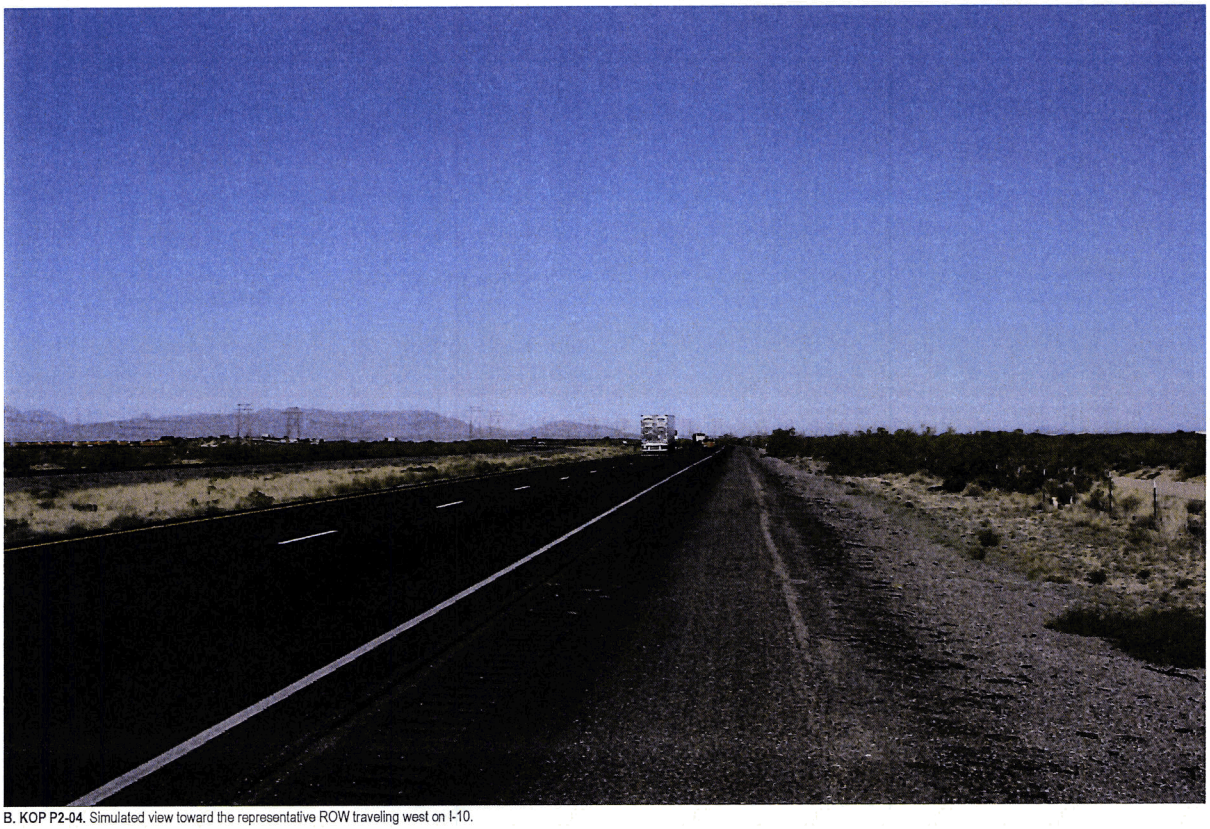
CH2MHILL



KOP P2-03. Existing view toward the representative ROW traveling west on Highway 549.

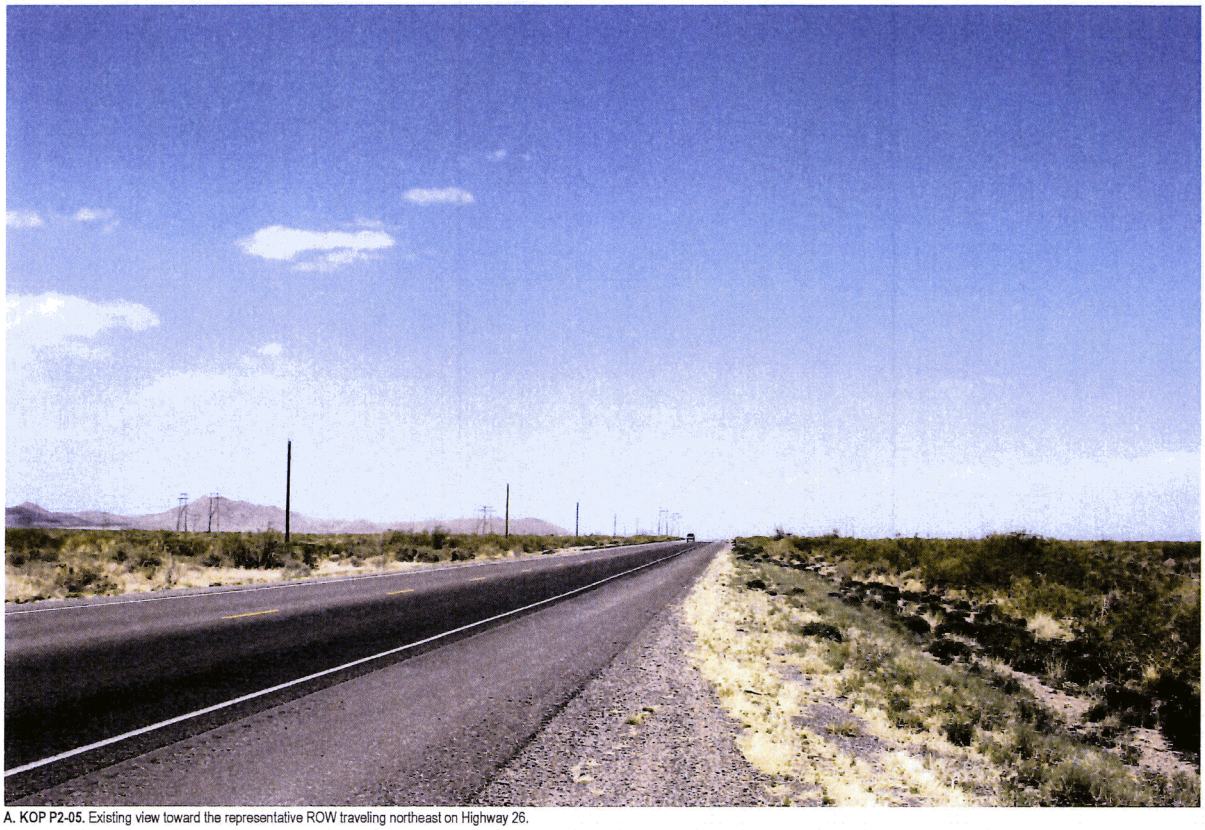
FIGURE B-4
KOP P2-03. View from Highway 549 Westbound
Southline Transmission Project

A. KOP P2-04. Existing view toward the representative ROW traveling west on I-10.

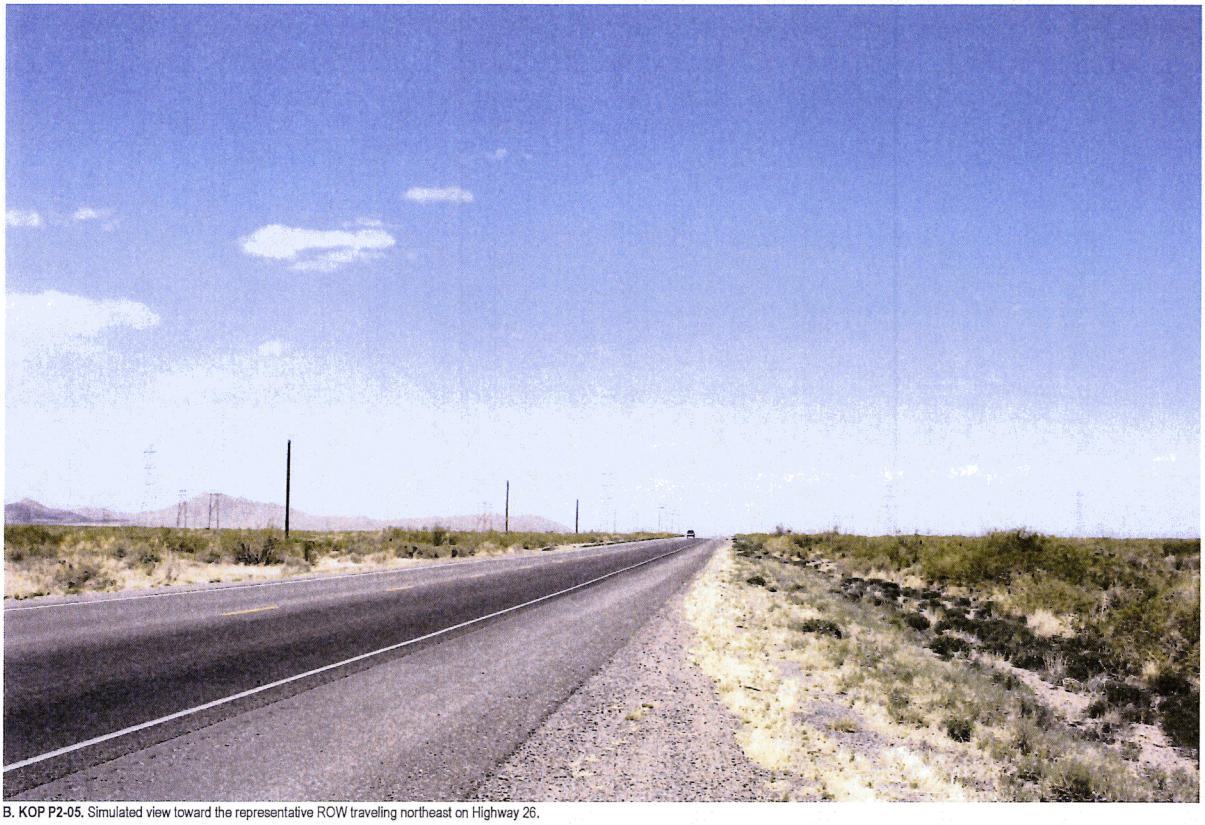


B. KOP P2-04. Simulated view toward the representative ROW traveling west on I-10.

FIGURE B-5
KOP P2-04. View from Interstate 10 Westbound
Southline Transmission Project



A. KOP P2-05. Existing view toward the representative ROW traveling northeast on Highway 26.



B. KOP P2-05. Simulated view toward the representative ROW traveling northeast on Highway 26.

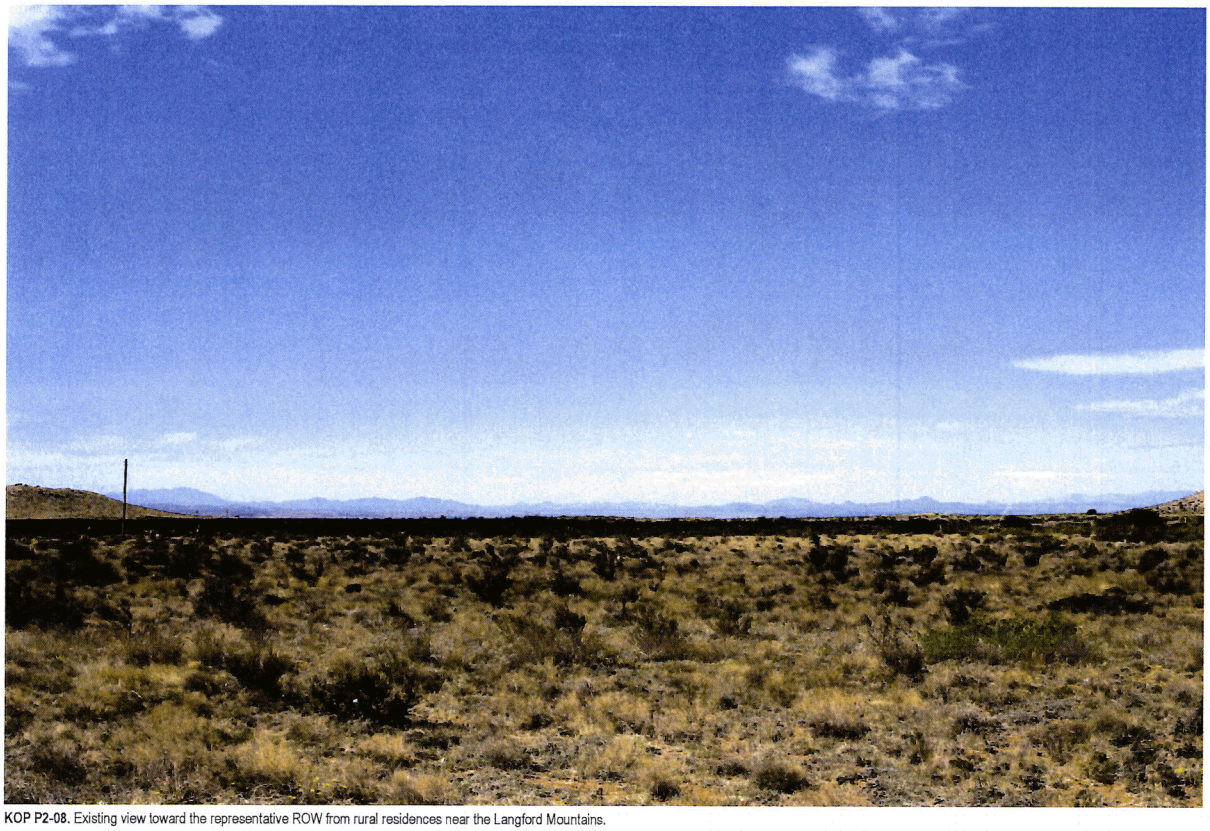
FIGURE B-6
KOP P2-05. View from Highway 26
Southline Transmission Project

KOP P2-06. Existing view toward the representative ROW from the City of Deming.

FIGURE B-7
KOP P2-06. View from City of Deming
Southline Transmission Project

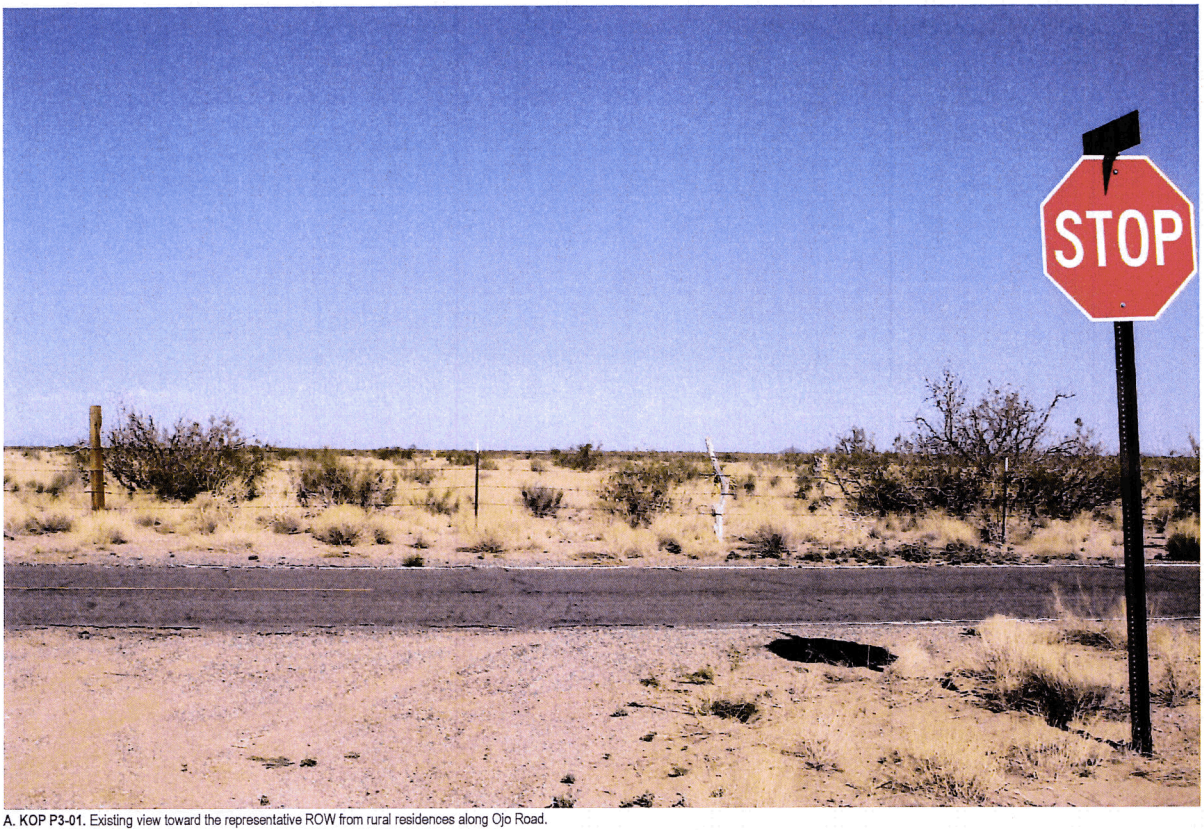
KOP P2-07. Existing view toward the representative ROW from the Grandmother Victoria Mountains.

FIGURE B-8
KOP P2-07. View from Grandmother Victoria Mountains
Southline Transmission Project

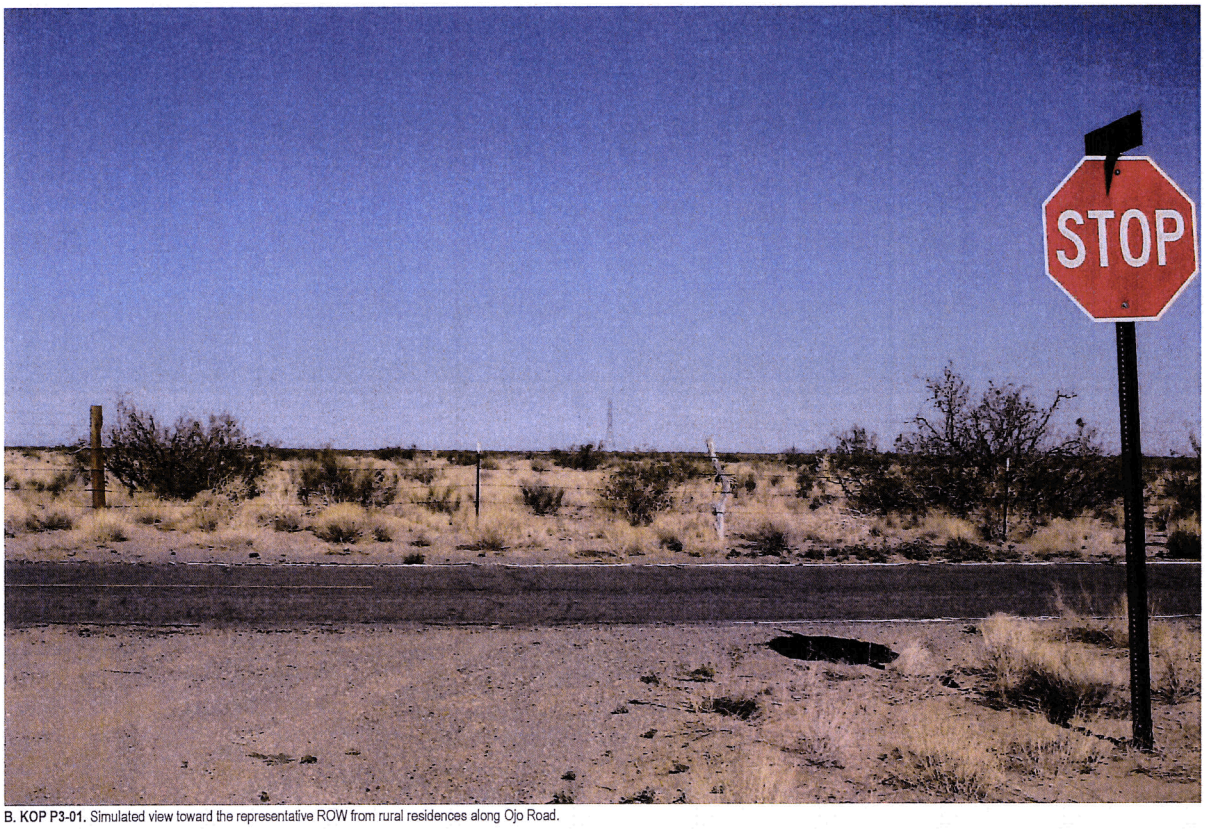


KOP P2-08. Existing view toward the representative ROW from rural residences near the Langford Mountains.

FIGURE B-9
KOP P2-08. View from Rural Residences near Langford Mountains
Southline Transmission Project



A. **KOP P3-01.** Existing view toward the representative ROW from rural residences along Ojo Road.

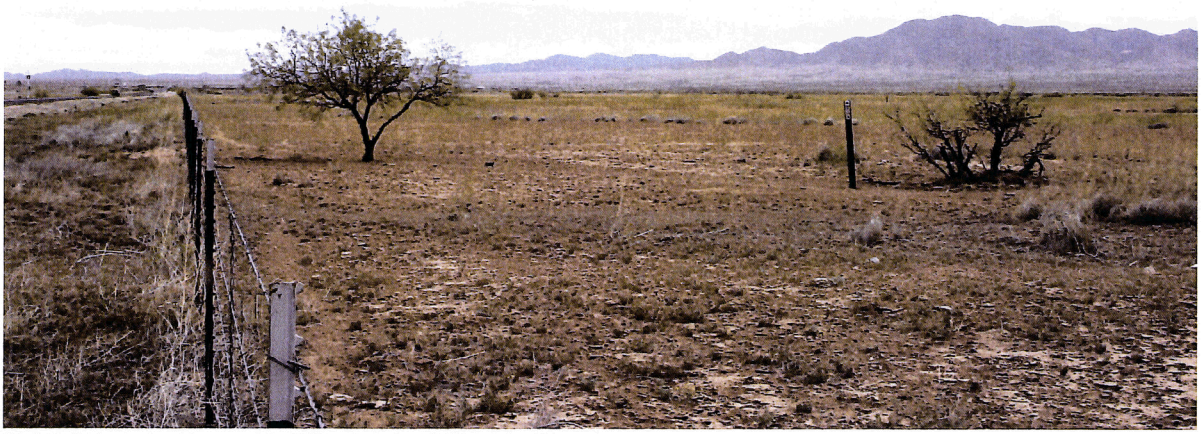


B. **KOP P3-01.** Simulated view toward the representative ROW from rural residences along Ojo Road.

FIGURE B-10
KOP P3-01. View from Ojo Road
Southline Transmission Project

KOP P3-02. Existing view toward the representative ROW from an elevated view along Highway 9 looking west.

FIGURE B-11
KOP P3-02. View from Highway 9
Southline Transmission Project



KOP P4-01. Existing view toward the representative ROW from the Continental Divide Trail along Highway 90.

FIGURE B-12
KOP P4-01. View from Continental Divide Trail
Southline Transmission Project

KOP P4-02. Existing view toward the representative ROW turning onto Highway 70, exiting rural residential neighborhood along H&L Road.

FIGURE B-13
KOP P4-02. View from H&L Road
Southline Transmission Project

A. KOP S1-01. Existing view toward the representative ROW from County Road A11.

B. KOP S1-01. Simulated view toward the representative ROW from County Road A11.

FIGURE B-14
KOP S1-01. View from County Road A11
Southline Transmission Project

CH2MHILL

KOP S1-02. Existing view toward the representative ROW looking east from the eastern rim of Kilbourne Hole.

FIGURE B-15
KOP S1-02. View from Kilbourne Hole
Southline Transmission Project

A. KOP S2-01. Existing view toward the representative ROW from County Road A16.

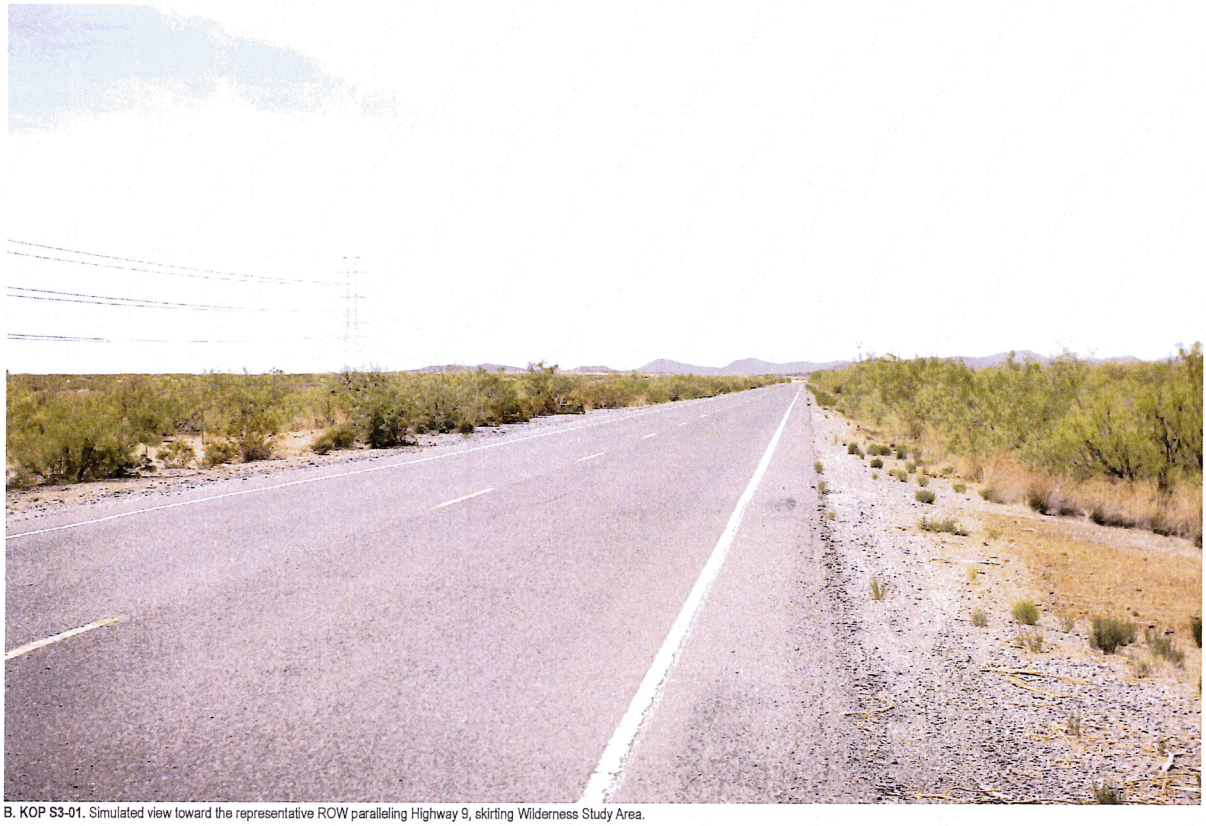
B. KOP S2-01. Simulated view toward the representative ROW from County Road A16.

FIGURE B-16
KOP S2-01. View from County Road A16
Southline Transmission Project

KOP A-01. Existing view toward the representative ROW crossing from County Road A15, within Phillips Hole.

FIGURE B-17
KOP A-01. View from County Road A15
Southline Transmission Project

A. KOP S3-01. Existing view toward the representative ROW paralleling Highway 9, skirting Wilderness Study Area.



B. KOP S3-01. Simulated view toward the representative ROW paralleling Highway 9, skirting Wilderness Study Area.

FIGURE B-18
KOP S3-01. View from Highway 9
Southline Transmission Project

KOP S4-01. Existing view toward the representative ROW from an elevated view along the international border.

FIGURE B-19
KOP S4-01. View from Guzman's Lookout
Southline Transmission Project

KOP B-01. Existing view toward the representative ROW from an elevated view along the international border.

FIGURE B-20
KOP B-01. View from Guzman's Lookout
Southline Transmission Project

KOP S5-01. Existing view of the representative ROW crossing Highway 9 near Columbus.

FIGURE B-21
KOP S5-01. View from Highway 9 at Columbus
Southline Transmission Project

CH2MHILL

A. KOP S5-02. Existing view toward the representative ROW from an elevated view within Pancho Villa State Park near Columbus.

B. KOP S5-02. Simulated view toward the representative ROW from an elevated view within Pancho Villa State Park near Columbus.

FIGURE B-22
KOP S5-02. View from Pancho Villa State Park
Southline Transmission Project

CH2MHILL

KOP S5-03. Existing view toward the representative ROW traveling along Highway 9.

FIGURE B-23
KOP S5-03. View from Highway 9
Southline Transmission Project

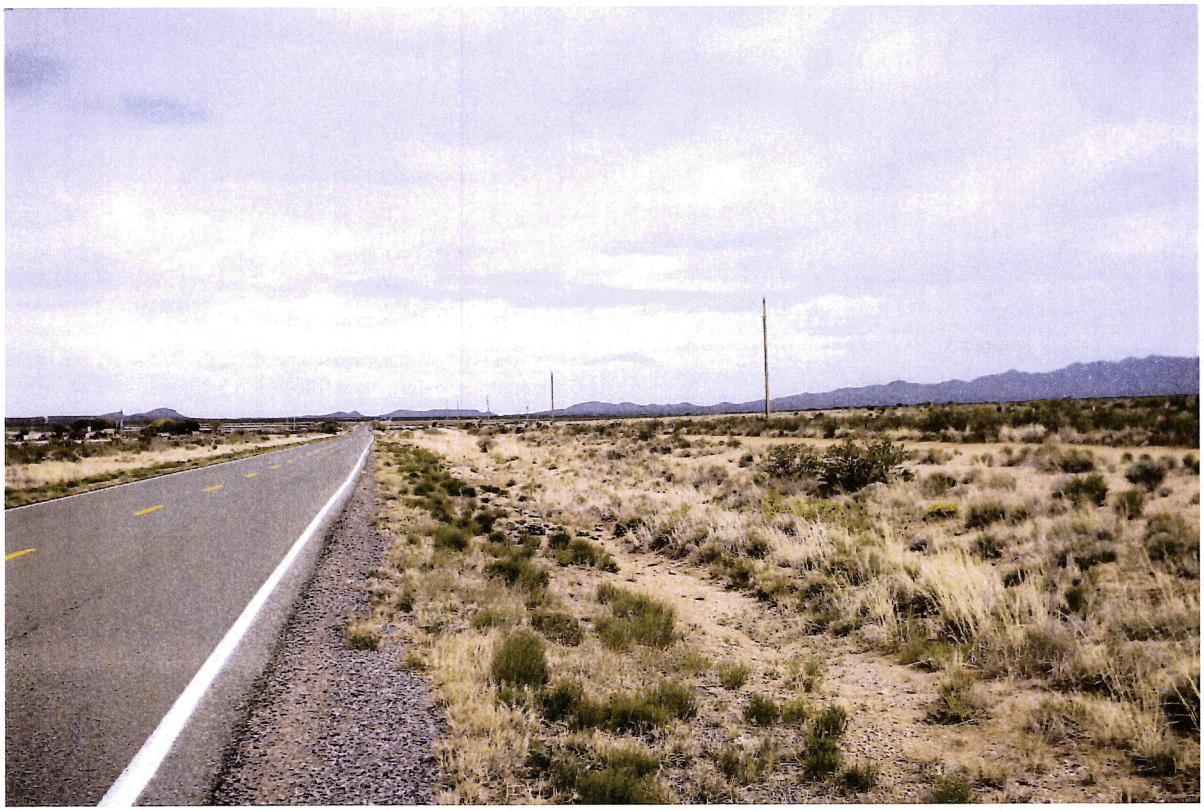
KOP S6-01. Existing view toward the representative ROW from eastern Hachita Valley toward the southern extent of the Cedar Mountains.

FIGURE B-24
KOP S6-01. View from Hachita Valley
Southline Transmission Project

KOP C-01. Existing view toward the representative ROW from eastern Hachita Valley toward the southern extent of the Cedar Mountains.

FIGURE B-25
KOP C-01. View from Hachita Valley
Southline Transmission Project

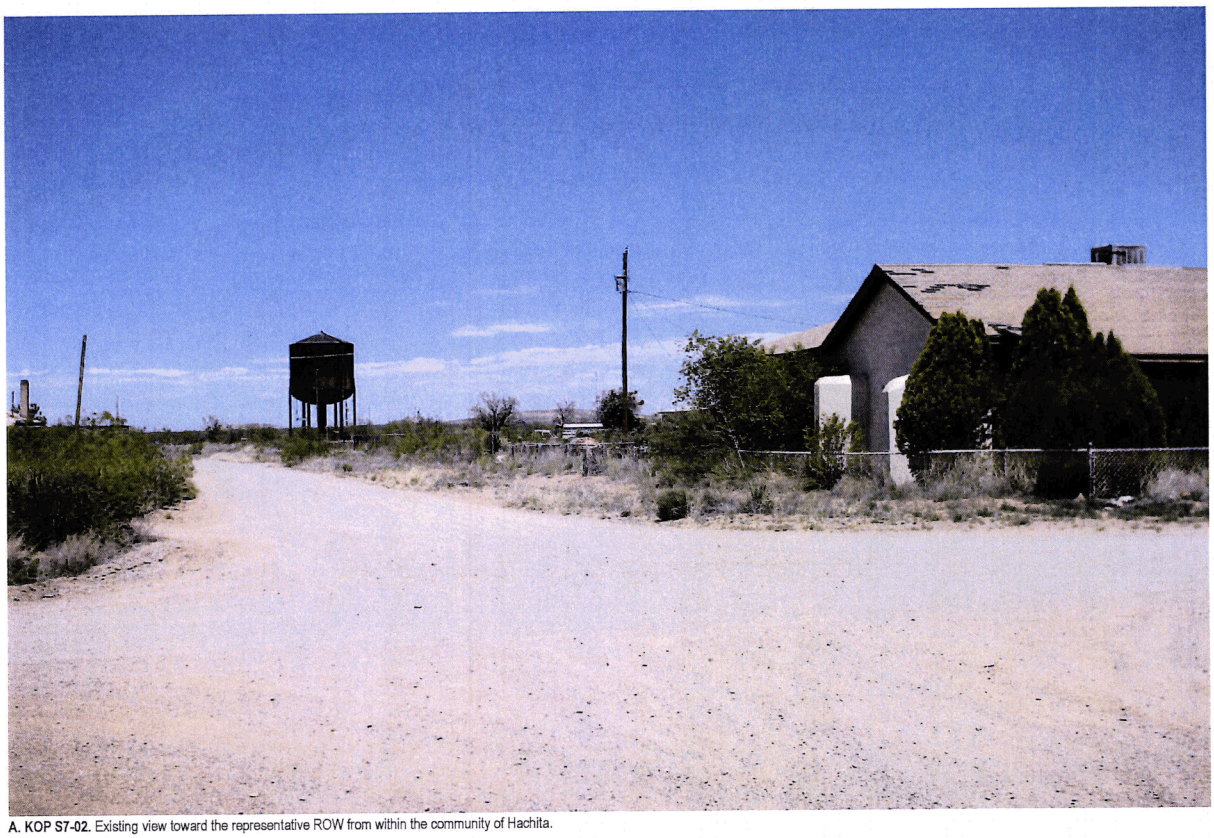
CH2MHILL



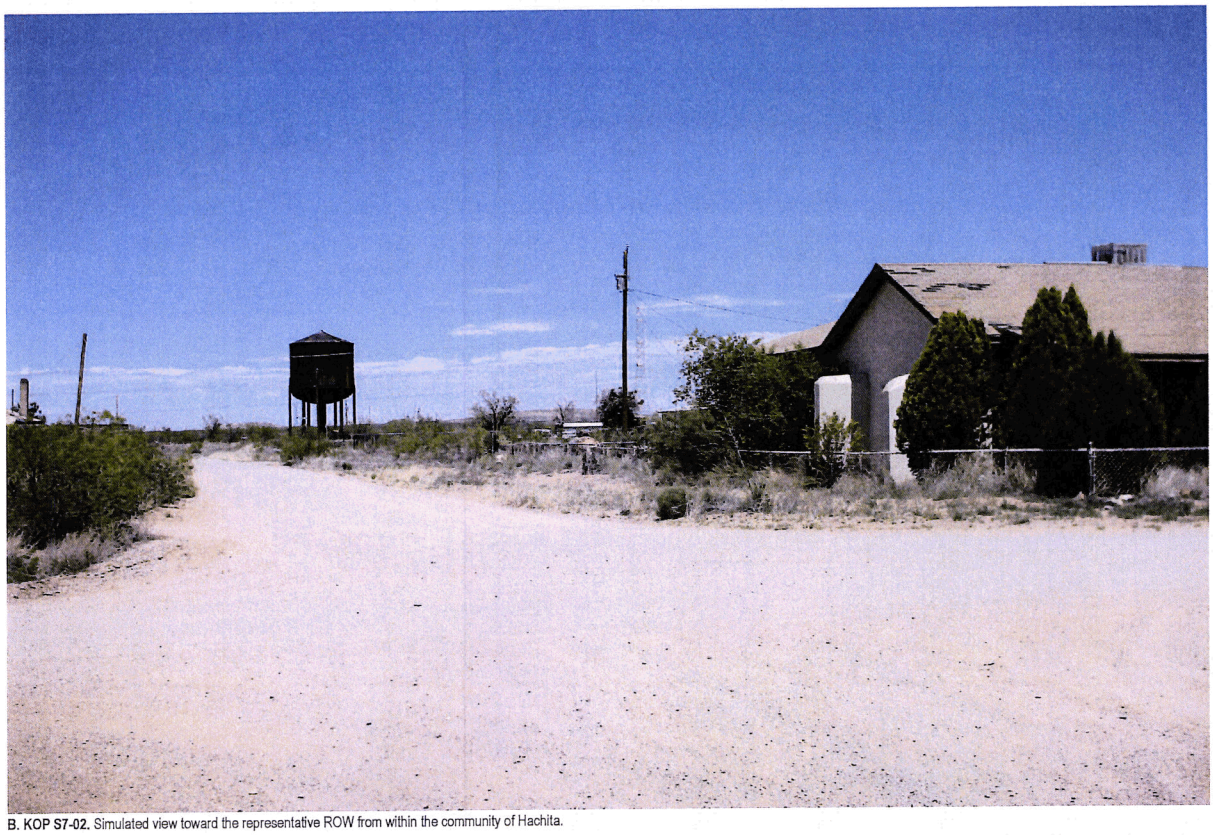
KOP S7-01. Existing view toward the representative ROW paralleling Highway 9 within Hachita Valley.

FIGURE B-26
KOP S7-01. View from Hachita Valley
Southline Transmission Project

CH2MHILL



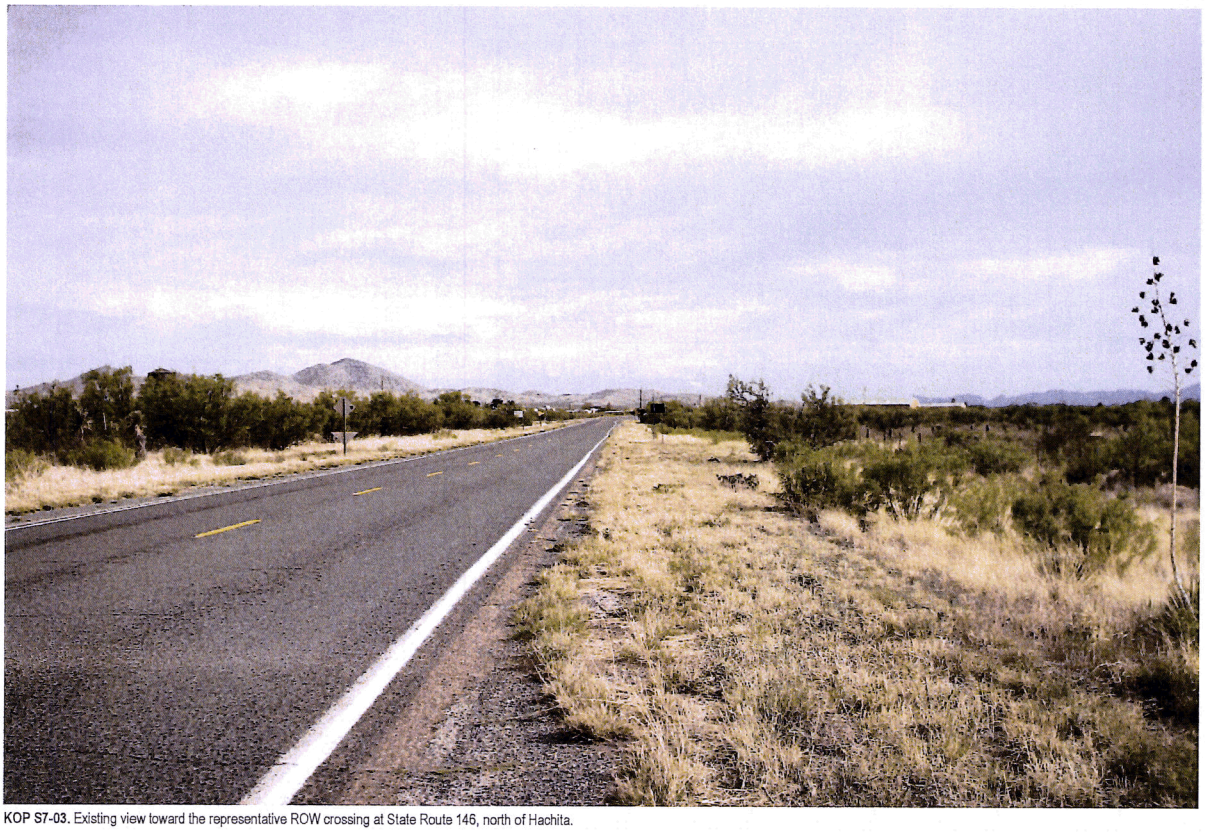
A. KOP S7-02. Existing view toward the representative ROW from within the community of Hachita.



B. KOP S7-02. Simulated view toward the representative ROW from within the community of Hachita.

FIGURE B-27
KOP S7-02. View from Community of Hachita
Southline Transmission Project

CH2MHILL

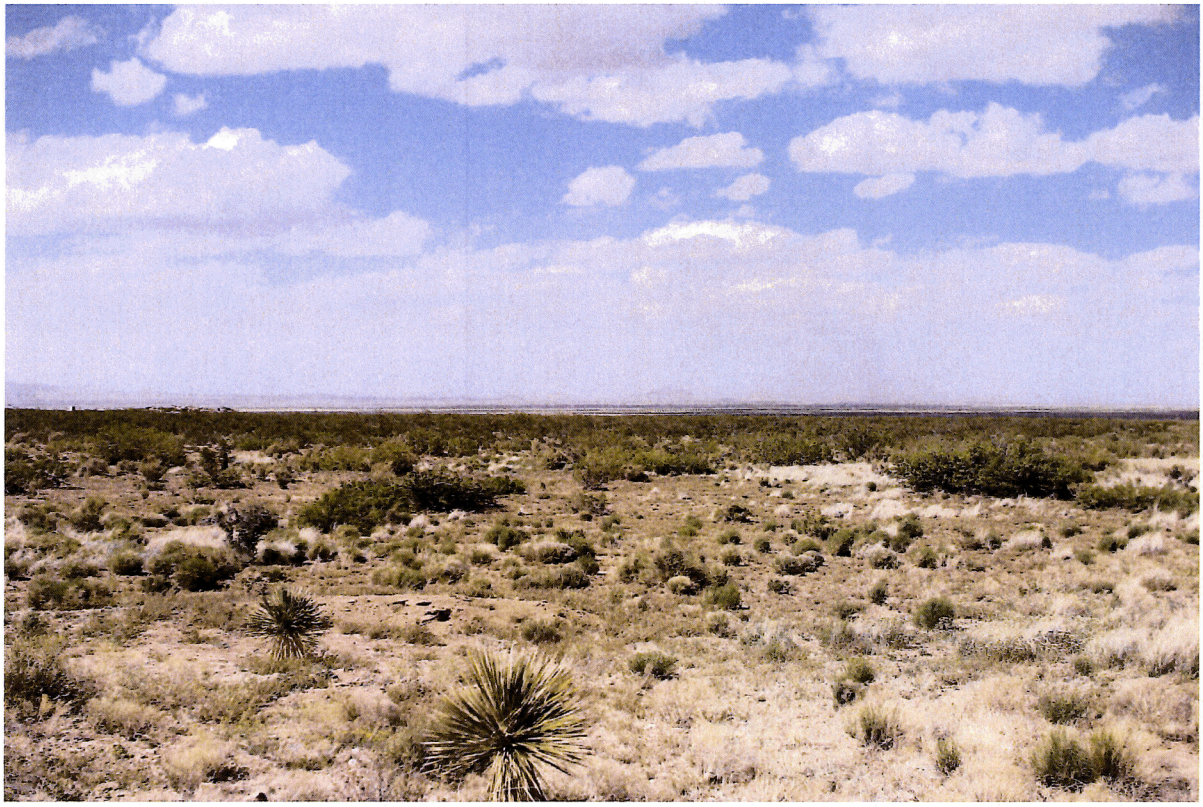


KOP S7-03. Existing view toward the representative ROW crossing at State Route 146, north of Hachita.

FIGURE B-28
KOP S7-03. View from North of Community of Hachita
Southline Transmission Project

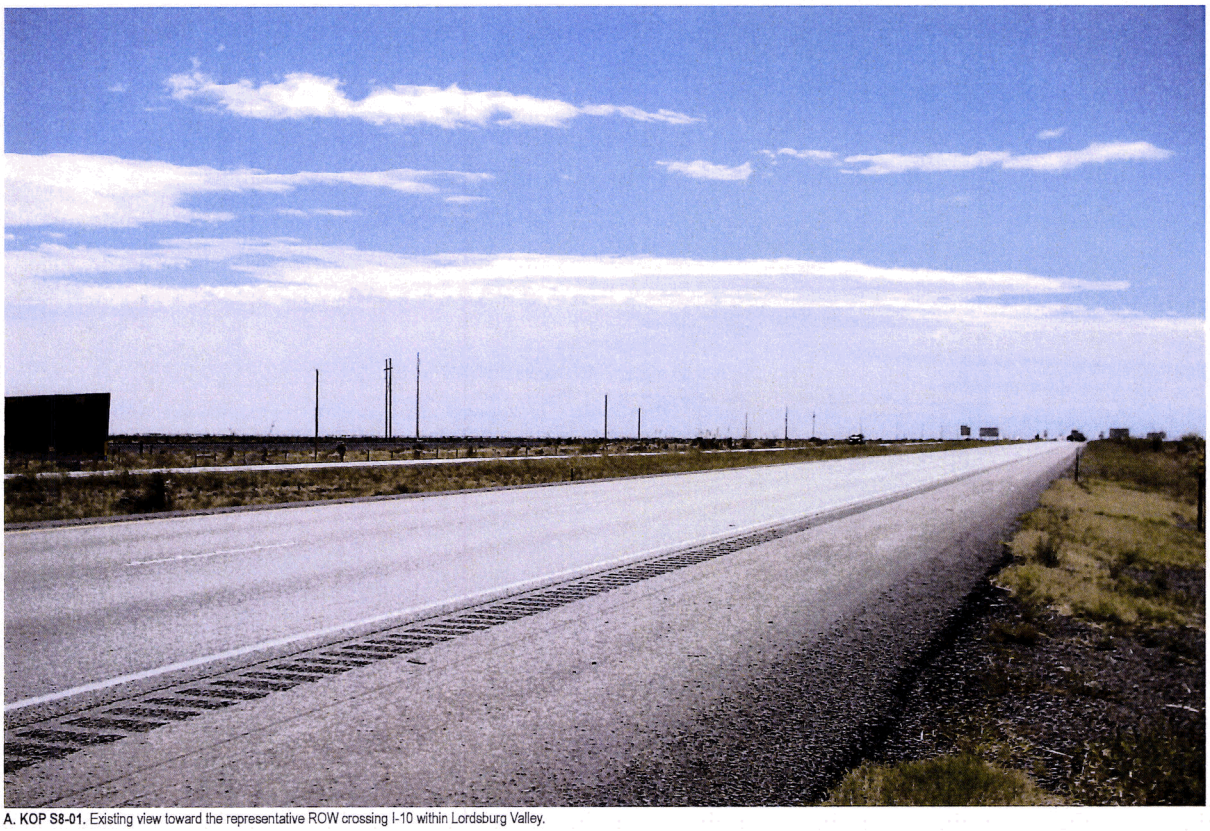
KOP S7-04. Existing view toward the representative ROW from rural residential area in Lordsburg Valley near the Continental Divide.

FIGURE B-29
KOP S7-04. View near Continental Divide
Southline Transmission Project



KOP S7-05. Existing view toward the representative ROW and open Lordsburg Valley near Brockman Hills.

FIGURE B-30
KOP S7-05. View near Brockman Hills
Southline Transmission Project



A. KOP S8-01. Existing view toward the representative ROW crossing I-10 within Lordsburg Valley.

B. KOP S8-01. Simulated view toward the representative ROW crossing I-10 within Lordsburg Valley.

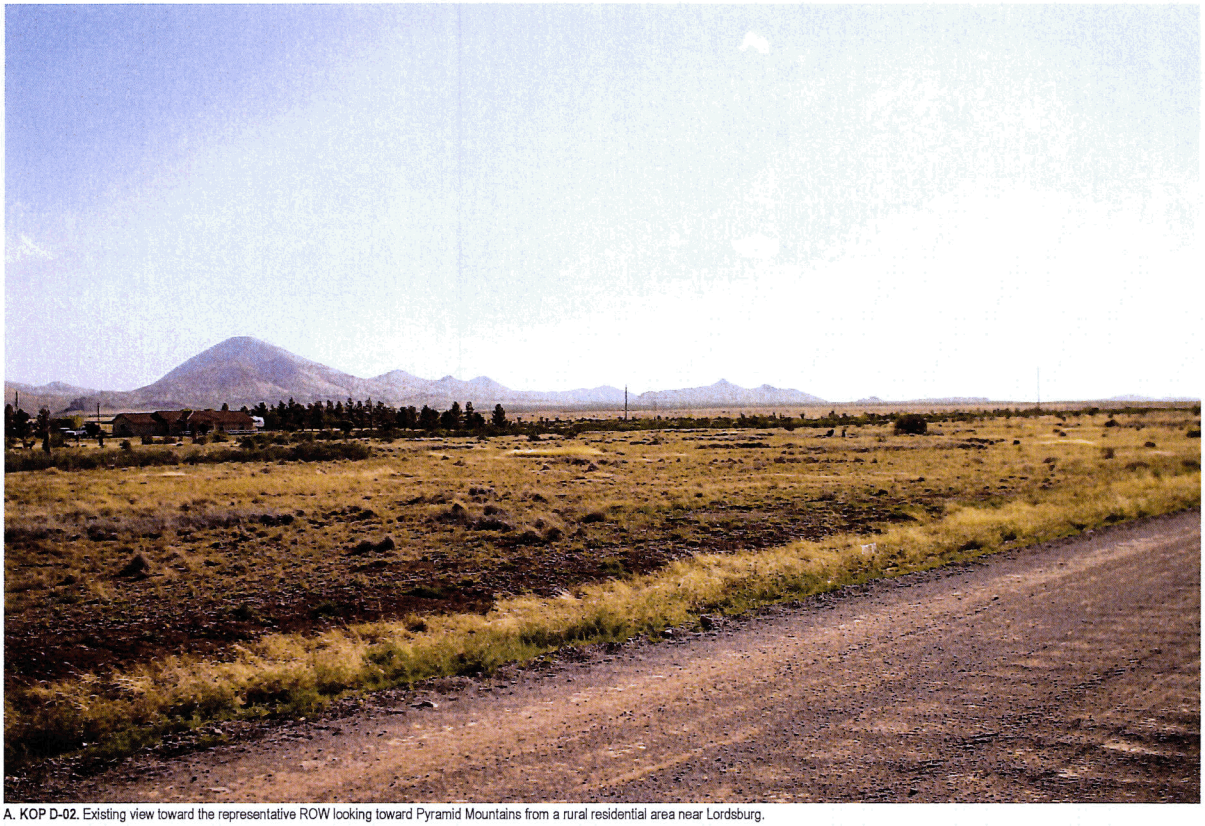
FIGURE B-31
KOP S8-01. View toward I-10 Crossing
Southline Transmission Project

KOP S8-02. Existing view toward the representative ROW from farmlands within Lordsburg Valley.

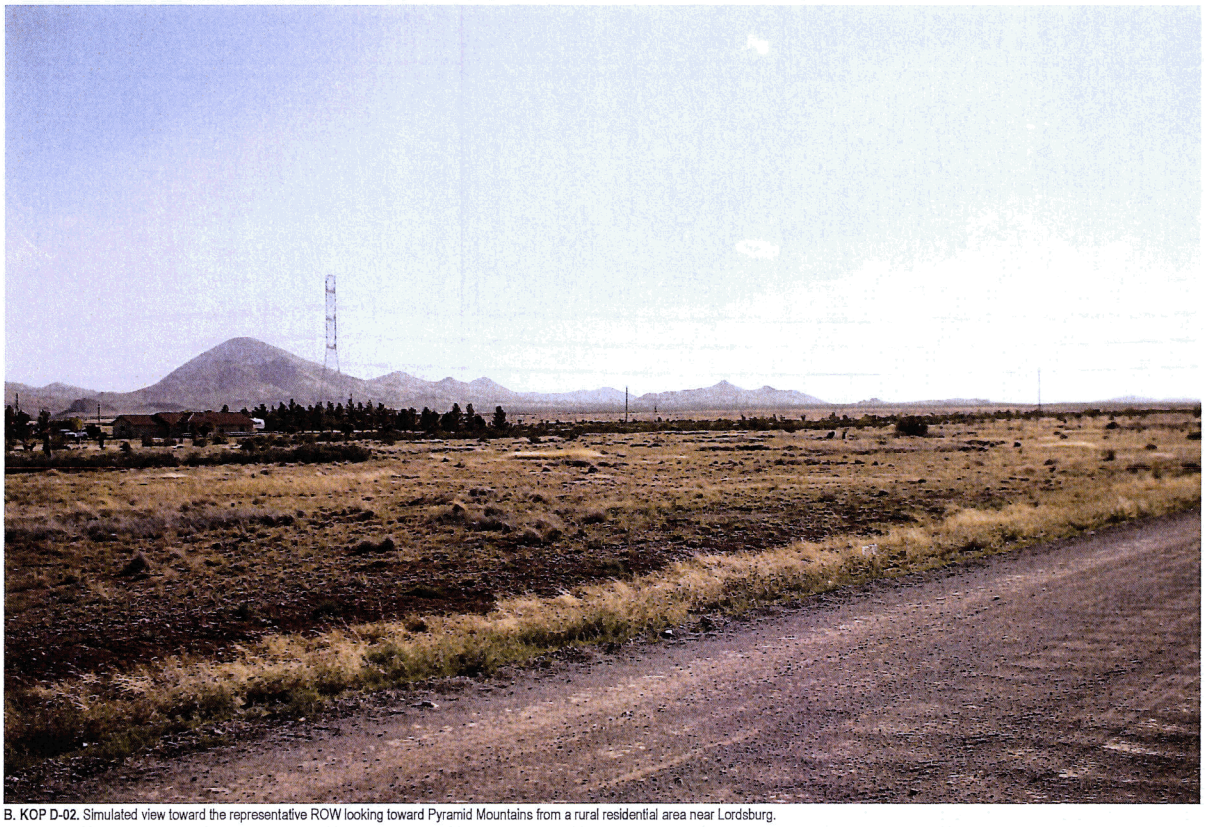
FIGURE B-32
KOP S8-02. View from Lordsburg Valley Farmland
Southline Transmission Project

KOP D-01. Existing view toward the representative ROW from NM 113 crossing within Lordsburg Valley.

FIGURE B-33
KOP D-01. View from NM 113
Southline Transmission Project

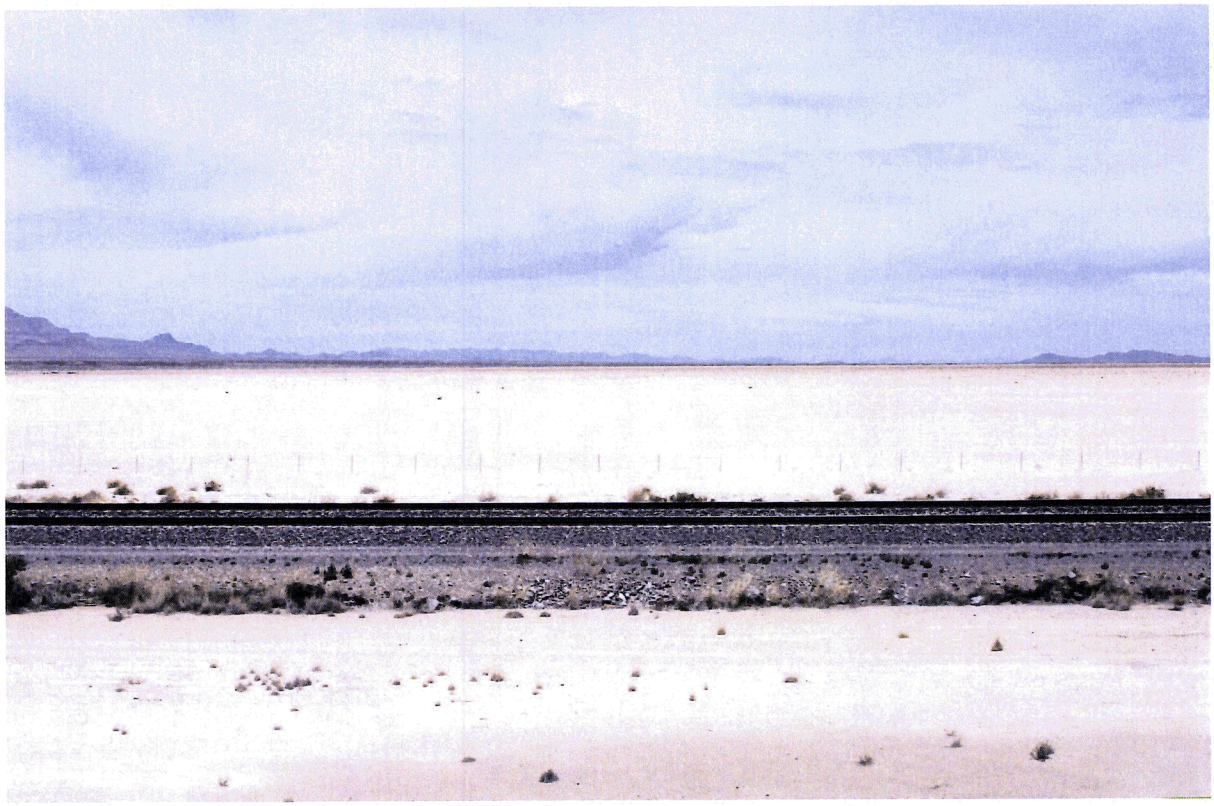


A. KOP D-02. Existing view toward the representative ROW looking toward Pyramid Mountains from a rural residential area near Lordsburg.

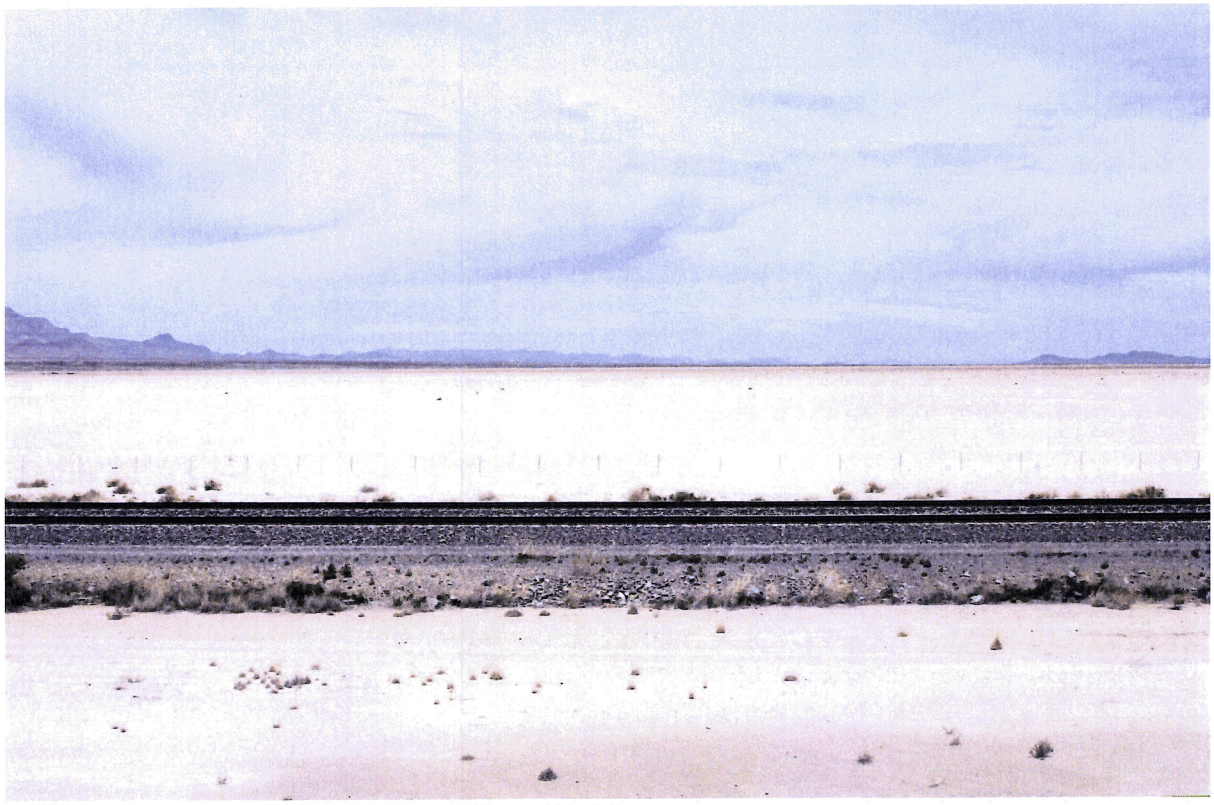


B. KOP D-02. Simulated view toward the representative ROW looking toward Pyramid Mountains from a rural residential area near Lordsburg.

FIGURE B-34
KOP D-02. View from Eastern Outskirts of Lordsburg
Southline Transmission Project



A. KOP P5-01. Existing view toward the representative ROW from I-10, across Alkali Flat, toward Peloncillo Mountains.



B. KOP P5-01. Simulated view toward the representative ROW from I-10, across Alkali Flat, toward Peloncillo Mountains.

FIGURE B-35
KOP P5-01. View from I-10 across Alkali Flat
Southline Transmission Project

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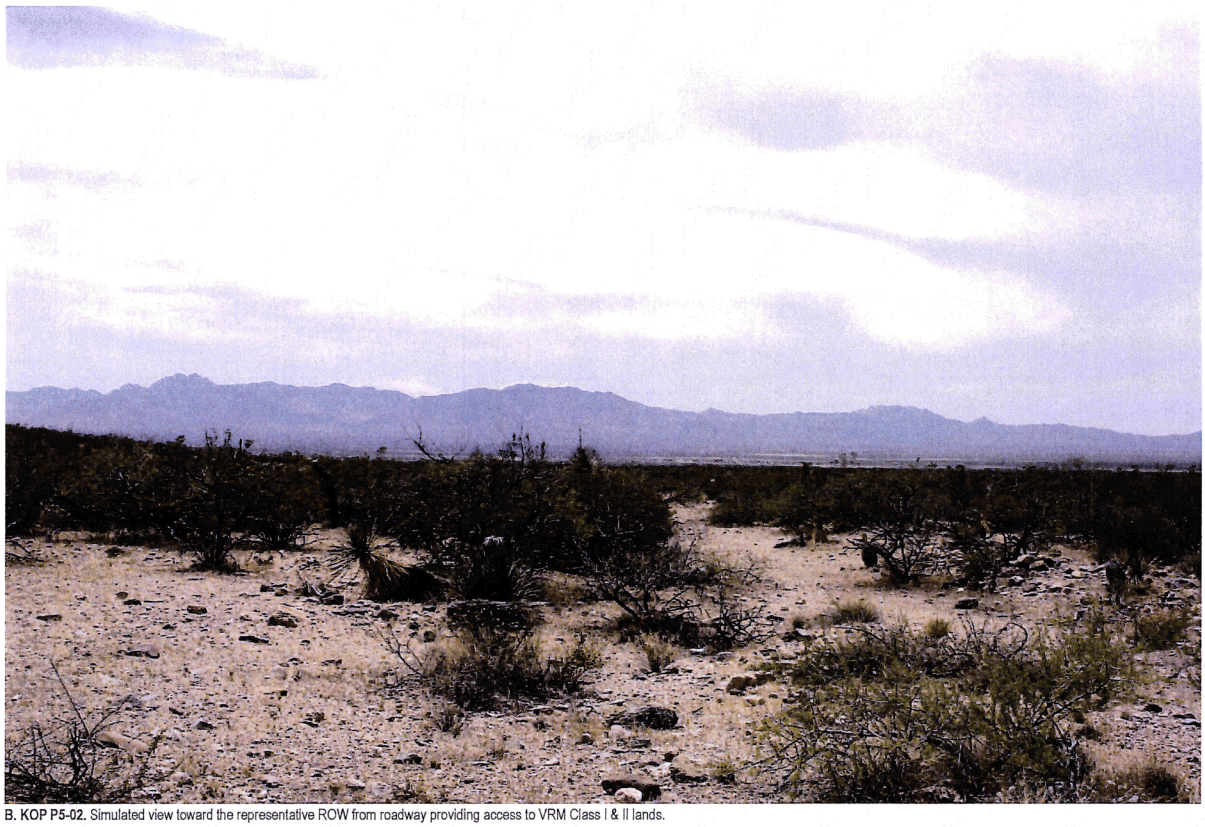
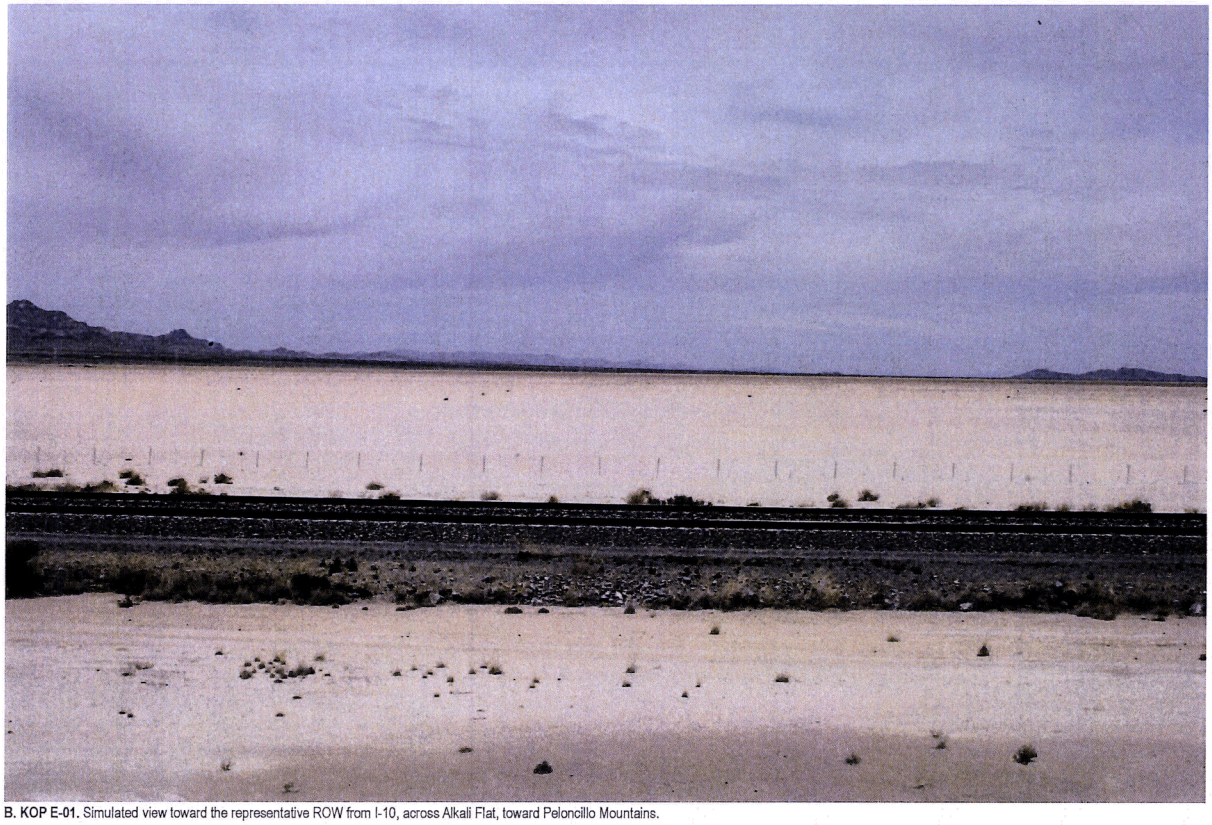
A. KOP P5-02. Existing view toward the representative ROW from roadway providing access to VRM Class I & II lands.



B. KOP P5-02. Simulated view toward the representative ROW from roadway providing access to VRM Class I & II lands.

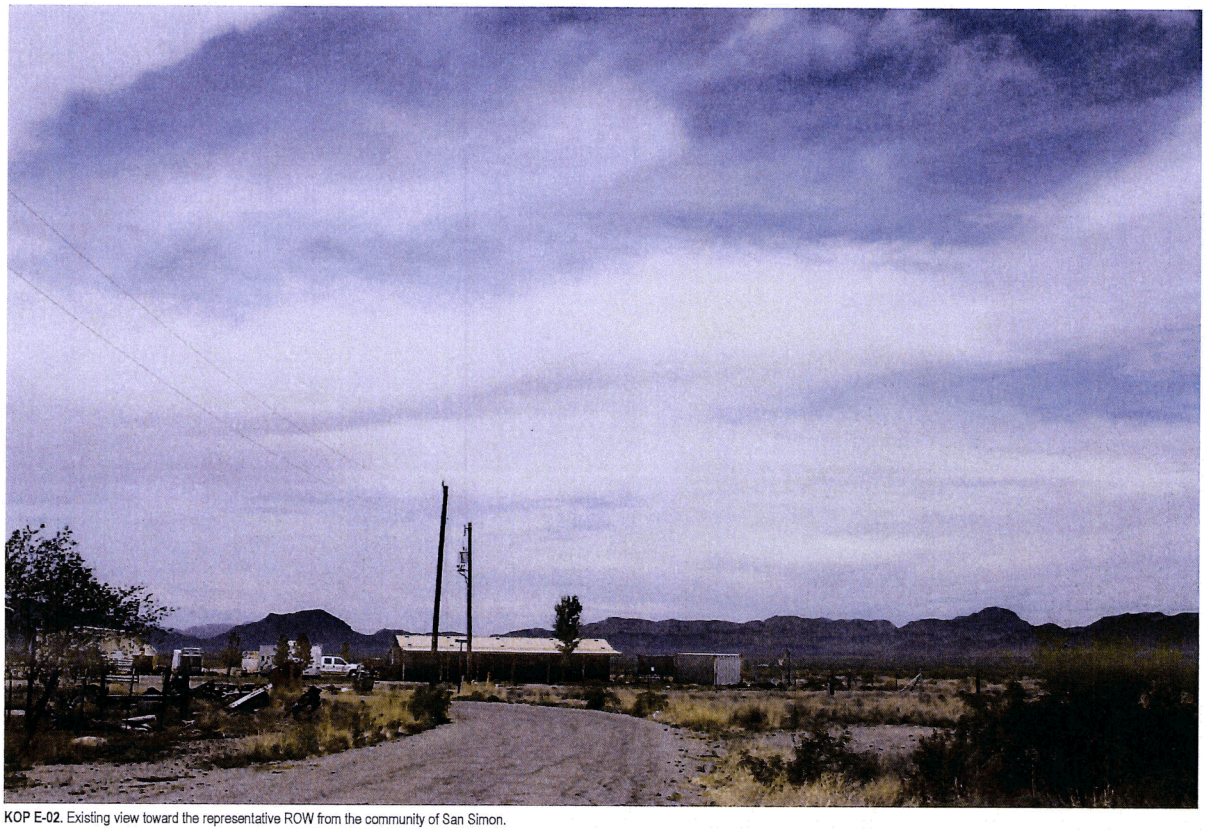
FIGURE B-36
KOP P5-02. View from Peloncillo Mountains
Southline Transmission Project

A. KOP E-01. Existing view toward the representative ROW from I-10, across Alkali Flat, toward Peloncillo Mountains.



B. KOP E-01. Simulated view toward the representative ROW from I-10, across Alkali Flat, toward Peloncillo Mountains.

FIGURE B-37
KOP E-01. View from I-10 toward Peloncillo Mountains
Southline Transmission Project



KOP E-02. Existing view toward the representative ROW from the community of San Simon.

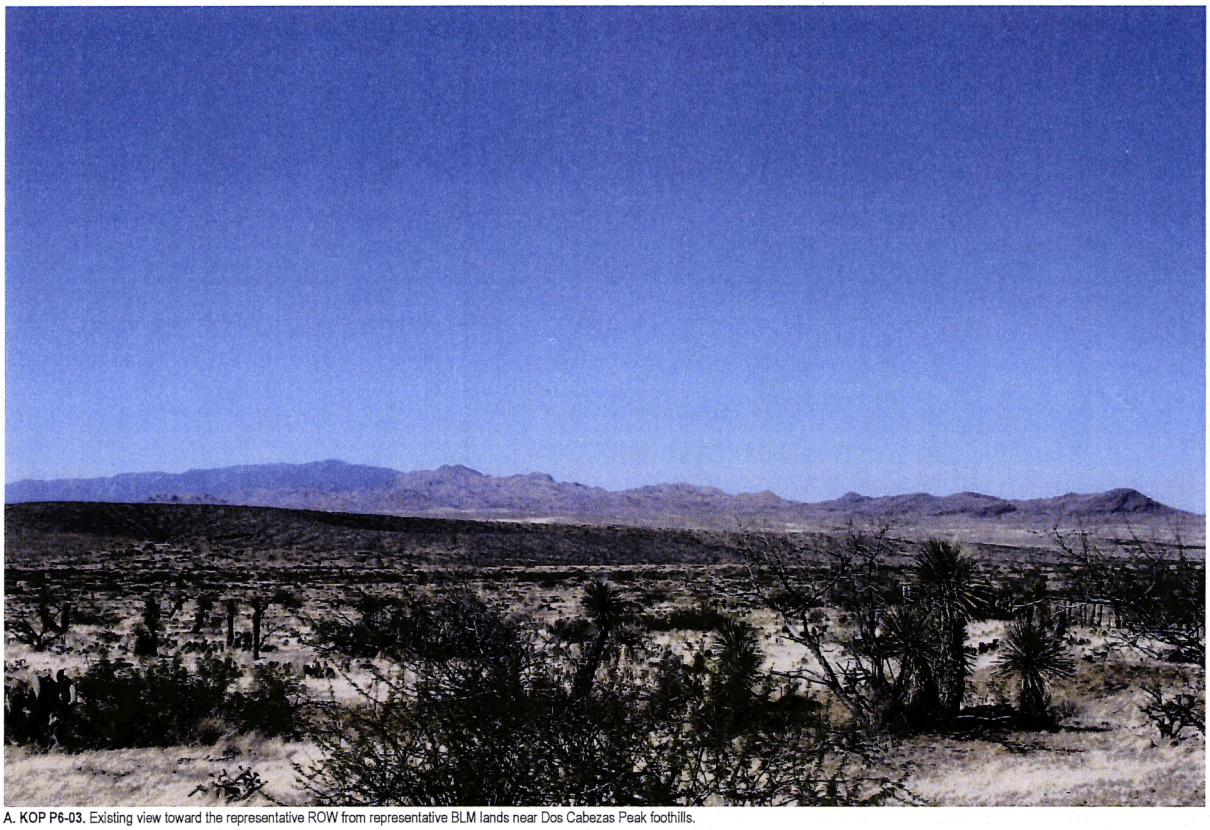
FIGURE B-38
KOP E-02. View from Community of San Simon
Southline Transmission Project

KOP P6-01. Existing view toward the representative ROW from the community of Bowie.

FIGURE B-39
KOP P6-01. View from Community of Bowie
Southline Transmission Project

KOP P6-02. Existing view toward the representative ROW from the main access road to Ft. Bowie Scenic ACEC and wilderness area.

FIGURE B-40
KOP P6-02. View from South Apache Pass Road
Southline Transmission Project



A. KOP P6-03. Existing view toward the representative ROW from representative BLM lands near Dos Cabezas Peak foothills.

B. KOP P6-03. Simulated view toward the representative ROW from representative BLM lands near Dos Cabezas Peak foothills.

FIGURE B-41
KOP P6-03. View from Dos Cabezas Peak Foothills
Southline Transmission Project

A. KOP F-01. Existing view toward the representative ROW from the northern part of the community of Bowie.

B. KOP F-01. Simulated view toward the representative ROW from the northern part of the community of Bowie.

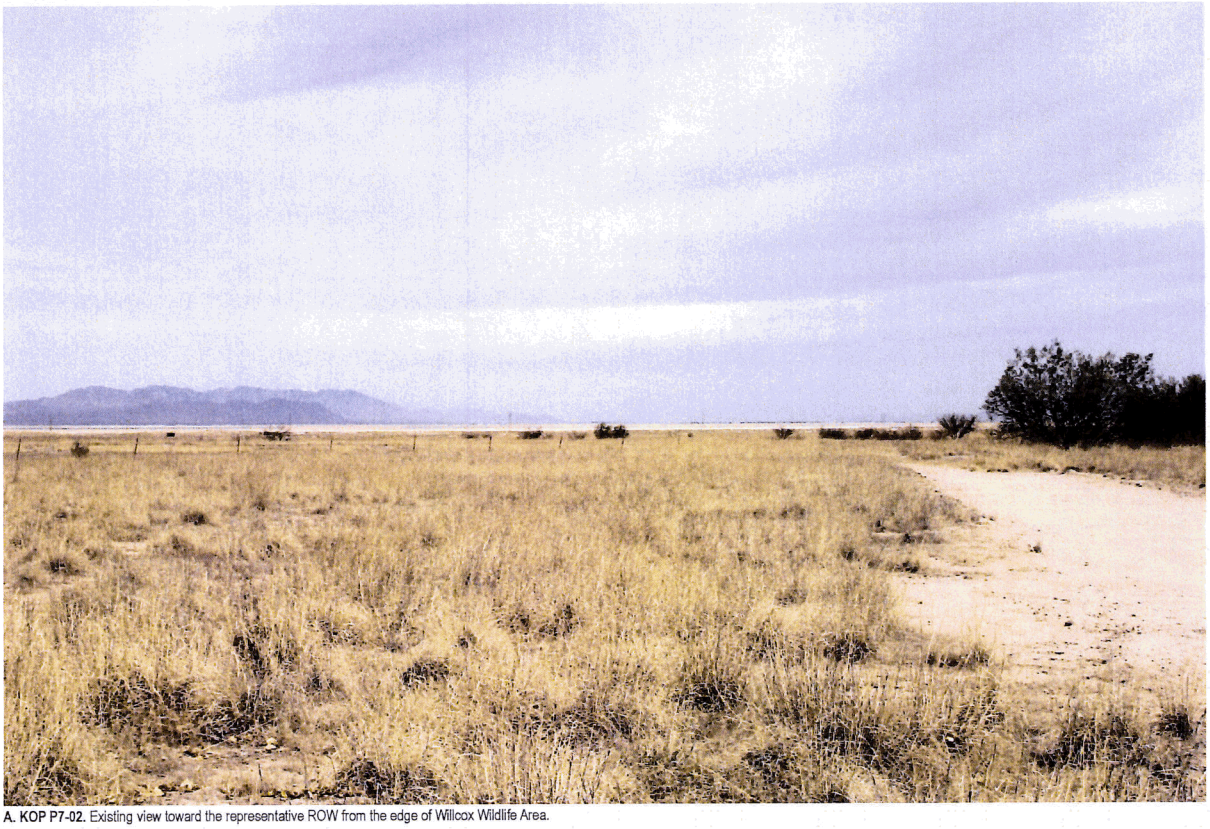
FIGURE B-42
KOP F-01. View from Bowie
Southline Transmission Project

KOP F-02. Existing view toward the representative ROW from State Route 191, which provides access points north, including to Safford.

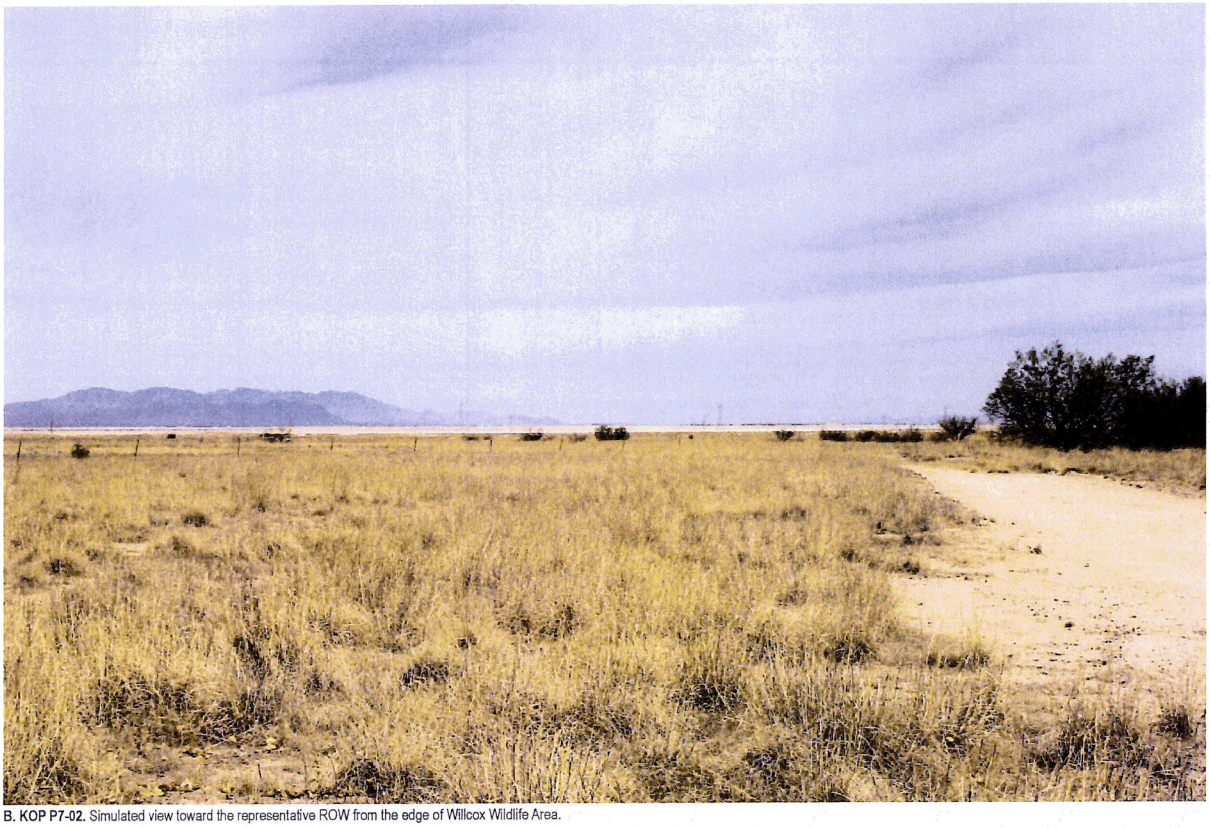
FIGURE B-43
KOP F-02. View from Arizona SR 191
Southline Transmission Project

KOP P7-01. Existing view toward the representative ROW from State Route 186, which provides primary access into Dos Cabezas Peaks ACEC.

FIGURE B-44
KOP P7-01. View from Arizona SR 186
Southline Transmission Project



A. KOP P7-02. Existing view toward the representative ROW from the edge of Willcox Wildlife Area.



B. KOP P7-02. Simulated view toward the representative ROW from the edge of Willcox Wildlife Area.

FIGURE B-45
KOP P7-02. View from Willcox Playa Wildlife Area
Southline Transmission Project

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KOP P7-03. Existing view toward the representative ROW from within Willcox Wildlife Area, at the gathering point for the Wings over Willcox bird-watching festival.

FIGURE B-46
KOP P7-03. View from Willcox Playa
Southline Transmission Project

KOP G-01. Existing view toward the representative ROW from the western boundary of the Willcox developed area.

FIGURE B-47
KOP G-01. View from City of Willcox
Southline Transmission Project

KOP G-02. Existing view toward the representative ROW from within Willcox Wildlife Area, at the gathering area for the Wings over Willcox bird-watching festival.

FIGURE B-48
KOP G-02. View from Willcox Playa
Southline Transmission Project

A. KOP G-03. Existing view toward representative ROW from within the community of Cochise.

B. KOP G-03. Simulated view toward representative ROW from within the community of Cochise.

FIGURE B-49
KOP G-03. View from Community of Cochise
Southline Transmission Project

A. KOP U1-01. Existing view toward the representative ROW from the northwest corner of Coronado National Forest.

B. KOP U1-01. Simulated view toward the representative ROW from the northwest corner of Coronado National Forest.

FIGURE B-50
KOP U1-01. View from Coronado National Forest
Southline Transmission Project

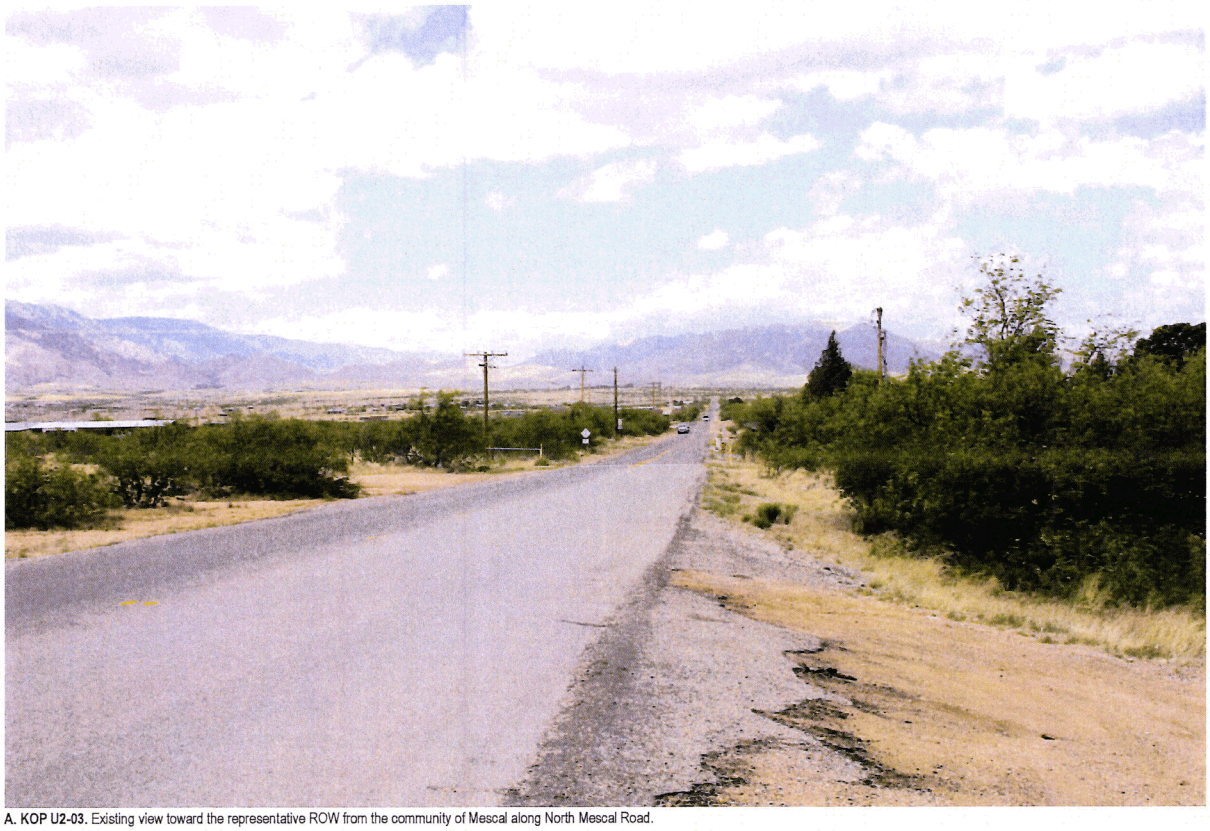
KOP U2-01. Existing view toward the representative ROW from multi-use recreational fields in the City of Benson.

FIGURE B-51
KOP U2-01. View from City of Benson Park
Southline Transmission Project

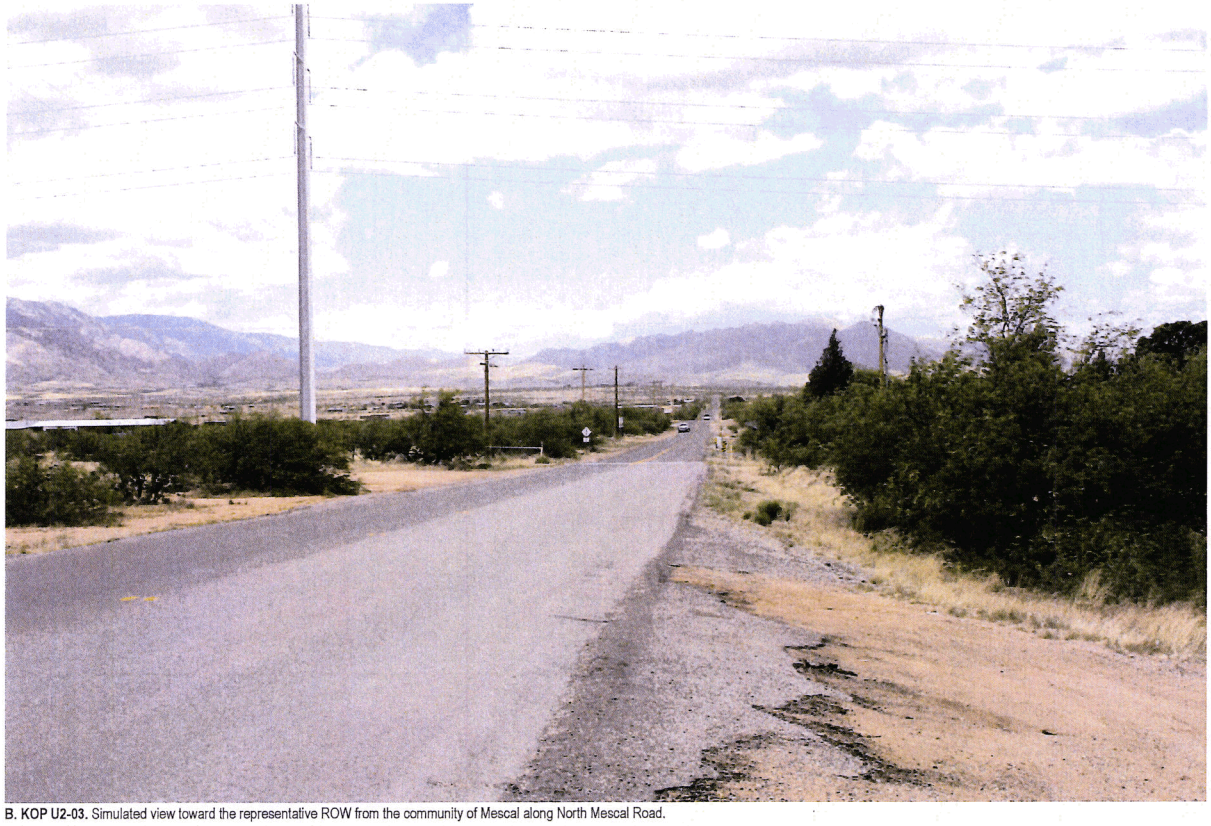
CH2MHILL

KOP U2-02. Existing unobstructed view toward the representative ROW from a future residential development, taken from a newly constructed roadway.

FIGURE B-52
KOP U2-02. View from Future City of Benson Residential Development
Southline Transmission Project



A. KOP U2-03. Existing view toward the representative ROW from the community of Mescal along North Mescal Road.

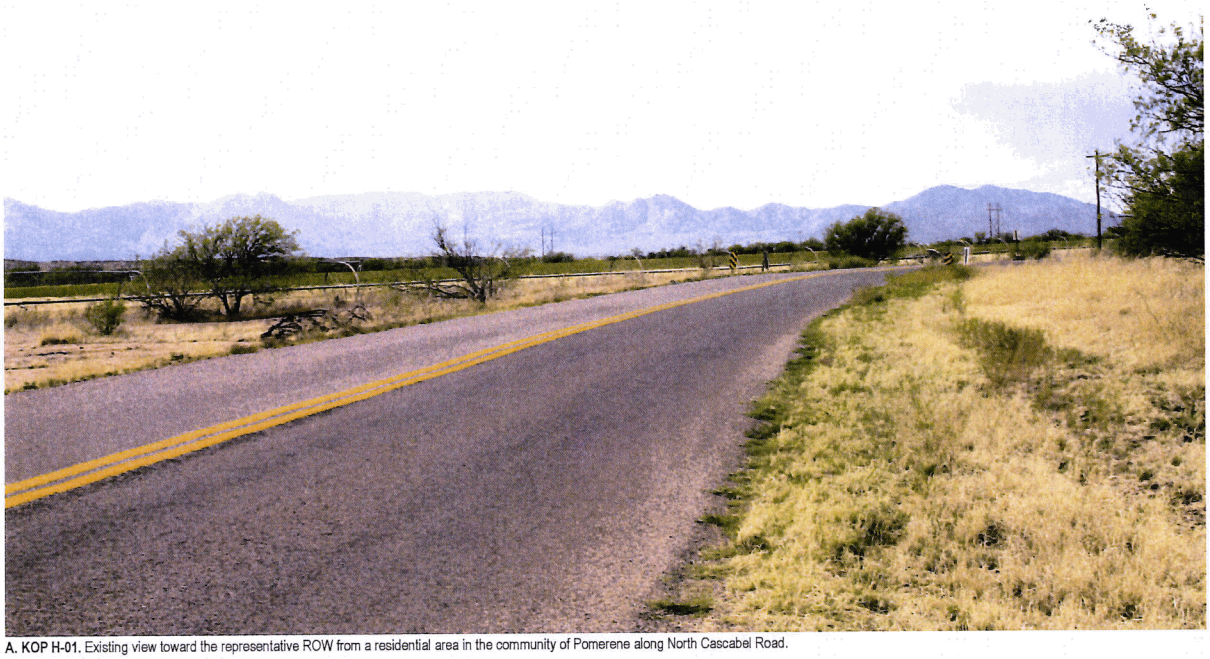


B. KOP U2-03. Simulated view toward the representative ROW from the community of Mescal along North Mescal Road.

FIGURE B-53
KOP U2-03. View from Community of Mescal
Southline Transmission Project

KOP U2-04. Existing view toward the representative ROW line within the community of Mescal.

FIGURE B-54
KOP U2-04. View from Rural Residences in Mescal
Southline Transmission Project



A. KOP H-01. Existing view toward the representative ROW from a residential area in the community of Pomerene along North Cascabel Road.

B. KOP H-01. Simulated view toward the representative ROW from a residential area in the community of Pomerene along North Cascabel Road.

FIGURE B-55
KOP H-01. View from Community of Pomerene
Southline Transmission Project

CH2MHILL

KOP H-02. Existing view toward the representative ROW from a rural residential area north of Mescal.

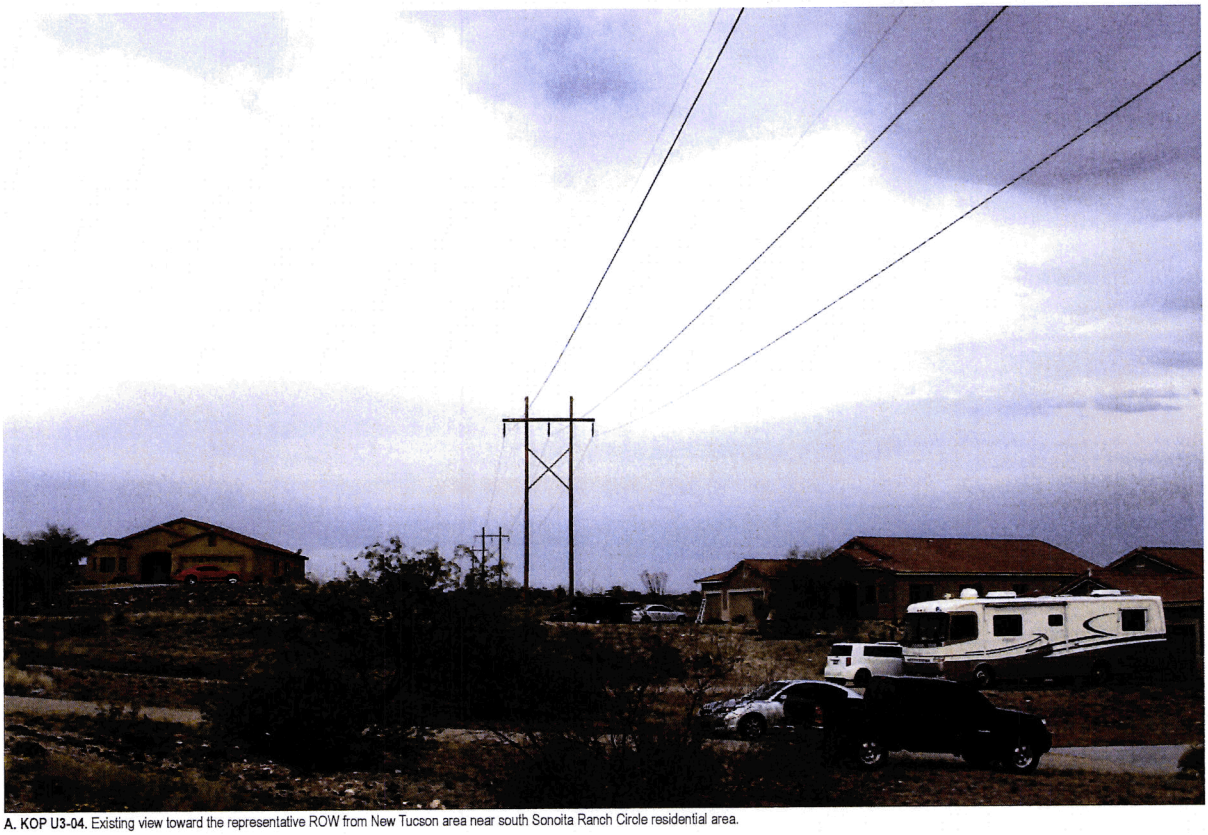
FIGURE B-56
KOP H-02. View from North of Community of Mescal
Southline Transmission Project

KOP H-03. Existing view toward the representative ROW within the community of Mescal.

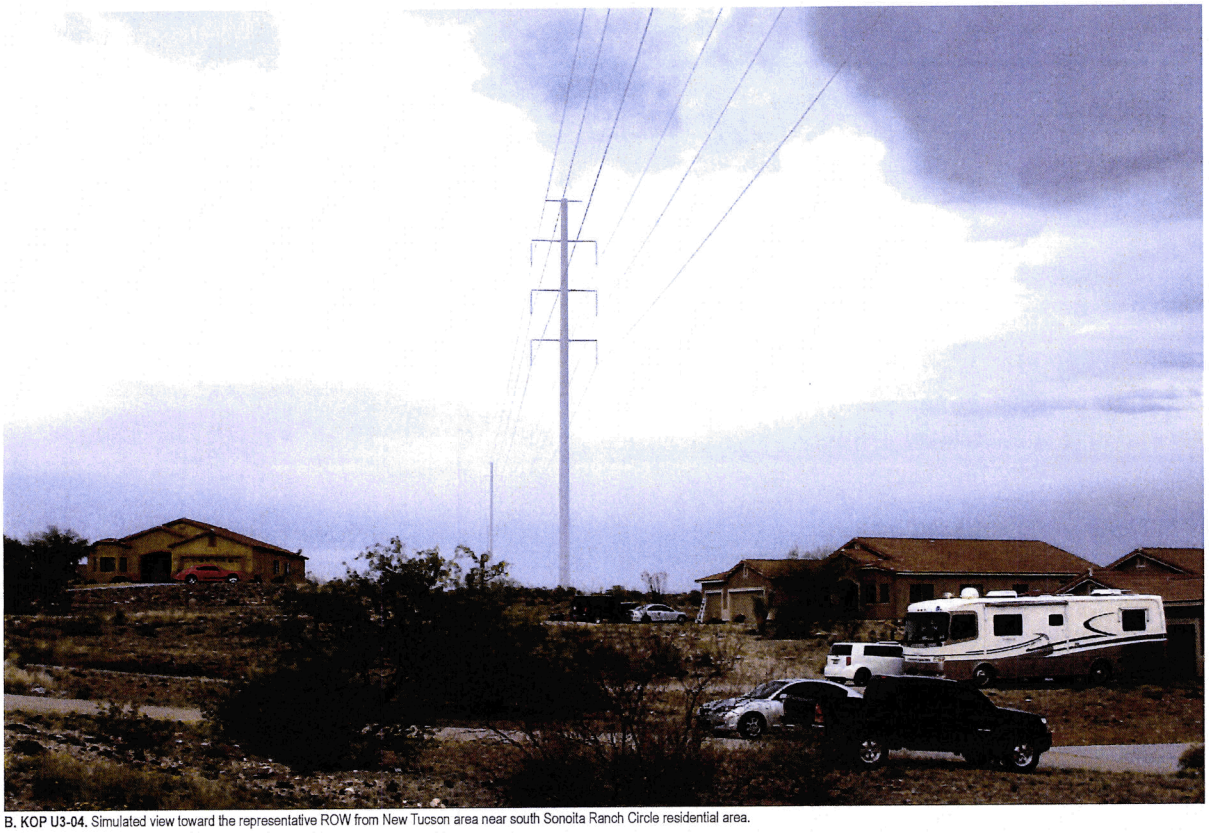
FIGURE B-57
KOP H-03. View from Rural Residences in Mescal
Southline Transmission Project

KOP U3-03. Existing view toward the representative ROW crossing of Scenic Highway 83.

FIGURE B-58
KOP U3-03. View from Highway 83
Southline Transmission Project



A. KOP U3-04. Existing view toward the representative ROW from New Tucson area near south Sonoita Ranch Circle residential area.



B. KOP U3-04. Simulated view toward the representative ROW from New Tucson area near south Sonoita Ranch Circle residential area.

FIGURE B-59
KOP U3-04. View from Sonoita Ranch
Southline Transmission Project

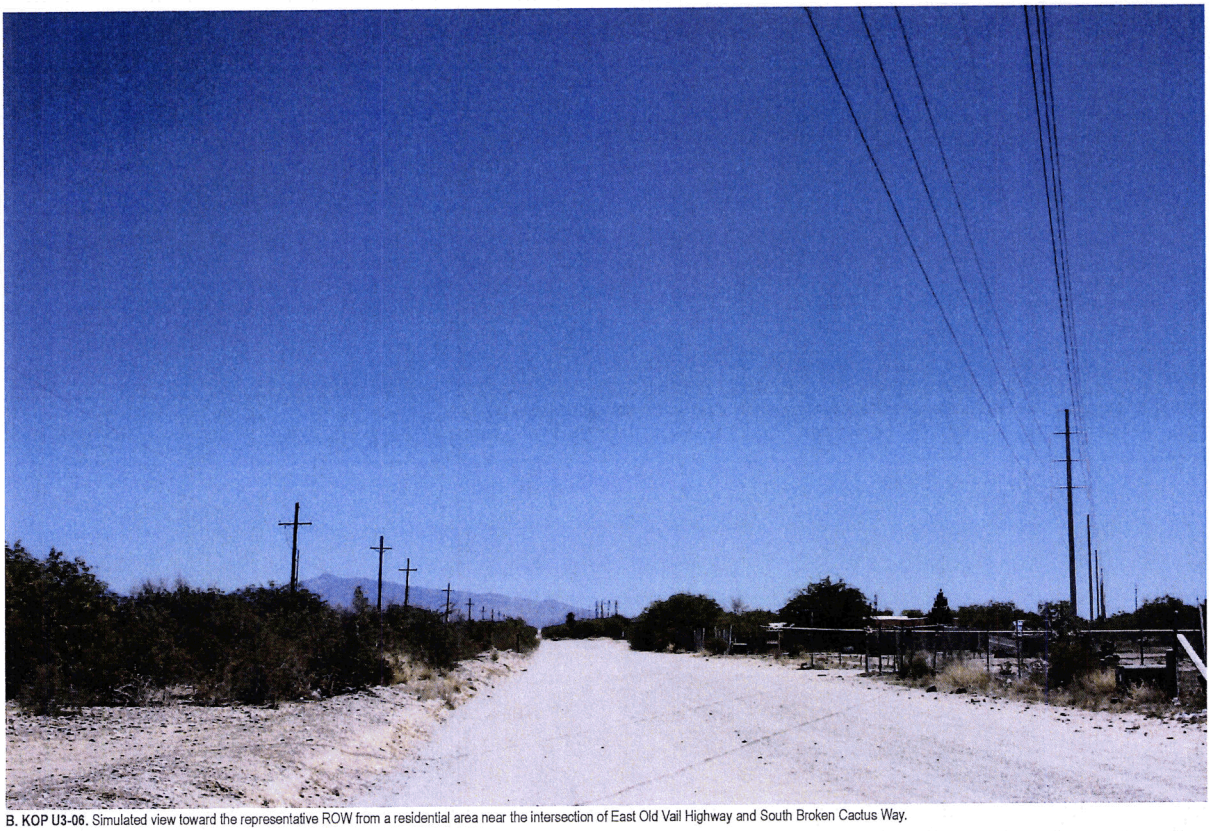
CH2MHILL

KOP U3-05. Existing view toward the representative ROW from the southwest corner of the Pima County Fairground complex.

FIGURE B-60
KOP U3-05. View from Tucson Raceway Park
Southline Transmission Project

CH2MHILL

A. KOP U3-06. Existing view toward the representative ROW from a residential area near the intersection of East Old Vail Highway and South Broken Cactus Way.



B. KOP U3-06. Simulated view toward the representative ROW from a residential area near the intersection of East Old Vail Highway and South Broken Cactus Way.

FIGURE B-61
KOP U3-06. View from East Old Vail Highway
Southline Transmission Project

CH2MHILL

KOP U3-07. Existing view toward the representative ROW from tribal land near San Xavier Mission.

FIGURE B-62
KOP U3-07. View from Mission San Xavier del Bac
Southline Transmission Project

CH2MHILL

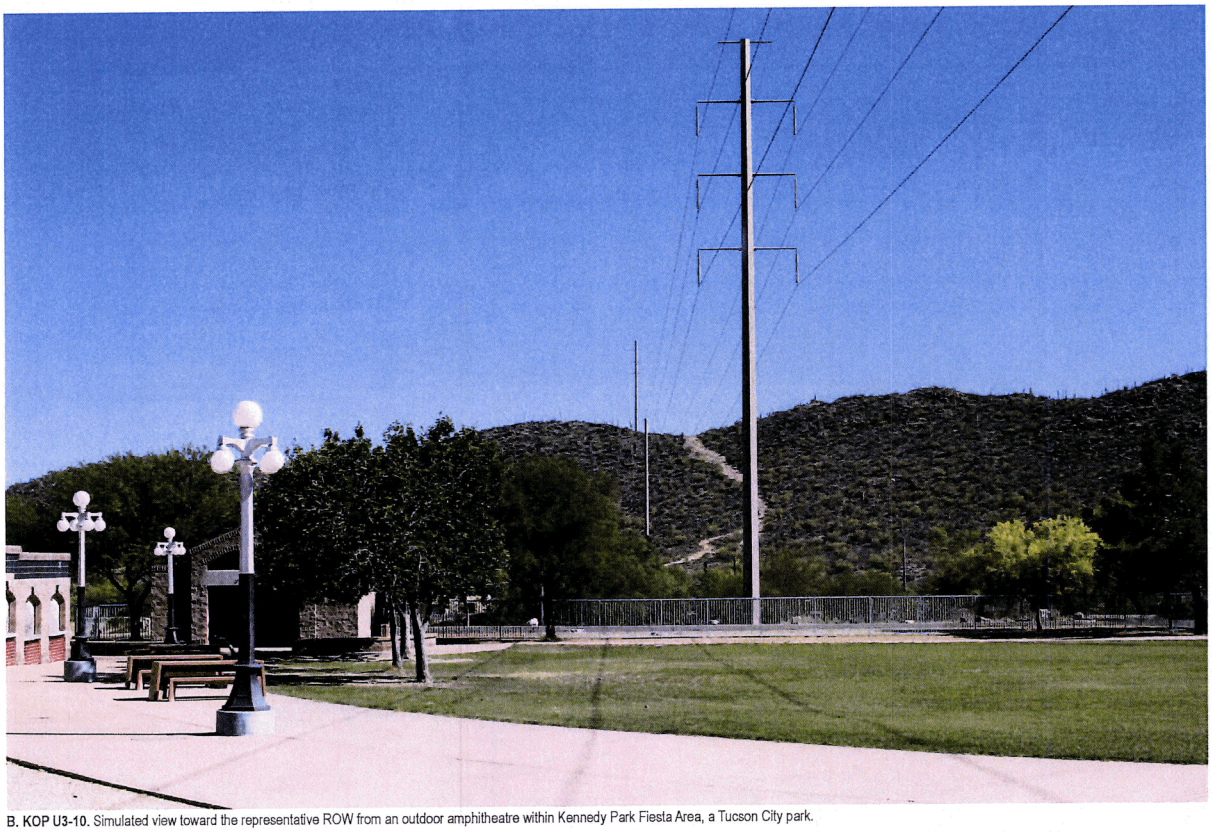
KOP U3-08. Existing view toward the representative ROW from Santa Cruz River Bikeway East River Trail system.

FIGURE B-63
KOP U3-08. View from Santa Cruz River Bikeway
Southline Transmission Project

KOP U3-09. Existing view toward the representative ROW from a residential area along South Newcastle Court.

FIGURE B-64
KOP U3-09. View from South Newcastle Court
Southline Transmission Project

A. KOP U3-10. Existing view toward the representative ROW from an outdoor amphitheatre within Kennedy Park Fiesta Area, a Tucson City park.



B. KOP U3-10. Simulated view toward the representative ROW from an outdoor amphitheatre within Kennedy Park Fiesta Area, a Tucson City park.

FIGURE B-65
KOP U3-10. View from Kennedy Park Fiesta Area
Southline Transmission Project

CH2MHILL

A. KOP U3-11. Existing view toward the representative ROW from Explorers Trail within Tucson Mountain Park, Pima County.

B. KOP U3-11. Simulated view toward the representative ROW from Explorers Trail within Tucson Mountain Park, Pima County.

FIGURE B-66
KOP U3-11. View from Explorers Trail
Southline Transmission Project

KOP U3-12. Existing view toward the representative ROW from Sentinel Peak Observation Area, a Tucson City park.

FIGURE B-67
KOP U3-12. View from Sentinel Peak Observation Area
Southline Transmission Project

A. KOP U3-13. Existing view toward the representative ROW from Tumamoc Hill Road.

B. KOP U3-13. Simulated view toward the representative ROW from Tumamoc Hill Road.

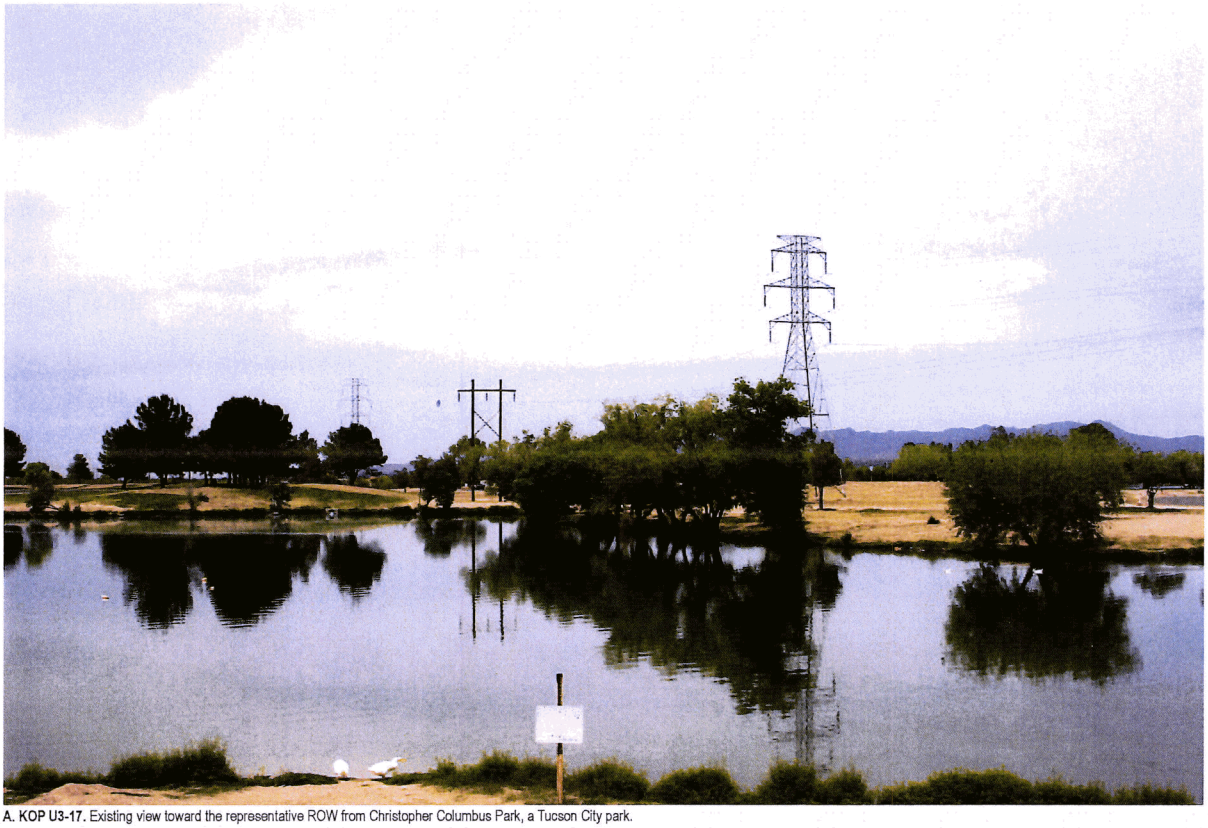
FIGURE B-68
KOP U3-13. View from Tumamoc Hill Road
Southline Transmission Project

KOP U3-15. Existing view toward the representative ROW from the river crossing along the trail near Juhan Park, a Tucson City park.

FIGURE B-70
KOP U3-15. View from Santa Cruz Riverbed
Southline Transmission Project

KOP U3-16. Existing view toward the representative ROW from Silverbell Golf Course, a Tucson City public golf course.

FIGURE B-71
KOP U3-16. View from Silverbell Public Golf Course
Southline Transmission Project



A. KOP U3-17. Existing view toward the representative ROW from Christopher Columbus Park, a Tucson City park.

B. KOP U3-17. Simulated view toward the representative ROW from Christopher Columbus Park, a Tucson City park.

FIGURE B-72
KOP U3-17. View from Silverbell Lake
Southline Transmission Project

KOP U3-19. Existing view toward the representative ROW from West Picture Rocks Road, located at entry to Saguaro National Park.

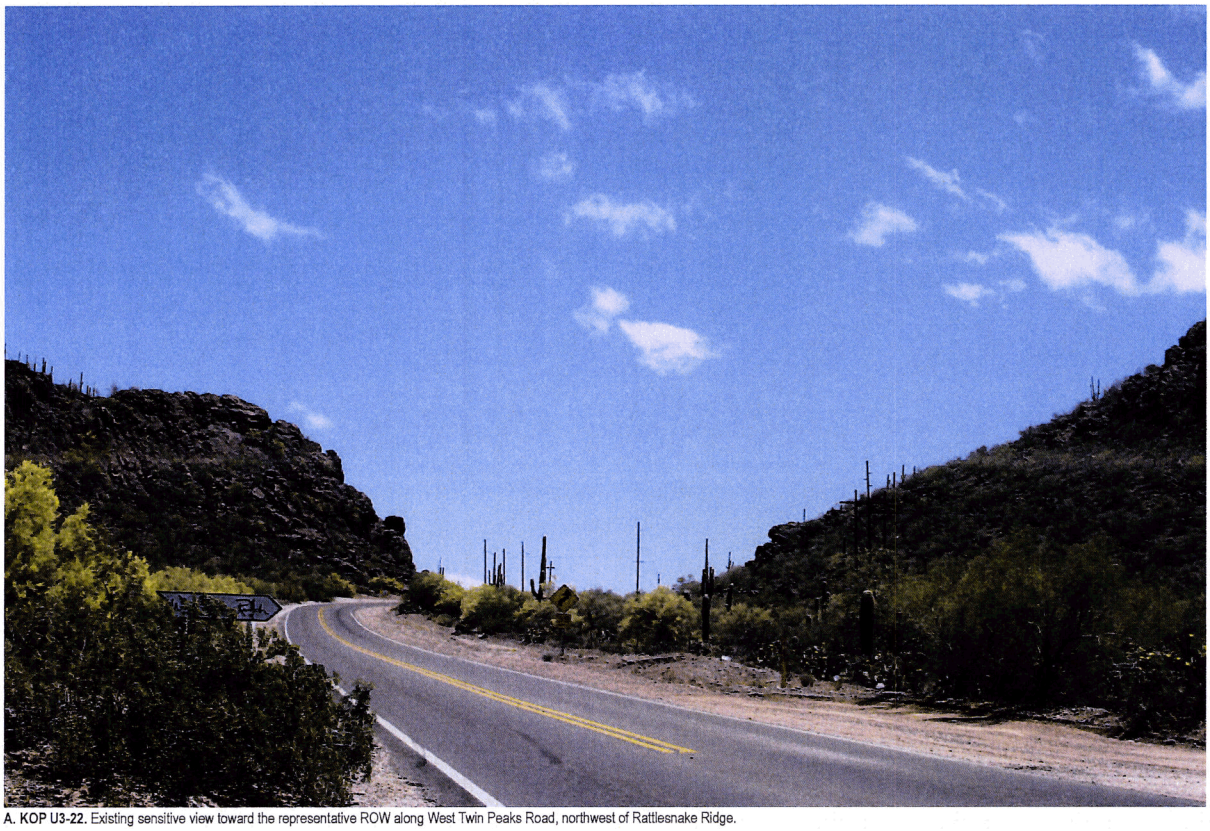
FIGURE B-74
KOP U3-19. View from Saguaro National Park Entrance
Southline Transmission Project

KOP U3-20. Existing view toward the representative ROW from a residential area near the community of Marana.

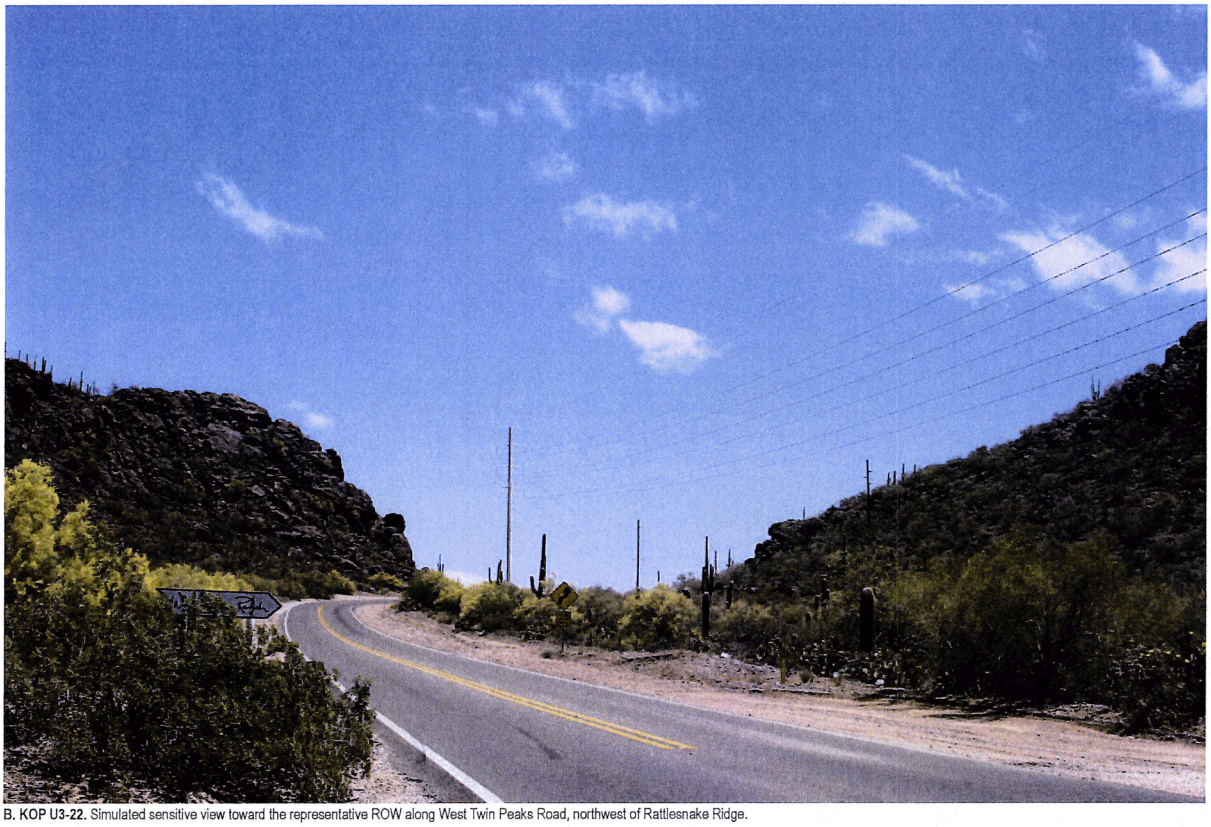
FIGURE B-75
KOP U3-20. View from Wade Road
Southline Transmission Project

KOP U3-21. Existing view toward the representative ROW looking through a mixed commercial and residential area, southeast of Rattlesnake Ridge.

FIGURE B-76
KOP U3-21. View from North Silverbell Road
Southeast of Rattlesnake Ridge
Southline Transmission Project



A. KOP U3-22. Existing sensitive view toward the representative ROW along West Twin Peaks Road, northwest of Rattlesnake Ridge.



B. KOP U3-22. Simulated sensitive view toward the representative ROW along West Twin Peaks Road, northwest of Rattlesnake Ridge.

FIGURE B-77
KOP U3-22. View from West Twin Peaks Road
Southline Transmission Project

A. KOP U3-23. Existing view toward the representative ROW from a rural residential area along Silverbell Road historic auto route.

B. KOP U3-23. Simulated view toward the representative ROW from a rural residential area along Silverbell Road historic auto route.

FIGURE B-78
KOP U3-23. View from Silverbell Road
Historic Auto Route
Southline Transmission Project

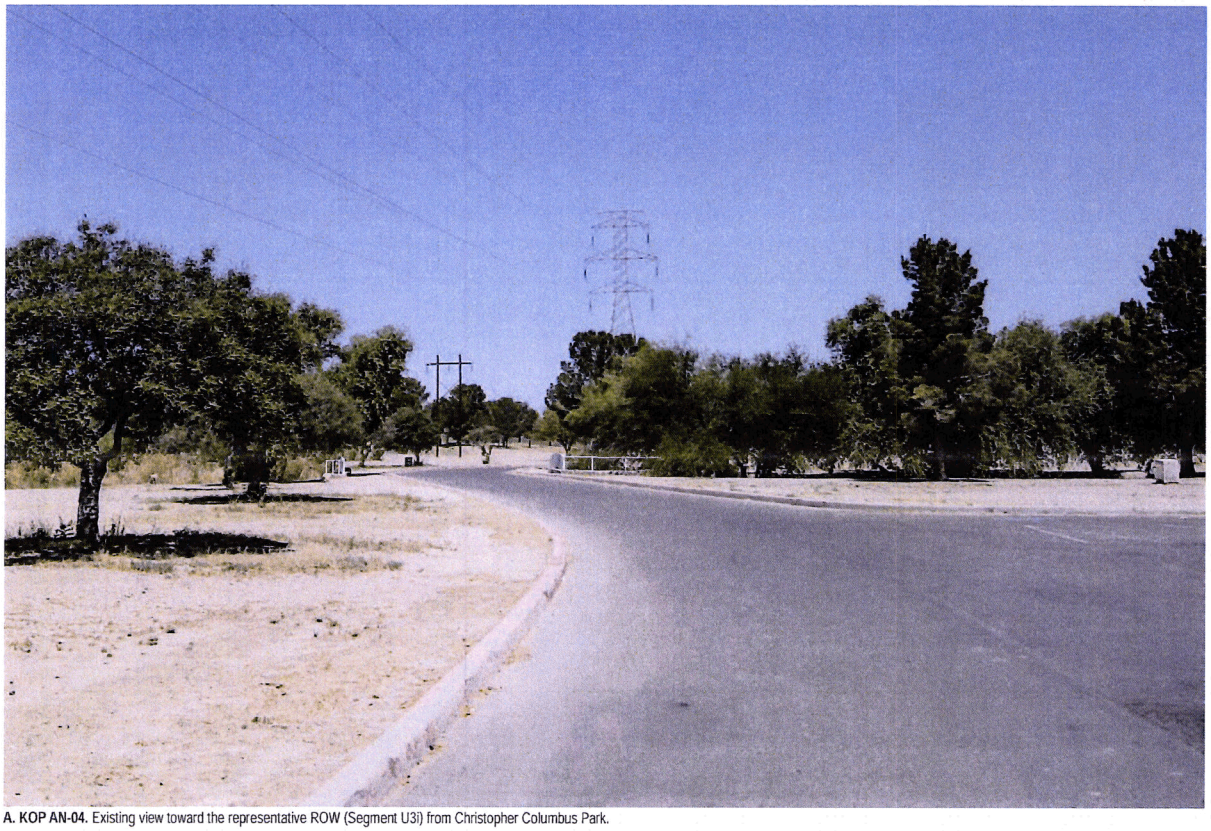
KOP U3-24. Existing view toward the representative ROW from Red Rock residential area in Pima County.

FIGURE B-79
KOP U3-24. View from Red Rock
Southline Transmission Project

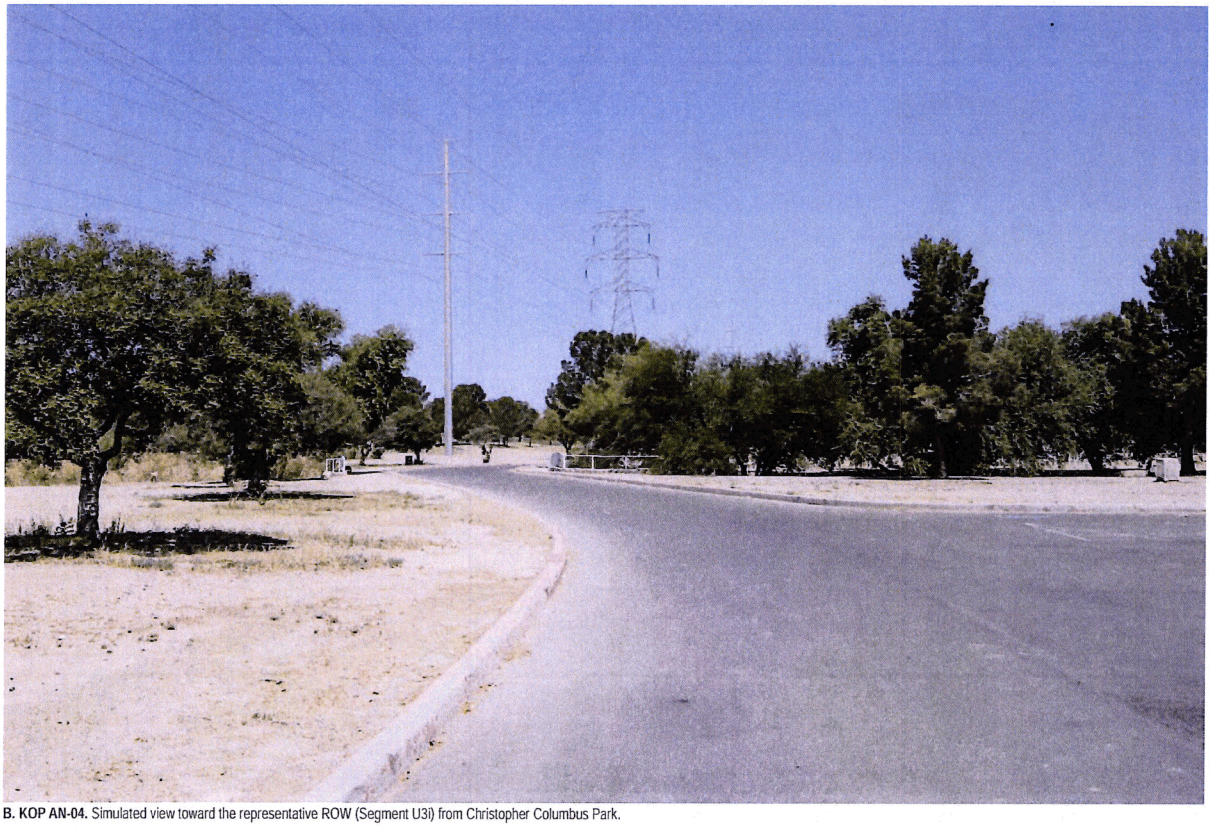
A. KOP **NPS-02.** Existing view toward the representative ROW (Segment TH3b) from the bike trail just east of the river bed and west of Interstate 10.

B. KOP **NPS-02.** Simulated view toward the representative ROW from (Segment TH3b) the bike trail just east of the river bed and west of Interstate 10.

FIGURE B-91
KOP NPS-02. View from bike trial just east of river bed and west of Interstate 10
Southline Transmission Project



A. KOP AN-04. Existing view toward the representative ROW (Segment U3i) from Christopher Columbus Park.



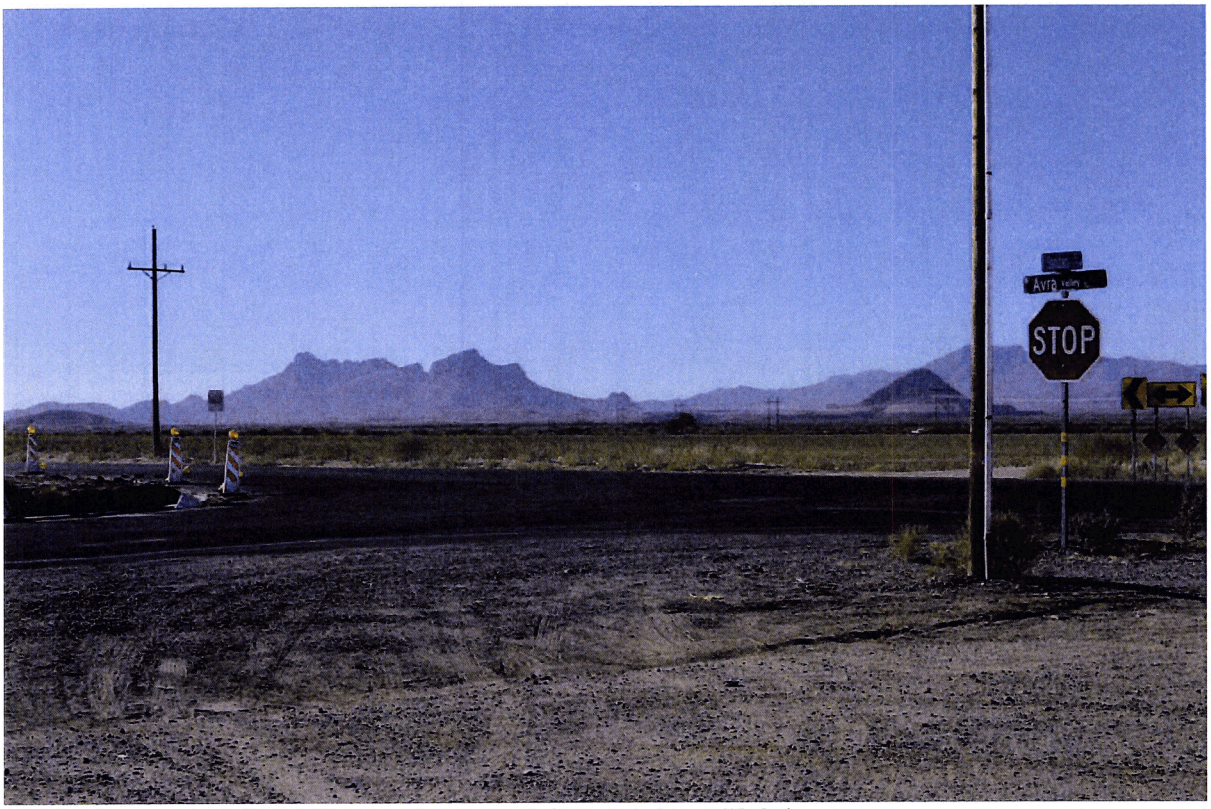
B. KOP AN-04. Simulated view toward the representative ROW (Segment U3i) from Christopher Columbus Park.

FIGURE B-84
KOP AN-04. View from Christopher Columbus Park
Southline Transmission Project

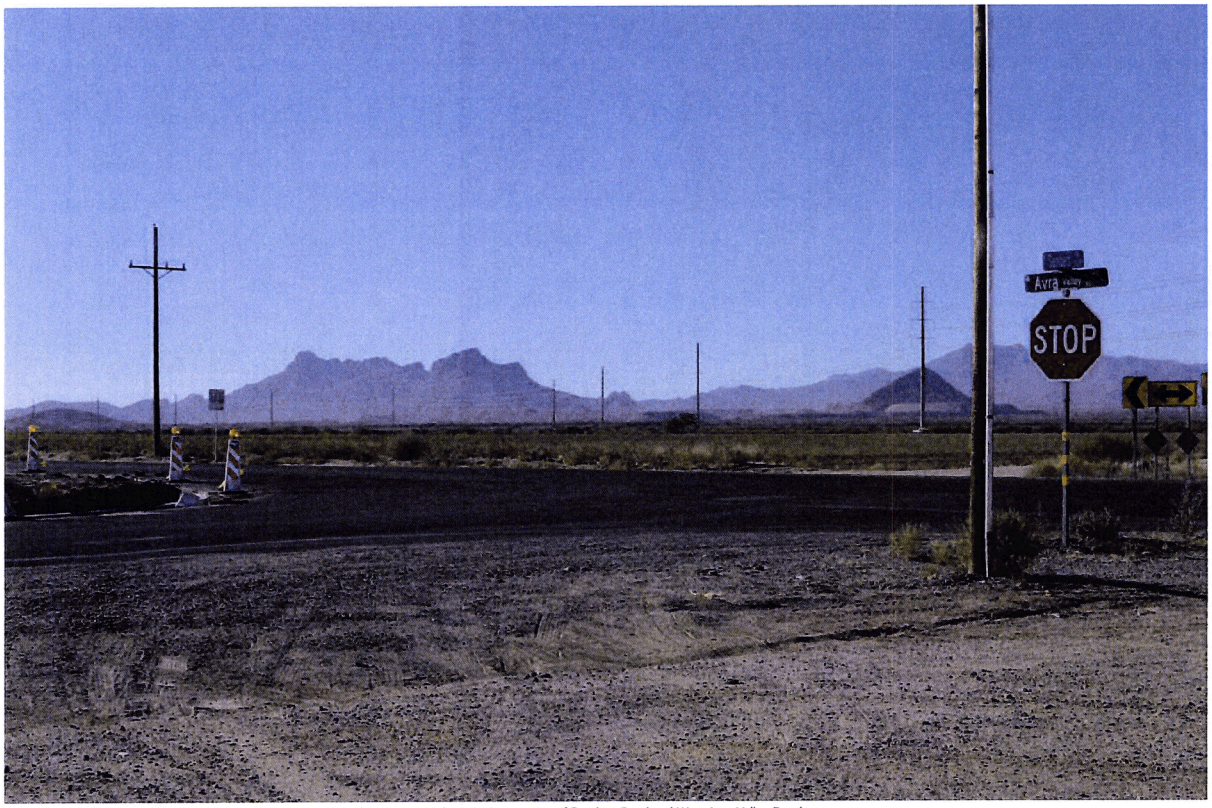
A. KOP AN-12. Existing view toward the representative ROW (Segment U3k) from North Aguirre Road west of Pinal Airpark along a portion of a planned recreational trail.

B. KOP AN-12. Simulated view toward the representative ROW (Segment U3k) from North Aguirre Road west of Pinal Airpark along a portion of a planned recreational trail.

FIGURE B-88
KOP AN-12. View from North Aguirre Road west of Pinal Airpark
Southline Transmission Project

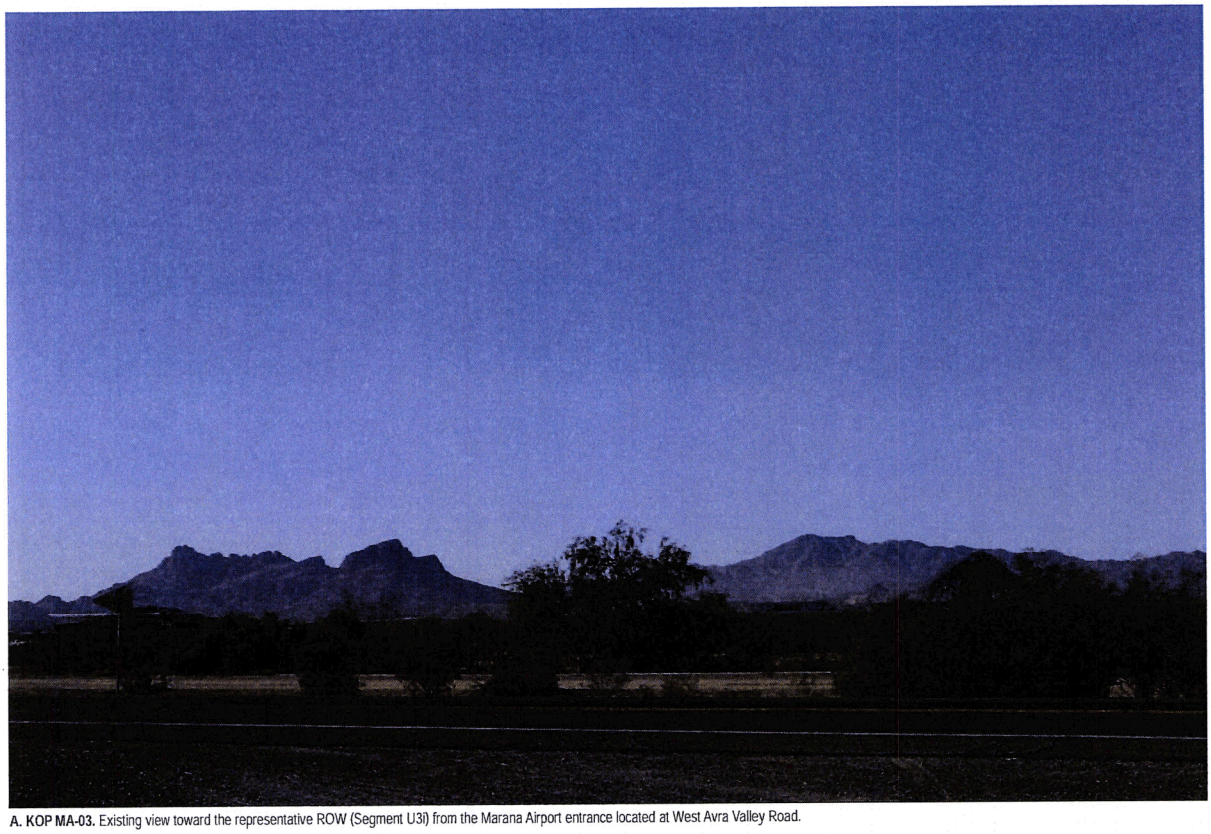


A. KOP MA-02. Existing view toward the representative ROW (Segment U3j) from the intersection of Sanders Road and West Avra Valley Road.

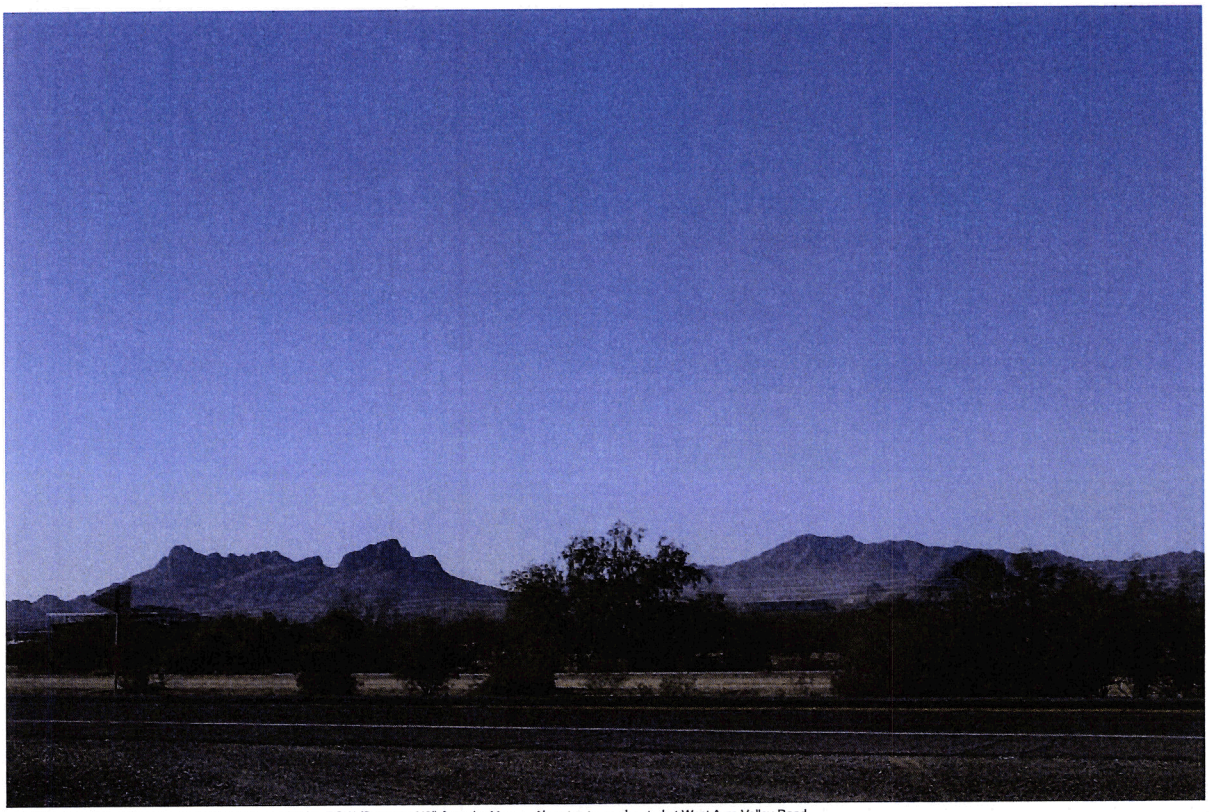


B. KOP MA-02. Simulated view toward the representative ROW (Segment U3j) from the intersection of Sanders Road and West Avra Valley Road.

FIGURE B-87
KOP MA-02. View from the intersection of Sanders Road and West Avra Valley Road
Southline Transmission Project

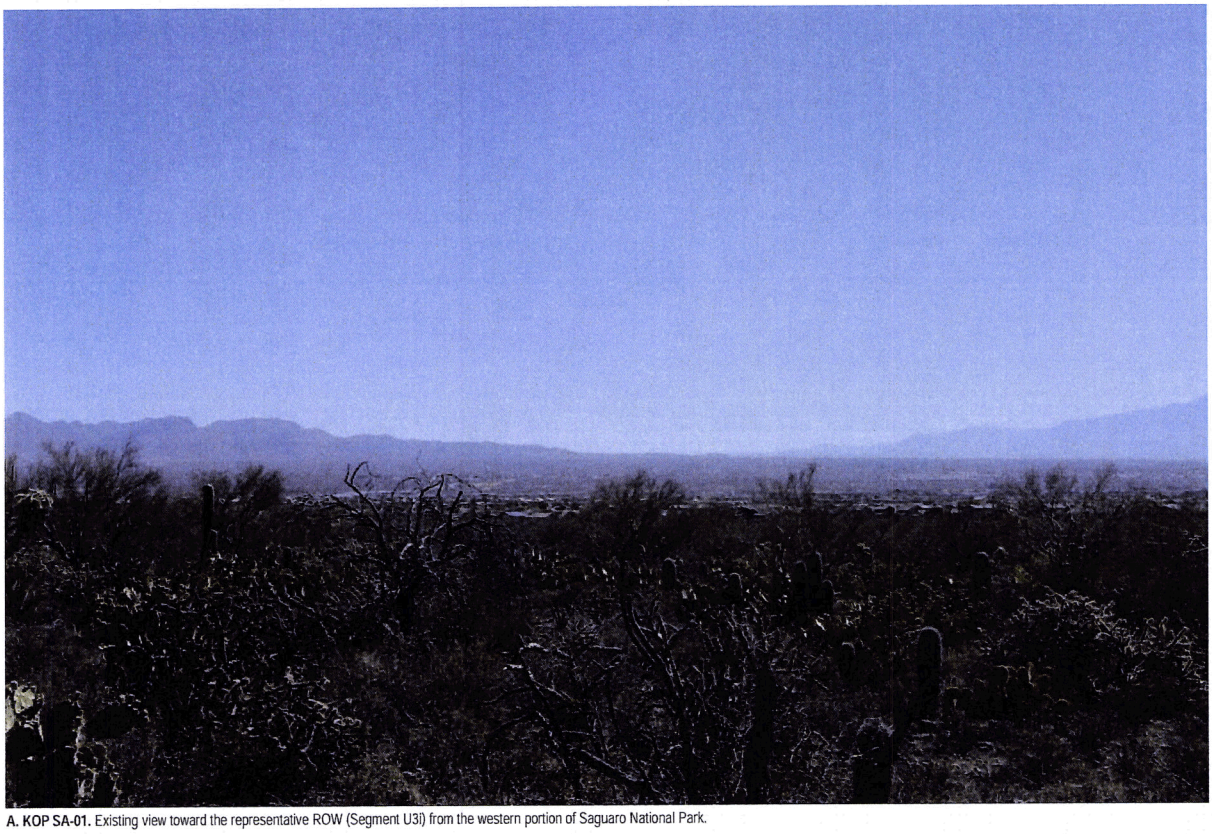


A. KOP MA-03. Existing view toward the representative ROW (Segment U3i) from the Marana Airport entrance located at West Avra Valley Road.

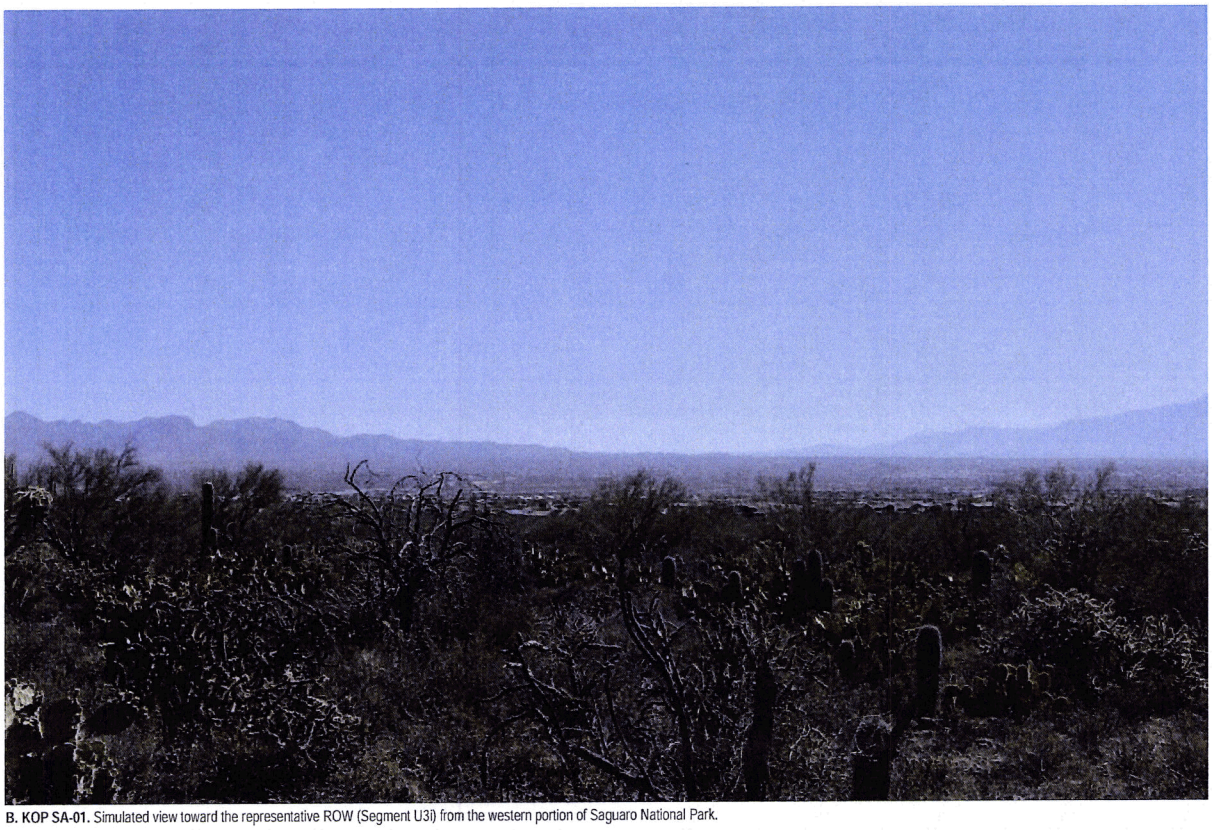


B. KOP MA-03. Simulated view toward the representative ROW (Segment U3i) from the Marana Airport entrance located at West Avra Valley Road.

FIGURE B-89
KOP MA-03. View from Marana Airport entrance
Southline Transmission Project

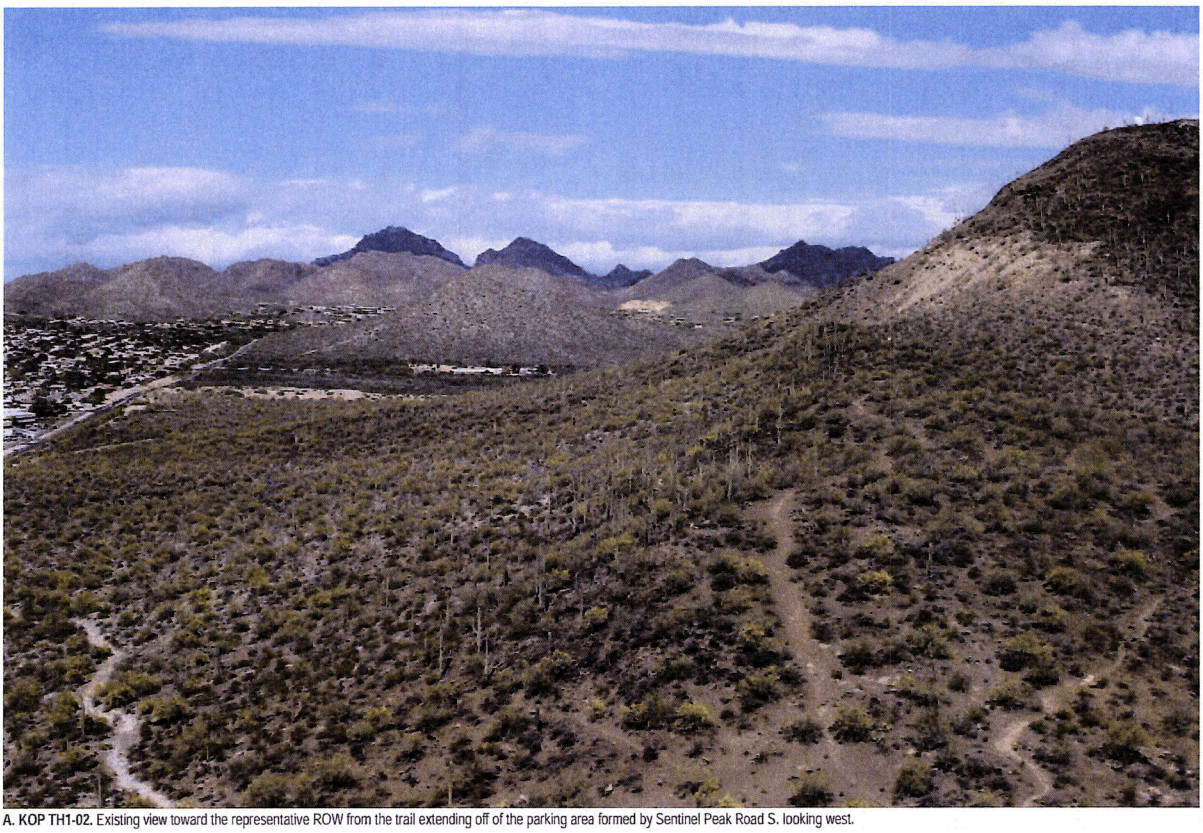


A. KOP SA-01. Existing view toward the representative ROW (Segment U3i) from the western portion of Saguaro National Park.

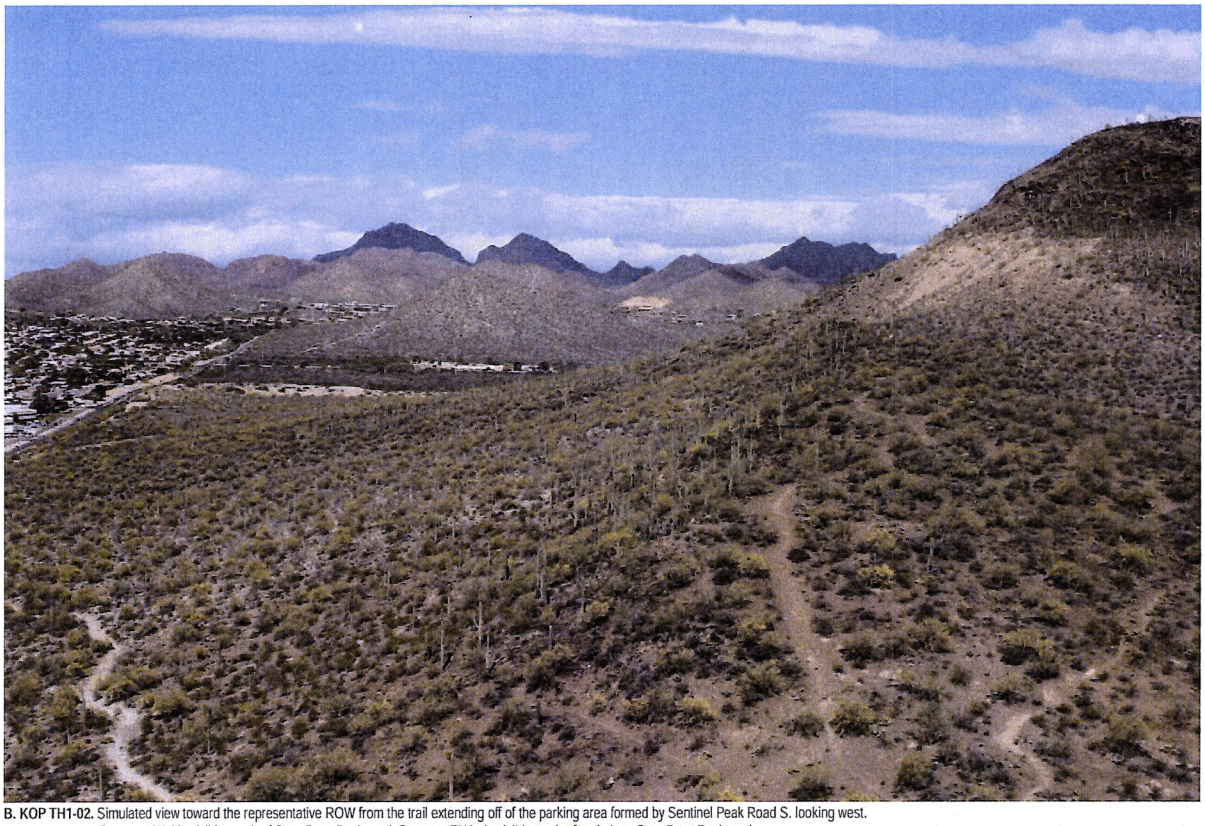


B. KOP SA-01. Simulated view toward the representative ROW (Segment U3i) from the western portion of Saguaro National Park.

FIGURE B-90
KOP SA-01. View from Saguaro National Park
Southline Transmission Project



A. KOP TH1-02. Existing view toward the representative ROW from the trail extending off of the parking area formed by Sentinel Peak Road S. looking west.



B. KOP TH1-02. Simulated view toward the representative ROW from the trail extending off of the parking area formed by Sentinel Peak Road S. looking west.
Segment U3d is visible south of Starr Pass Boulevard. Segment TH1a is visible north of and along Starr Pass Boulevard.

FIGURE B-83
KOP TH1-02. View from trail located off of South Sentinel Peak Road looking west
Southline Transmission Project

A. KOP TH1-S1. Existing view facing north toward the representative ROW (Segment U3e) from West Starr Pass Boulevard between South Coati Drive and South Bison Drive.

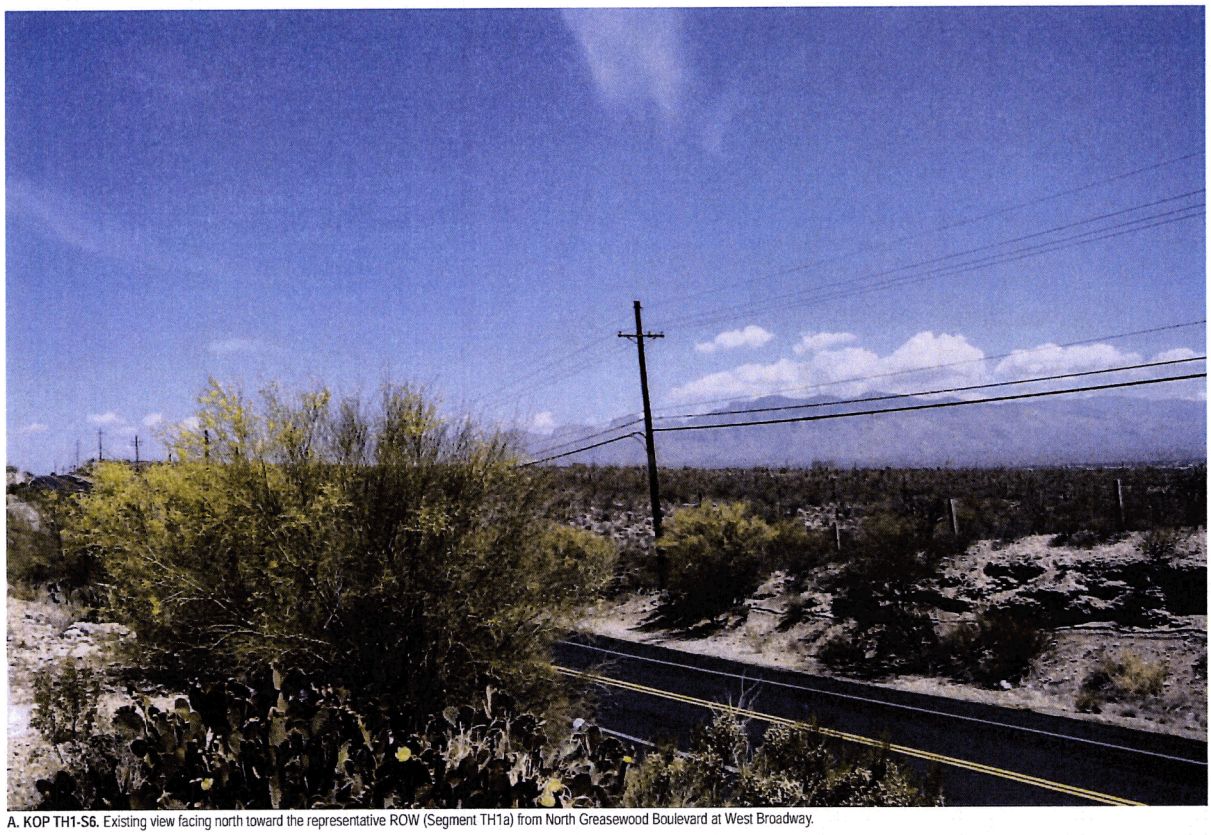
B. KOP TH1-S1. Simulated view facing north toward the representative ROW (Segment U3e) from West Starr Pass Boulevard between South Coati Drive and South Bison Drive.

FIGURE B-80
KOP TH1-S1. View from West Starr Pass Boulevard between South Coati Drive and South Bison Drive
Southline Transmission Project

A. KOP TH1-S3. Existing view facing east toward the representative ROW from West Starr Pass Boulevard near Park W Lane.

B. KOP TH1-S3. Simulated view facing east toward the representative ROW from West Starr Pass Boulevard near Park W Lane. Segment TH1a is visible north of and along Starr Pass Boulevard. Segment U3d is visible south of Starr Pass Boulevard.

FIGURE B-81
KOP TH1-S3. View from West Starr Pass Boulevard near Park W Lane
Southline Transmission Project



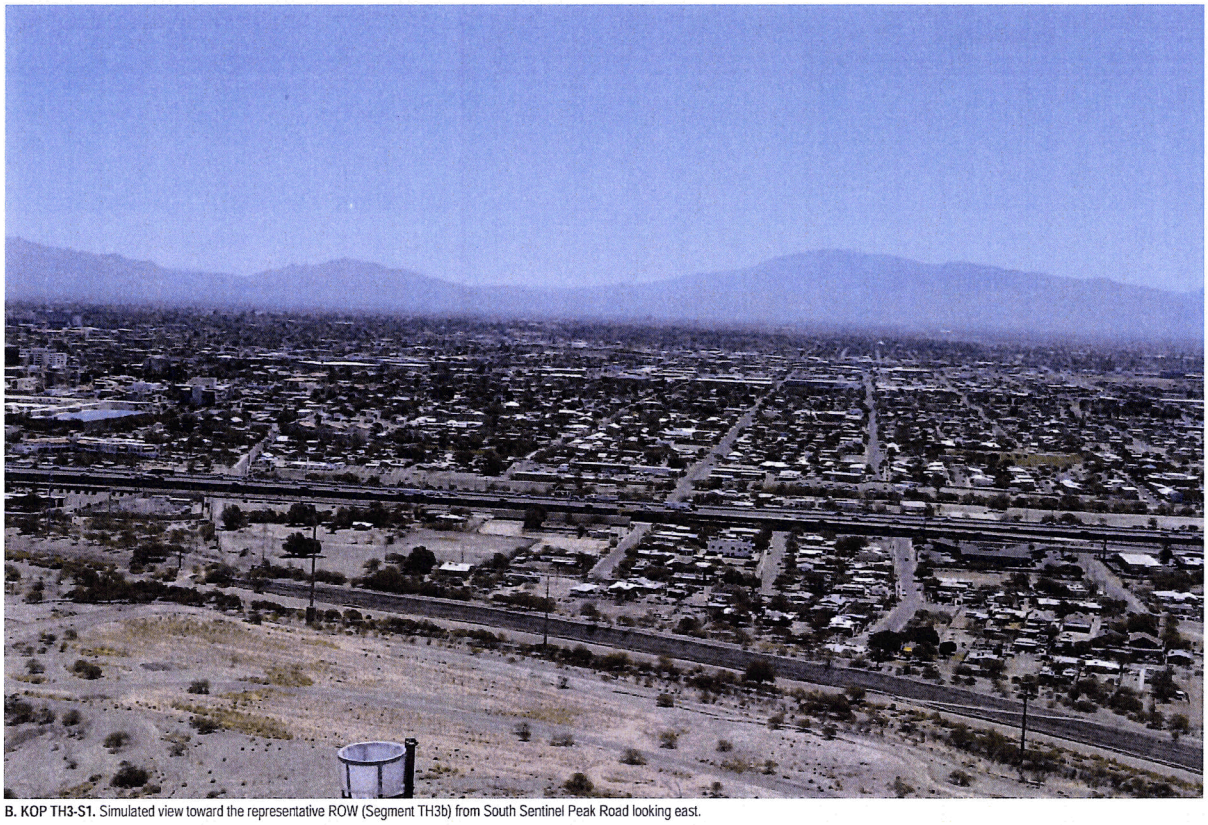
A. KOP TH1-S6. Existing view facing north toward the representative ROW (Segment TH1a) from North Greasewood Boulevard at West Broadway.

B. KOP TH1-S6. Simulated view facing north toward the representative ROW (Segment TH1a) from North Greasewood Boulevard at West Broadway.

FIGURE B-82
KOP TH1-S6. View from North Greasewood Boulevard at West Broadway
Southline Transmission Project

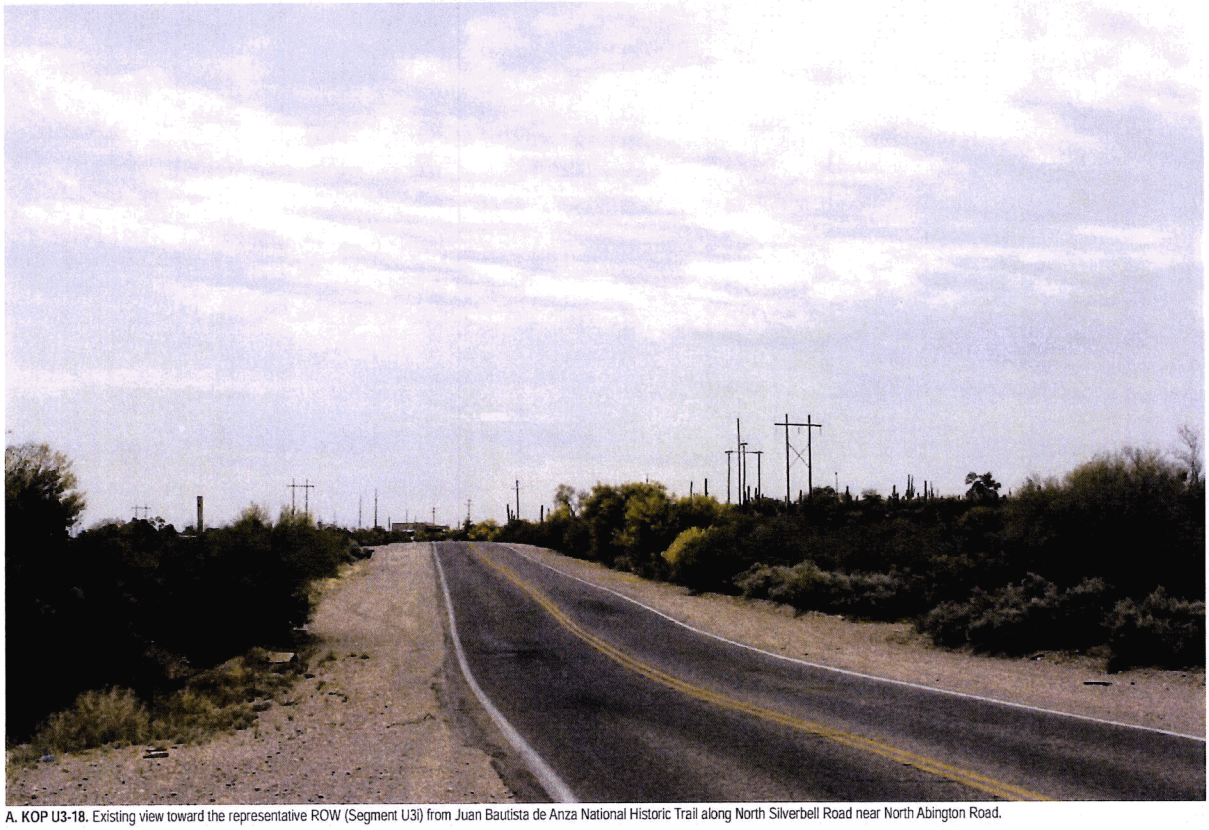
CH2MHILL

A. KOP TH3-S1. Existing view toward the representative ROW (Segment TH3b) from South Sentinel Peak Road looking east.

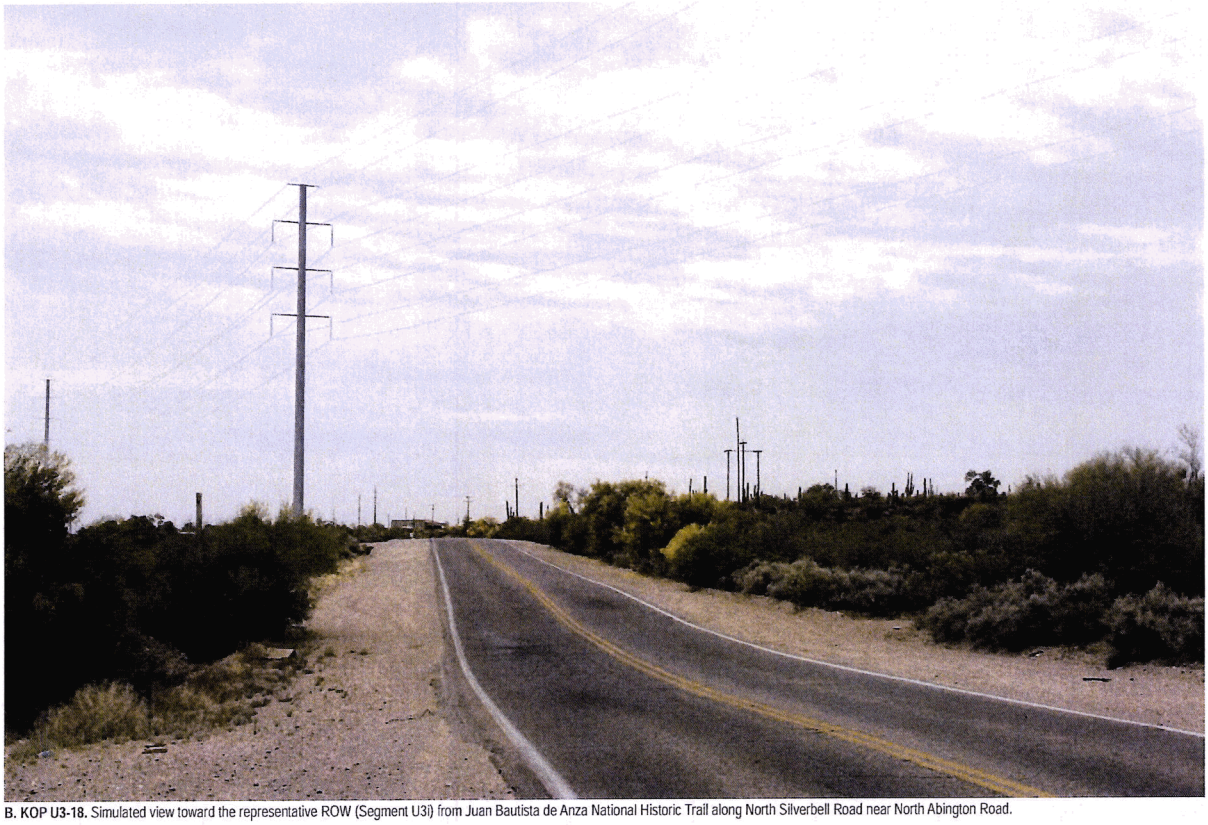


B. KOP TH3-S1. Simulated view toward the representative ROW (Segment TH3b) from South Sentinel Peak Road looking east.

FIGURE B-86
KOP TH3-S1. View from South Sentinel Peak Road looking east
Southline Transmission Project



A. KOP U3-18. Existing view toward the representative ROW (Segment U3i) from Juan Bautista de Anza National Historic Trail along North Silverbell Road near North Abington Road.



B. KOP U3-18. Simulated view toward the representative ROW (Segment U3i) from Juan Bautista de Anza National Historic Trail along North Silverbell Road near North Abington Road.

FIGURE B-85
KOP U3-18. View from Juan Bautista de Anza National Historic Trail
Southline Transmission Project

CH2MHILL

A. KOP TH1-03. Existing view from Sentinel Peak at Tumamoc Hill oriented towards Local Alternatives TH1b and TH1c in the Upgrade Section.

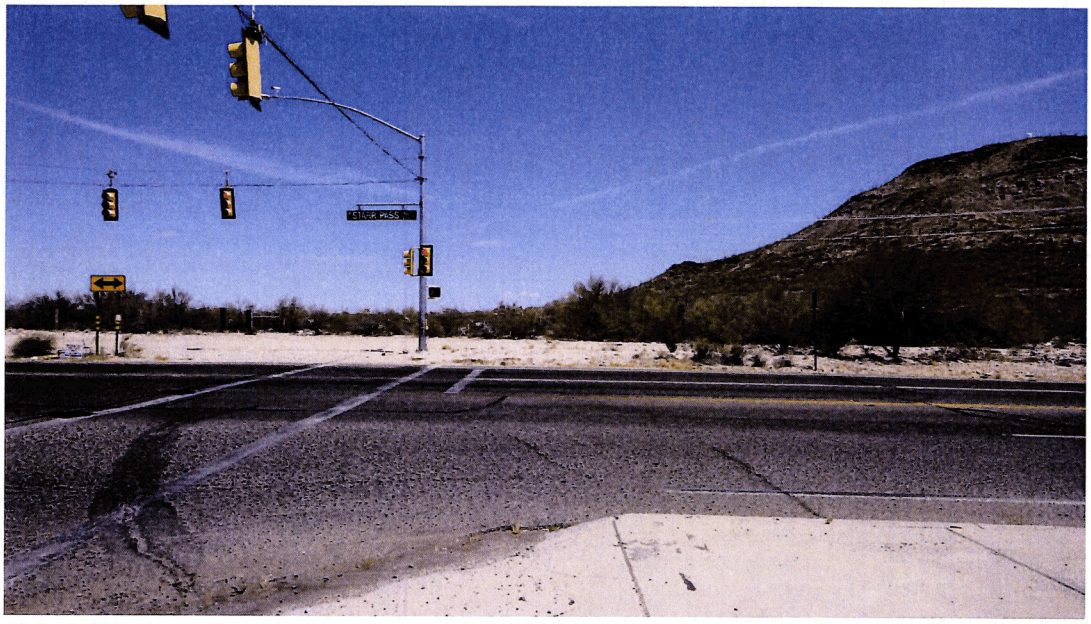
B. KOP TH1-03. Simulated view from Sentinel Peak at Tumamoc Hill oriented towards Local Alternatives TH1b and TH1c in the Upgrade Section.

Figure B-92.
KOP TH1-03. View from Sentinel Peak at Tumamoc Hill.
Southline Transmission Project

A. KOP U3-07a. Existing view from San Xavier Mission oriented toward subroute U3a in the Upgrade Section.

B. KOP U3-07a. Simulated view from San Xavier Mission oriented toward subroute U3a in the Upgrade Section.

Figure B-93.
KOP U3-07a. View from San Xavier Mission on the Tohono O'odham Nation
Southline Transmission Project



KOP TH1-S2. Existing view along West Starr Pass Boulevard toward representative ROW for local alternative TH1a, which would be visible with Tumamoc Hill in the background.

KOP TH1-S4. Existing view along Greasewood Road just south of the Tolson Elementary School, providing view of local alternative that would run along Greasewood Road to avoid the Tumamoc Hill area.

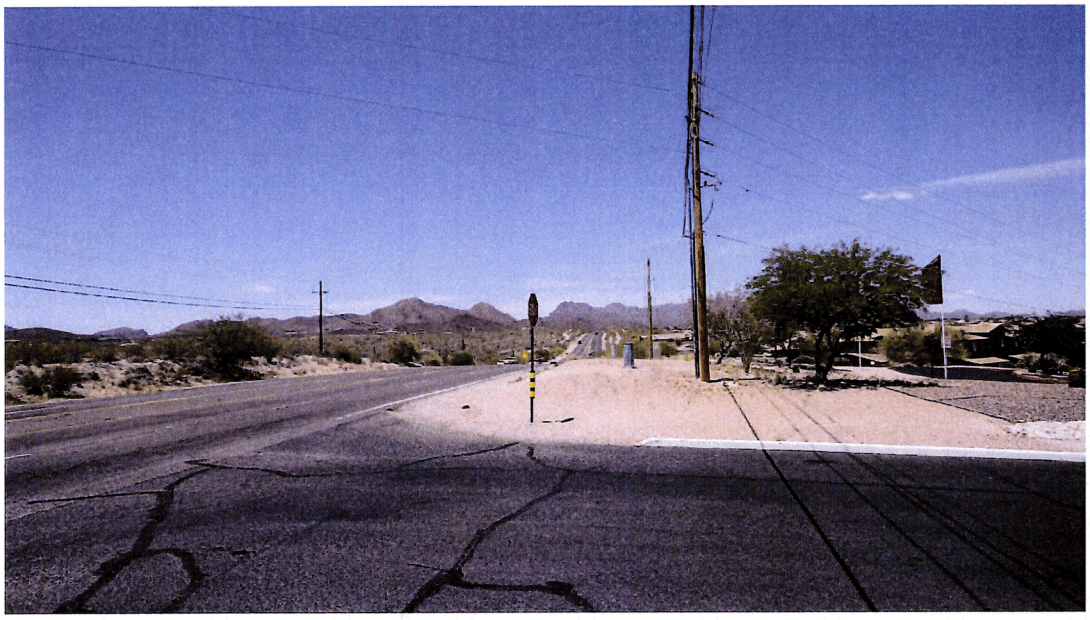
Figure B-94.
KOP TH1. Views from West Star Pass Boulevard and Greasewood Road.
Southline Transmission Project

KOP TH1-S5. Existing view from residential area (West Calle Tonala) just west of Greasewood Road toward Tumamoc Hill and the local alternative that would avoid Tumamoc Hill.

Figure B-95.
KOP TH1. View from West Calle Tonala
Southline Transmission Project

KOP TH1-S7. Existing view toward the representative ROW from Greasewood Road and Speedway Boulevard.

Figure B-96.
KOP TH1-S7. View from Greasewood Road.
Southline Transmission Project

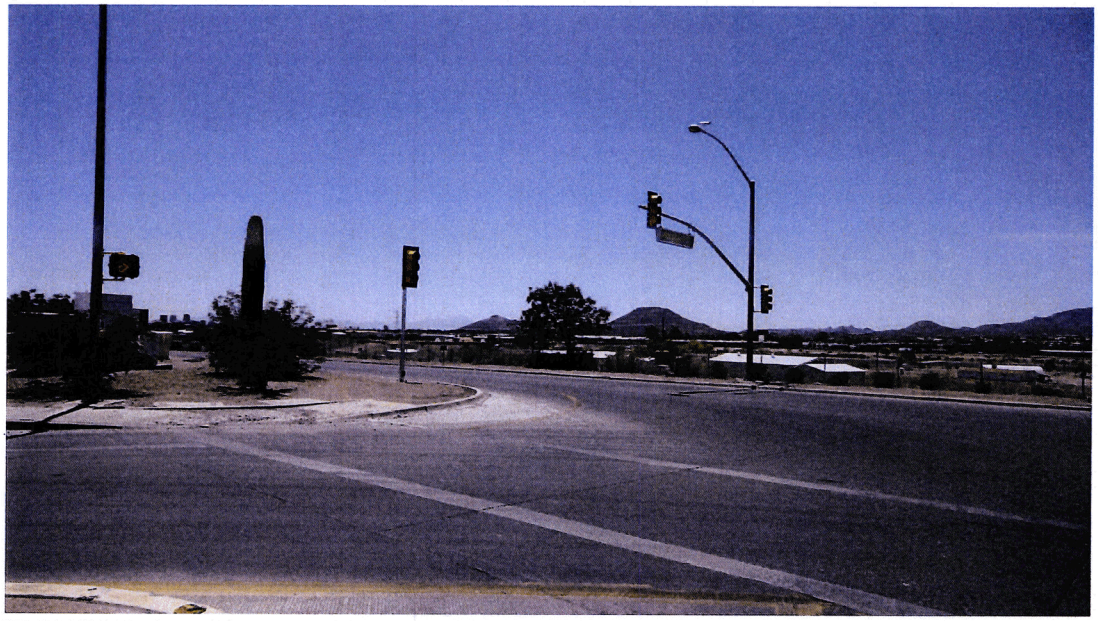


KOP TH1-S8. Existing view toward the representative ROW from Speedway Boulevard.

Figure B-97.
KOP TH1-S8. View from Speedway Boulevard.
Southline Transmission Project

KOP TH1-S9. Existing view toward the representative ROW from North El Rio Drive near El Rio Golf Course, a Tucson City public golf course.

Figure B-98.
KOP TH1-S9. View from North El Rio Drive.
Southline Transmission Project



KOP TH1-S10. Existing view toward the representative ROW from West Miracle Mile and I-10.

Figure B-99.
KOP TH1-S10. View south towards Grant Road from West Miracle Mile.
Southline Transmission Project

KOP TH3-R1. Existing view toward the representative ROW from the Loop on the Santa Cruz River Bikeway.

Figure B-100.
KOP TH3-R1. View from the Santa Cruz River.
Southline Transmission Project

KOP TH3-R2. Existing view toward the representative ROW from the Loop on the Santa Cruz River Bikeway.

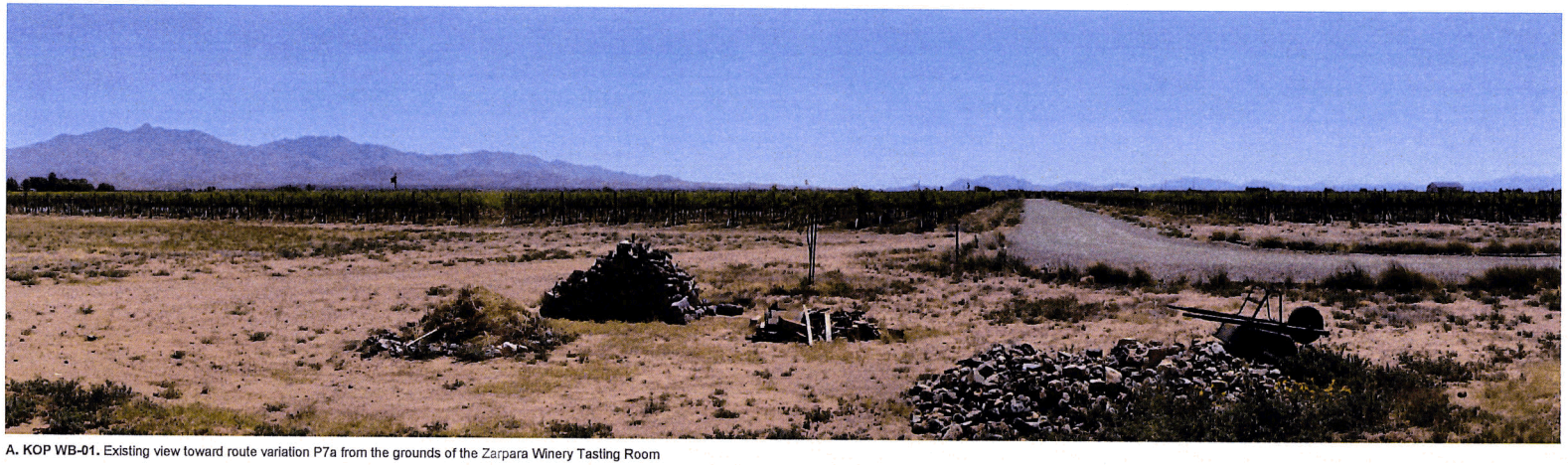
Figure B-101.
KOP TH3-R2. View from West St. Mary's Road.
Southline Transmission Project

KOP TH3-R3. Existing view toward the representative ROW from the Garden of Gethsemane, a Tucson City park.

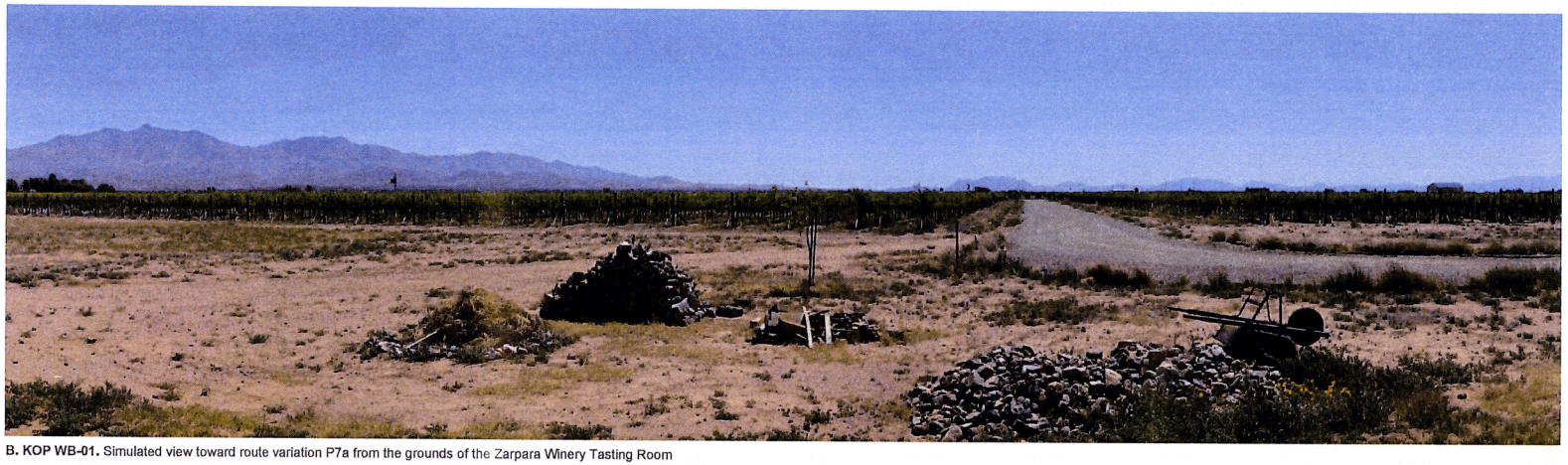
Figure B-102.
KOP TH3-R3. View from Garden of Gethsemane along Loop bikeway.
Southline Transmission Project

KOP TH3-R4. Existing view toward the representative ROW from the Loop on the Santa Cruz River Bikeway.

Figure B-103.
KOP TH3-R4. View from the Santa Cruz River.
Southline Transmission Project



A. KOP WB-01. Existing view toward route variation P7a from the grounds of the Zarpara Winery Tasting Room



B. KOP WB-01. Simulated view toward route variation P7a from the grounds of the Zarpara Winery Tasting Room

Figure B-104.
KOP WB-01. View from the Zarpara Winery Tasting Room
Southline Transmission Project

A. KOP WB-02. Existing view toward route variation P7a from grounds of the Pillsbury Winery Tasting Room

B. KOP WB-02. Simulated view toward route variation P7a from grounds of the Pillsbury Winery Tasting Room

Figure B-105.
KOP WB-02. View from the Pillsbury Winery Tasting Room
Southline Transmission Project

A. KOP WB-02. Existing view toward route variation P7a from the backyard of the privately owned Narita Property

B. KOP WB-02. Simulated view toward route variation P7a from the backyard of the privately owned Narita Property

Figure B-106.
KOP WB-03. View from the privately owned Narita Property
Southline Transmission Project

KOP AN-03. Existing view looking north-northwest along the Loop on the Santa Cruz River Bikeway/Anza Trail.

Figure B-107.
KOP AN-03. View from the Santa Cruz River Bikeway/Anza Trail.
Southline Transmission Project

Appendix J

BLM LAND USE AUTHORIZATIONS

BLM LAND USE AUTHORIZATIONS

Section 302 of the Federal Land Policy and Management Act of 1976 (FLPMA) provides the BLM's authority to issue leases and permits for the use, occupancy, and development of the public lands. Leases and permits (i.e., land use authorizations) are issued for purposes such as a commercial filming, advertising displays, commercial or noncommercial croplands, apiaries, livestock holding or feeding areas not related to grazing permits and leases, harvesting of native or introduced species, temporary or permanent facilities for commercial purposes (does not include mining claims), residential occupancy, ski resorts, construction equipment storage sites, assembly yards, oil rig stacking sites, mining claim occupancy if the residential structures are not incidental to the mining operation, and water pipelines and well pumps related to irrigation and non-irrigation facilities. The regulations establishing procedures for the processing of these leases and permits are found in 43 Code of Federal Regulations (CFR) 2920.

The proposed Project would be categorized under the "temporary or permanent facilities for commercial purposes" and would therefore be subject to Section 302 of the FLPMA.

Table J-1 below is a listing of all of the land use authorizations that would be intersected by the proposed project's land use analysis area. In many cases, the LUA, though inside the analysis area, would not be impacted by the project since it would be located outside of the proposed Project ROW and also beyond the reach of construction disturbances (i.e., the LUA would not be physically intersected by the proposed project; the airspace above the LUA would be crossed by the transmission line span). Please refer to section 4.11.2 for a detailed analysis of the LUAs that would be intersected by the proposed Project ROW.

The geographic scope for the land use analysis area for the New Build Section is a 2-mile corridor around the action alternatives (1-mile buffer on either side of the centerline). The land use analysis area for the Upgrade Section is a 500-foot corridor (250-foot buffer on either side of the centerline. The temporal scope for the land use analysis area is the life of the project (50 years).

Table J-1. Existing Land Use Authorizations

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section – Afton Substation to Hidalgo Substation					
Las Cruces District Office	NMNM 061198	El Paso Electric Company	Power line	Route Group 1	P1, P2
Las Cruces District Office	NMNM 057029	County of Doña Ana	Road (pending)	Route Group 1	P1, P2
Las Cruces District Office	NMNM 129489	El Paso Electric Company	Power line (pending)	Route Group 1	P1, P2
Las Cruces District Office	NMLC 0 064867	El Paso Natural Gas Company	Pipeline	Route Group 1 and 2	P1, P2, P4a, P4b, P4c, LD3a,
Las Cruces District Office	NMNM 003102	El Paso Natural Gas Company	Pipeline	Route Group 1	P1, P2
Las Cruces District Office	NMNM 011755	El Paso Electric Company	Pipeline	Route Group 1	P1, P2
Las Cruces District Office	NMNM 026731	Qwest	Telephone line	Route Group 1	P1, P2
Las Cruces District Office	NMNM 034521	El Paso Natural Gas Company	Pipeline	Route Group 1	P1, P2

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section – Afton Substation to Hidalgo Substation, cont'd.					
Las Cruces District Office	NMNM 083956	El Paso Natural Gas Company	Pipeline	Route Group 1 and 2	P1, P2, P4a, P4b, P4c, LD3a,
Las Cruces District Office	NMNM 110628	El Paso Global Networks	Fiber optic	Route Group 1 and 2	P1, P2, LD3a
Las Cruces District Office	NMNM 110628	SFPP, LP	Pipeline	Route Group 1	P1, P2
Las Cruces District Office	NMNM 0 000161	El Paso Natural Gas Company	Pipeline	Route Group 1 and 2	P1, P2, DN1, LD1
Las Cruces District Office	NMNM 0 018856	SFPP, LP	Pipeline	Route Group 1	P1, P2
Las Cruces District Office	NMNM 077527	County of Doña Ana	Road	Route Group 1	P1, P2
Las Cruces District Office	NMNM 083848	El Paso Electric Company	Power line	Route Group 1	P1, P2
Las Cruces District Office	NMNM 106212	El Paso Electric Company	Power line	Route Group 1	P1, P2
Las Cruces District Office	NMNM 0 0467924	Qwest	Telephone line	Route Group 1	P1, P2
Las Cruces District Office	NMNM 007163	El Paso Natural Gas Company	Pipeline	Route Group 1	P1, P2, S1
Las Cruces District Office	NMNM 102630	Public Service Company of New Mexico	Power line	Route Group 1	P1, P2, S1
Las Cruces District Office	NMNM 106206	Public Service Company of New Mexico	Communication site	Route Group 1	P1, P2, S1
Las Cruces District Office	NMNM 110615	Public Service Company of New Mexico	Pipeline	Route Group 1	P1, P2, S1
Las Cruces District Office	NMNM 115188	SFPP, LP	Pipeline	Route Group 1	P1, P2, S1
Las Cruces District Office	NMNM 0 013347	El Paso Natural Gas Company	Road	Route Group 1	P1, P2, S1
Las Cruces District Office	NMNM 0 107835	El Paso Natural Gas Company	Power line	Route Group 1	P1, P2, S1
Las Cruces District Office	NMNM 0 329147	Qwest	Telephone line	Route Group 1	P1, P2, S1
Las Cruces District Office	NMNM 0 053219	City of Las Cruces	Pipeline	Route Group 1	P1, P2, S1
Las Cruces District Office	NMNM 086726	Santa Fe Pac PPLN	Pipeline facility site	Route Group 1	P1, P2, S1
Las Cruces District Office	NMNM 092965	El Paso Natural Gas Company	Pipeline facility site	Route Group 1	P1, P2, S1
Las Cruces District Office	NMNM 106193	El Paso Global Networks	Fiber optic	Route Group 1 and 2	P1, P2, S1, DN1, LD1
Las Cruces District Office	NMNM 106224	Public Service Company of New Mexico	Pipeline	Route Group 1	P1, P2, S1
Las Cruces District Office	NMNM 0 107835	El Paso Natural Gas Company	Power line	Route Group 1	P1, P2, S1

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section – Afton Substation to Hidalgo Substation, cont'd.					
Las Cruces District Office	NMNM 000578	El Paso Electric Company	Power line	Route Group 1	S1
Las Cruces District Office	NMNM 0 437681	Qwest	Telephone line	Route Group 1	S1
Las Cruces District Office	NMLC 0 064563	AT&T	Fiber optic	Route Group 1	S2
Las Cruces District Office	NMNM 102648	AT&T	Fiber optic	Route Group 1 and 2	S2, LD3a
Las Cruces District Office	NMNM 059304	El Paso Electric Company	Power line	Route Group 1	S2
Las Cruces District Office	NMNM 127593	Valley Telephone Cooperative	Fiber optic	Route Group 1	Alternative A, S3, S4, S5, Alternative C, S6, S7
Las Cruces District Office	NMNM 107570	Natural Gas Processing Company	Pipeline facilities	Route Group 1	P2
Las Cruces District Office	NMNM 129320	City of Las Cruces	Pipeline	Route Group 1	P2
Las Cruces District Office	NMNM 02898	El Paso Electric Company	Power line	Route Group 1	P2
Las Cruces District Office	NMNM 0 560459	El Paso Electric Company	Power line	Route Group 1	P2
Las Cruces District Office	NMNM 052900	El Paso Electric Company	Power line	Route Group 1	P2
Las Cruces District Office	NMNM 0 036763	El Paso Electric Company	Power line	Route Group 1	P2
Las Cruces District Office	NMNM 130980	USGS Water Science Center	Water facility (pending)	Route Group 1	P2
Las Cruces District Office	NMNMN 0 032224	SFPP, LP	Pipeline facility site	Route Group 1	P2
Las Cruces District Office	NMNM0 037669	SFPP, LP	Telephone line	Route Group 1	P2
Las Cruces District Office	NMNM 125773	El Paso Electric Company	Power line	Route Group 1	P2
Las Cruces District Office	NM116391	El Paso Natural Gas Company	Pipeline facility site	Route Group 1	P2
Las Cruces District Office	NMNM 116355	El Paso Natural Gas Company	Pipeline facility site	Route Group 1	P2
Las Cruces District Office	NMNM 001152	El Paso Electric Company	Power line	Route Group 1	P1
Las Cruces District Office	NMNM 121014	Department of Homeland Security	Other energy facility	Route Group 1	S2
Las Cruces District Office	NMNM 124061	County of Doña Ana	Communication site	Route Group 1	S2
Las Cruces District Office	NMNM 083940	County of Doña Ana	Road	Route Group 1	Alternative A
Las Cruces District Office	NMNM 020278	Vanguard Wireless	Communication site	Route Group 1	P2

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section – Afton Substation to Hidalgo Substation, cont'd.					
Las Cruces District Office	NMNM 029897	El Paso Electric Company	Communication site	Route Group 1	P2
Las Cruces District Office	NMNM 045812	Union Pacific Railroad	Road	Route Group 1	P2
Las Cruces District Office	NMNM 089601	Verizon Wireless	Road	Route Group 1	P2
Las Cruces District Office	NMNM 110647	Sprint	Road	Route Group 1	P2
Las Cruces District Office	NMNM 127728	Union Pacific Railroad	Road (pending)	Route Group 1	P2
Las Cruces District Office	NMNM 128485	State of New Mexico Department of Information Technology	Communication site (pending)	Route Group 1	P2
Las Cruces District Office	NMNM 0 558147	El Paso Electric Company	Power line	Route Group 1	P2
Las Cruces District Office	NMNM 128243	SFPP LP	Pipeline facility site	Route Group 1	P2
Las Cruces District Office	NMNM 066339	El Paso Natural Gas Company	Pipeline facility site	Route Group 1	P2
Las Cruces District Office	NMNM 010974	El Paso Electric Company	Power line	Route Group 1	P2
Las Cruces District Office	NMNM 066339	El Paso Natural Gas Company	Pipeline facility site	Route Group 1	P2
Las Cruces District Office	NMNM 089617	El Paso Electric Company	Power line	Route Group 1	P2
Las Cruces District Office	NMNM 112035	El Paso Natural Gas Company	Pipeline facility site	Route Group 1	P2
Las Cruces District Office	NMNM 127092	AT&T	Telephone line	Route Group 1	P2
Las Cruces District Office	NMNM 0 168896	SFPP LP	Pipeline facility site	Route Group 1	
Las Cruces District Office	NMNM 0 107766	El Paso Natural Gas Company	Pipeline facility site	Route Group 1	P2
Las Cruces District Office	NMNM 030944	El Paso Natural Gas Company	Pipeline facility site	Route Group 1	P2
Las Cruces District Office	NMNM 009917	El Paso Natural Gas Company	Pipeline facility site	Route Group 1	P2
Las Cruces District Office	NMNM 100747	New Mexico State Highway Department	Fence	Route Group 1	P2, S6, S7, Alternative C
Las Cruces District Office	NMLC 0 070352	New Mexico State Highway Department	Road	Route Group 1	P2
Las Cruces District Office	NMNM 061205	AT&T	Fiber optic	Route Group 1	P2
Las Cruces District Office	NMNM 066376	Sprint	Fiber optic	Route Group 1 and 2	P2, LD1, Alternative F, P6b
Las Cruces District Office	NMNM 077535	Qwest	Telephone line	Route Group 1	P2

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section – Afton Substation to Hidalgo Substation, cont'd.					
Las Cruces District Office	NMNM 0554337	New Mexico State Highway Department	Road	Route Group 1	P2
Las Cruces District Office	NMNM 003177	El Paso Electric Company	Power line	Route Group 1	P2
Las Cruces District Office	NMLC 031731	Union Pacific Railroad	Rail road	Route Group 1	Alternative C
Las Cruces District Office	NMNM 126846	Customs and Border Protection	Communication site	Route Group 1	Alternative C, S5, S6
Las Cruces District Office	NMNM 095035	Federal Highways Administration	Materials site	Route Group 1	Alternative C, S5, S6,
Las Cruces District Office	NMLC 0 070009	Federal Highways Administration	Materials site	Route Group 1	P2
Las Cruces District Office	NMMN 0 557671	New Mexico State Highway Department	Road	Route Group 1	P2
Las Cruces District Office	NMNM 045809	Wesley Sherrer	Road	Route Group 1	P2
Las Cruces District Office	NMNM 0 116716	Columbus Electric Cooperative	Power line	Route Group 1	P2
Las Cruces District Office	NMNM 130793	Federal Highways Administration	Bridge (pending)	Route Group 1	P2
Las Cruces District Office	NMNM 106225	Boling, Miller	Road	Route Group 1	P2
Las Cruces District Office	NMNM 028524	El Paso Natural Gas Company	Power facilities	Route Group 1	P2
Las Cruces District Office	NMNM 106193	El Paso Global Networks	Fiber optic	Route Group 1	P2
Las Cruces District Office	NMNM 107868	El Paso Natural Gas Company	Pipeline facilities site	Route Group 1	
Las Cruces District Office	NMNM 095033	Federal Highways Administration	Materials site	Route Group 1	Alternative C, S5, S6,
Las Cruces District Office	NMNM 052983	County of Luna	Road	Route Group 1	S6, S7, Alternative C, P3, P2, DN1
Las Cruces District Office	NMNM 061199	Valley Telephone Cooperative	Telephone line	Route Group 1	S5, P3
Las Cruces District Office	NMNM 107571	Department of Justice	Other facility	Route Group 1	S5, P3
Las Cruces District Office	NMLC 0 030874	El Paso & Southwestern Railroad	Railroad	Route Group 1	S5, P3
Las Cruces District Office	NMNM 008382	Public Service Company of New Mexico	Power line	Route Group 1	P2
Las Cruces District Office	NMNM 0 557451	New Mexico Highway Department	Road	Route Group 1	P2

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section – Afton Substation to Hidalgo Substation, cont'd.					
Las Cruces District Office	NMNM121405	Department of Homeland Security	Non-energy facility	Route Group 1	P2
Las Cruces District Office	NMNM 016929	Columbus Electric Cooperative	Power line	Route Group 1	S5, S6
Las Cruces District Office	NMLC 0 057616	New Mexico State Highway Department	Road	Route Group 1	P2, DN1
Las Cruces District Office	NMLC 0 059244	Tri-State G&T Association	Power line	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 057058	El Paso Electric Company	Power line	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 077521	Qwest	Telephone line	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 114438	Sunzia	Power line (pending)	Route Group 1 and 2	P2, DN1, P4a, LD3a, LD4
Las Cruces District Office	NMNM 083957	Qwest	Telephone line, fiber optic	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 017977	Columbus Electric Cooperative	Power line	Route Group 1	P2, DN1
Las Cruces District Office	NMLC 0 030875	El Paso & Southwestern Railroad	Railroad	Route Group 1	S5, S6
Las Cruces District Office	NMLC 0 031733	Union Pacific Railroad	Railroad	Route Group 1	S5, S6
Las Cruces District Office	NMNM 059321	Valley Telephone Cooperative	Power line	Route Group 1	S5, S6
Las Cruces District Office	NMNM 123180	Cooper Road	Road	Route Group 1	S5, S6
Las Cruces District Office	NMLC 0 031732	Union Pacific Railroad	Railroad	Route Group 1	S6, Alternative C
Las Cruces District Office	NMNM 023359	Department of Justice	Communication site	Route Group 1	S6, Alternative C
Las Cruces District Office	NMNM 026132	Columbus Electric Cooperative	Power line	Route Group 1	S6, S7, Alternative C
Las Cruces District Office	NMNM028427	Columbus Electric Cooperative	Power line	Route Group 1	S6, S7, Alternative C
Las Cruces District Office	NMNM 032041	New Mexico State Highway Department	Road	Route Group 1	S6, Alternative C
Las Cruces District Office	NMNM 121238	Columbus Electric Cooperative	Power line	Route Group 1	S6, S7, Alternative C
Las Cruces District Office	NMNM 126890	Customs and Border Protection	Other federal facility	Route Group 1	S6, Alternative C
Las Cruces District Office	NMNM 107577	Valley Telephone Cooperative	Telephone line	Route Group 1	S6, S7, Alternative C

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section – Afton Substation to Hidalgo Substation, cont'd.					
Las Cruces District Office	NMNM 022986	Public Service Company of New Mexico	Power line	Route Group 1 and 2	P2, DN1, P4a, P4b, LD3a
Las Cruces District Office	NMNM 062442	Public Service Company of New Mexico	Power line	Route Group 1	P2, DN1
Las Cruces District Office	NMLC 0 031602	Union Pacific Railroad	Railroad	Route Group 1	S6, S7, Alternative C
Las Cruces District Office	NMNM 130791	New Mexico State Highway Department	Road	Route Group 1	S6, S7, Alternative C
Las Cruces District Office	NMNM 032042	New Mexico State Highway Department	Road	Route Group 1	S6, S7, Alternative C
Las Cruces District Office	NMLC 0 053933	El Paso Natural Gas	Pipeline	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 0 0100812	Columbus Electric Cooperative	Power line	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 001800	El Paso Natural Gas	Pipeline	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 0 560037	El Paso Natural Gas	Pipeline	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 031995	New Mexico State Highway Department	Road	Route Group 1	S6, S7, Alternative C
Las Cruces District Office	NMNM 083956	El Paso Natural Gas	Pipeline	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 045825	Columbus Electric Cooperative	Power line	Route Group 1	S7
Las Cruces District Office	NMNM057089	Valley Telephone Cooperative	Telephone line	Route Group 1	S7
Las Cruces District Office	NMNM 124643	Department of Commerce National Weather Service	Communication site	Route Group 1	S7
Las Cruces District Office	NMNM 117395	Department of Justice	Other federal facility	Route Group 1	S7
Las Cruces District Office	NMLC 0 031734	El Paso & Southwestern Railroad	Railroad	Route Group 1	S7
Las Cruces District Office	NMNM 032347	New Mexico State Highway Department	Road	Route Group 1	S7
Las Cruces District Office	NMNM 052981	County of Grant	Road	Route Group 1	S7
Las Cruces District Office	NMLC 0 057346	El Paso Natural Gas	Pipeline	Route Group 1 and 2	P2, DN1, P4a, P4b, LD3a

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section – Afton Substation to Hidalgo Substation, cont'd.					
Las Cruces District Office	NMNM 052989	Columbus Electric Cooperative	Power line	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 120831	Department of Homeland Security	Other federal facility	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 130611	University of Boulder	Lease (pending)	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 115814	Columbus Electric Cooperative	Power line	Route Group 1	S7
Las Cruces District Office	NMNM 017693	New Mexico State Highway Department	Road	Route Group 1	S7
Las Cruces District Office	NMNM 044916	New Mexico State Highway Department	Road	Route Group 1	S7
Las Cruces District Office	NMNM 0 012581	Columbus Electric Cooperative	Power line	Route Group 1	S7
Las Cruces District Office	NMLC 0 064646	AT&T	Telephone line	Route Group 1 and 2	S7, S8, Alternative D, LD3a
Las Cruces District Office	NMNM 0 030297	New Mexico State Highway Department	Road	Route Group 1	S7, S8, Alternative D
Las Cruces District Office	NMNM 104168	Tri-State G&T Association	Power line	Route Group 1	S7, S8, Alternative D
Las Cruces District Office	NMNM 033174	El Paso Electric Company	Power line	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 012161	El Paso Electric Company	Power line	Route Group 1	P2, DN1
Las Cruces District Office	NMNM 110614	El Paso Electric Company	Switchyard	Route Group 1	P2, DN1
New Build Section - Hidalgo Substation to Apache Substation					
Las Cruces District Office	NMLC 0 59227	Public Service Company of New Mexico	Power line	Route group 2	P4a, P4b, LD3a
Las Cruces District Office	NMNM 026442	Public Service Company of New Mexico	Power line	Route group 2	P4a, P4b, LD3a
Las Cruces District Office	NMNM 001801	El Paso Natural Gas	Pipeline	Route group 2	P4a P4b, LD3a
Las Cruces District Office	NMNM 063882	Public Service Company of New Mexico	Power line	Route group 2	P4a P4b, LD3a

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section - Hidalgo Substation to Apache Substation, cont'd.					
Las Cruces District Office	NMNM 045806	County of Hidalgo	Road	Route group 2	Alternative D, S8, P4a, P4b, LD3a, LD4
Las Cruces District Office	NMNM 067594	New Mexico State Highway Department	Road	Route group 1 and 2	Alternative D
Las Cruces District Office	NMLC 0 058751	El Paso Natural Gas	Pipeline	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMLC 0 059227	Public Service Company of New Mexico	Power line	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMLC 0 051189	New Mexico State Highway Department	Road	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 028107	Public Service Company of New Mexico	Power line	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 002300	New Mexico State Highway Department	Road	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 013862	AT&T	Telephone line	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 098524	Southern Pacific Railroad	Railroad	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 0 554830	El Paso Natural Gas	Pipeline	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMLC 0 030416	AZ & NM Railroad Company	Railroad	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 004901	El Paso Natural Gas	Pipeline	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 003709	City of Lordsburg	Water plant	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 058252	Public Service Company of New Mexico	Power line	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 070086	Western NM Telephone Company	Power line	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 089625	Alltel Communications	Road	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 026730	Western NM Telephone Company	Telephone line	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 096538	Henika Road	Road	Route group 2	P4a, P4b, P4c, LD3a
Las Cruces District Office	NMNM 128979	Lightining Dock Geo	Powerline	Route group 2	P4a, P4b, P4c, LD3a

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section - Hidalgo Substation to Apache Substation, cont'd.					
Las Cruces District Office	NMNM 066376	Sprint Communications / US Telecom	Fiber Optic	Route group 2	P5a, P4b, P4c, LD2, LD3a
Las Cruces District Office	NMNM 099215	Federal Highways Administration	Materials site	Route group 1 and 2	Alternative D, P4a, P5c, LD1
Las Cruces District Office	NMNM 0 032225	SFPP LP	Oil and gas facility site	Route group1 and 2	Alternative D, P4a, P5c, LD1
Las Cruces District Office	NMNM 102601	Federal Highways Administration	Materials site	Route group 2	LD3a, LD3b, LD1
Las Cruces District Office	NMNM0 059806	New Mexico State Highway Department	Materials site	Route group 2	LD3a, LD3b, LD1
Las Cruces District Office	NMNM 033118	New Mexico State Highway Department	Water facility	Route group 2	P4a, P4b, P4c, LD4
Las Cruces District Office	NMLC 0 031816	AZ & NM Railroad Company	Railroad	Route group 2	LD3a, LD4
Las Cruces District Office	NMNM 001799	SFPP LP	Oil and gas facility site	Route group 2	LD3a, LD4
Las Cruces District Office	NMNM 131427	New Mexico State Highway Department	Water facility	Route group 2	LD1
Las Cruces District Office	NMNM 0 554638	New Mexico State Highway Department	Materials site	Route group 2	LD1
Las Cruces District Office	NMLC 0 064509	AT&T	Telegraph line	Route group 2	LD1
Las Cruces District Office	NMNM 021855	El Paso Natural Gas	Oil and gas facility	Route group 2	LD1
Las Cruces District Office	NMNM 0 554638	New Mexico State Highway Department	Materials site	Route group 2	LD1
Las Cruces District Office	NMNM 004901	El Paso Natural Gas	Pipeline	Route group 2	P5b, Alternative D, LD1
Las Cruces District Office	NMNM 315518	Qwest	Telephone line	Route group 2	LD1, Alternative F, P6b
Las Cruces District Office	NMNM 102621	Williams Communications	Road	Route group 2	LD1, Alternative F, P6b
Las Cruces District Office	NMLC 0 049366	New Mexico State Highway Department	Materials site	Route group 2	LD1, Alternative F, P6b
Las Cruces District Office	NMNM 052956	New Cingular Wireless	Communication Site	Route group 2	LD1, Alternative F, P6b
Las Cruces District Office	NMNM 114702	Verizon Wireless	Communication Site	Route group 2	LD1, Alternative F, P6b
Las Cruces District Office	NMLC 0 055814	New Mexico State Highway Department	Road	Route group 2	LD1, Alternative F, P6b

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section - Hidalgo Substation to Apache Substation, cont'd.					
Safford Field Office	AZPHX-0086573	Union Pacific Railroad Company	Railroad	Route group 2	LD-4
Safford Field Office	AZPHX-0086534	Southern Pacific Transmission	Pipeline	Route group 2	P5b, Alternative E, LD-1
Safford Field Office	AZPHX-0086067	El Paso Natural Gas Corporation	Pipeline	Route group 2	LD-1
Safford Field Office	AZPHX-0083253	El Paso Natural Gas Corporation	Pipeline	Route group 2	LD-1
Safford Field Office	AZPHX-0079294	ADOT	Road	Route group 2	Alternative F, P6a
Safford Field Office	AZPHX-0078758	ADOT	Road	Route group 2	P5b, Alternative E, LD-1
Safford Field Office	AZPHX-0078757	ADOT	Road	Route group 2	LD-1
Safford Field Office	AZPHX-0060374	Union Pacific Railroad Company	Railroad	Route group 2	LD-1
Safford Field Office	AZPHX-0060373	Union Pacific Railroad Company	Railroad	Route group 2	Alternative F, P6a
Safford Field Office	AZAR-0033277	ADOT	Road	Route group 2	P5b, Alternative E, LD-1
Safford Field Office	AZAR-0031302	Qwest	Fiber Optic Cable	Route group 2	LD-1
Safford Field Office	AZAR-0027420	ADOT	Road	Route group 2	P6a, Alternative F
Safford Field Office	AZAR-0026425	ADOT	Road	Route group 2	P6a, Alternative F
Safford Field Office	AZAR-0025474	ADOT	Road	Route group 2	LD-1
Safford Field Office	AZAR-0013941	ADOT	Road	Route group 2	LD-1
Safford Field Office	AZAR-0008822	Arizona Department of Public Safety	Operations	Route group 2	LD-1
Safford Field Office	AZAR-0008806	Santa Fe Pacific Pipeline	Pipeline	Route group 2	LD-1
Safford Field Office	AZA-0004895	Sulphur Springs Electric	Power line	Route group 2	LD-1
Safford Field Office	AZA-0003847	El Paso Natural Gas Corporation	Pipeline	Route group 2	LD-1
Safford Field Office	AZA--35499	Cochise County	Road	Route group 2	P5b, Alternative E, LD-1
Safford Field Office	AZA-033670	AT&T	Fiber Optic Line	Route group 2	P5b, Alternative E, LD-1
Safford Field Office	AZA-033386	Sulphur Springs Electric	Power line	Route group 2	Alternative F, P6a
Safford Field Office	AZA-031872	Wild Bill Guide Service	Road	Route group 2	LD-4

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section - Hidalgo Substation to Apache Substation, cont'd.					
Safford Field Office	AZA--031803	AT&T	Fiber Optic Line	Route group 2	P6b, Alternative F
Safford Field Office	AZA-031177	AT&T	Fiber Optic Line	Route group 2	LD-1
Safford Field Office	AZA-029033	Union Pacific Railroad	Railroad	Route group 2	LD-1
Safford Field Office	AZA-028599	FHWA	Road	Route group 2	LD-1
Safford Field Office	AZA-028724	Valley Telephone Company	Telephone Line	Route group 2	P6b, Alternative E, LD-1
Safford Field Office	AZA-027835	Valley Telephone Company	Telephone Line	Route group 2	P6b, Alternative E, LD-1
Safford Field Office	AZA-026558	Valley Telephone Company	Telephone Line	Route group 2	P6a, Alternative F
Safford Field Office	AZA-024087	UOP Molecular Sieve	Research	Route group 2	LD-4
Safford Field Office	AZA-02369501	BLM	Road	Route group 2	P6a, Alternative F
Safford Field Office	AZA-023665	Sulphur Springs Electric	Power line	Route group 2	P6a, Alternative F
Safford Field Office	AZA-023664	Sulphur Springs Electric	Power line	Route group 2	P6a, Alternative F
Safford Field Office	AZA-022287	Sprint Communications	Fiber Optic Cable	Route group 2	P6a, Alternative F
Safford Field Office	AZA-022121	Valley Telephone Company	Telephone Line	Route group 2	LD-1
Safford Field Office	AZA-02197701	BLM	Road	Route group 2	LD-4
Safford Field Office	AZA-021968	El Paso Natural Gas Corporation	Pipeline	Route group 2	Alternative F, P6a
Safford Field Office	AZA-021890	BLM	Road	Route group 2	LD-4
Safford Field Office	AZA-019983	Cochise County	Road	Route group 2	P5b, Alternative E, LD-1
Safford Field Office	AZA-018990	Duncan Valley Electric	Power line	Route group 2	none
Safford Field Office	AZA-018790	Sulphur Springs Electric	Power line	Route group 2	LD-1
Safford Field Office	AZA-018717	Sulphur Springs Electric	Power line	Route group 2	LD-1
Safford Field Office	AZA-017630	Valley Telephone Company	Telephone Line	Route group 2	LD-1
Safford Field Office	AZA-010866	ADOT	Road	Route group 2	LD-1
Safford Field Office	AZA-006508	Sulphur Springs Electric	Power line	Route group 2	LD-1
Safford Field Office	AZA-006058	Qwest	Fiber Optic Cable	Route group 2	Alternative F, P6a

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
New Build Section - Hidalgo Substation to Apache Substation, cont'd.					
Safford Field Office	AZA-003778	Qwest	Fiber Optic Cable	Route group 2	Alternative F, P6a
Safford Field Office	AZA-003036	BLM	Road	Route group 2	LD4
Safford Field Office	AZA-003032	BLM	Road	Route group 2	LD4
Safford Field Office	AZA-003030	BLM	Road	Route group 2	P5b
Safford Field Office	AZA-002189	Sulphur Springs Electric	Power line	Route group 2	LD-1
Safford Field Office	AZA-001912	El Paso Natural Gas Corporation	Pipeline	Route group 2	P5b, Alternative E, LD-1
Safford Field Office	AZA-001645	ADOT	Road	Route group 2	LD-1
Safford Field Office	AZA-000893	Vanar Flood Control District	Canal and reservoir	Route group2	LD-1
Safford Field Office	AZA-005973	Qwest	Fiber Optic Cable	Route group 2	Alternative J
Safford Field Office	AZA-00460101	Arizona Game and Fish Department	Road	Route group 2	Gc
Safford Field Office	AZA-001912	El Paso Natural Gas Corporation	Pipeline	Route group 2	P6c
Safford Field Office	AZA-035671	Pueblo Lithium	Communication	Route group 2	none
Safford Field Office	AZA-017668	United States Army	Road	Route group 2	none
Safford Field Office	AZA-019983	Cochise County	Road	Route group 2	Alternative F
Safford Field Office	AZA-035981	Micron Resources	Communication	Route group 2	P6c
Upgrade Section - Apache Substation to Pantano Substation					
Safford Field Office	AZPHX-0086067	El Paso Natural Gas Corporation	Pipeline	Route group 3	U1a
Safford Field Office	AZPHX-0083253	El Paso Natural Gas Corporation	Pipeline	Route group 3	U1a
Safford Field Office	AZAR-0035743	Sulphur Springs Electric	Powerline	Route group 3	U1a
Safford Field Office	AZAR-0032324	Southwest Transmission Cooperative	Transmission line	Route group 3	U1a
Safford Field Office	AZAR-0030532	Santa Fe Pacific Pipeline	Pipeline	Route group 3	U1a
Safford Field Office	AZAR-0017019	Santa Fe Pacific Pipeline	Pipeline	Route group 3	U1a
Safford Field Office	AZAR-0008806	Santa Fe Pacific Pipe	Pipeline	Route group 3	U1a
Safford Field Office	AZAR-0000438	Doe Wtn. Area Power Administration	Power line	Route group 3	U1a

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
Upgrade Section - Apache Substation to Pantano Substation, cont'd.					
Safford Field Office	AZA-022099	Ammon Enterprises	Canal	Route group 3	none
Safford Field Office	AZA-020283	Sulphur Springs Electric	Powerline	Route group 3	P7
Safford Field Office	AZA-007428	Southwest Transmission Cooperative	Transmission Line	Route group 3	U1a
Safford Field Office	AZA-007272	El Paso Natural Gas Corporation	Pipeline	Route group 3	U1a
Safford Field Office	AZA-002951	El Paso Natural Gas Corporation	Pipeline	Route group 3	Gc
Tucson Field Office	AR-035743	Sulphur Springs Valley Corporation	69 kV powerline	Route group 3	U2, Alternative H
Tucson Field Office	PHX-027227	Union Pacific Railroad	Railroad	Route group 3	U2
Tucson Field Office	PHX-086569	Union Pacific Railroad	Railroad	Route group 3	U2
Tucson Field Office	PHX-061304	Union Pacific Railroad	Railroad	Route group 3	U2
Tucson Field Office	PHX-086067	El Paso Natural Gas Corporation	Pipeline	Route group 3	U2
Tucson Field Office	PHX-086533	New Mexico and Arizona Railroad	Railroad	Route group 3	None
Tucson Field Office	PHX-059620	Union Pacific Railroad	Railroad	Route group 3	None
Tucson Field Office	PHX-038465	Union Pacific Railroad	Railroad	Route group 3	None
Tucson Field Office	PHX-020970	Union Pacific Railroad	Railroad	Route group 3	None
Tucson Field Office	PHX-014180	Union Pacific Railroad	Railroad	Route group 3	None
Tucson Field Office	AZA-21412	BLM	Road	Route group 3	None
Tucson Field Office	AZA-059612	Union Pacific Railroad	Railroad	Route group 3	U1a
Tucson Field Office	PHX-027226	Union Pacific Railroad	Railroad	Route group 3	U2
Tucson Field Office	PHX-086523	Southern Pacific Railroad	Railroad	Route group 3	U2
Tucson Field Office	AZA-32862	Arizona Game and Fish	Road	Route group 3	U3a

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
Upgrade Section - Pantano Substation to Saguaro Substation					
Tucson Field Office	PHX-086542	Union Pacific Railroad	Railroad	Route group 4	None
Tucson Field Office	PHX-014756	Union Pacific Railroad	Railroad	Route group 4	None
Tucson Field Office	PHX-086575	Southern Pacific Railroad	Railroad	Route group 4	None
Tucson Field Office	PHX-086536	Union Pacific Railroad	Railroad	Route group 4	None
Tucson Field Office	PHX-073666	El Paso Natural Gas Corporation	Natural gas pipeline	Route group 3 & 4	U3a
Tucson Field Office	AR-012969	Western Area Power Administration	Substation	Route group 4	U3a
Tucson Field Office	AZA-35758	Pima County	Road	Route group 3 & 4	U3a
Tucson Field Office	AZA-33950	Broadwing Communications	Fiber optic line	Route group 3 & 4	U3a
Tucson Field Office	PHX-019619	Tucson Nogales Railroad	Railroad	Route group 4	none
Tucson Field Office	PHX-086836	Pima County	Highway	Route group 4	none
Tucson Field Office	PHX-086725	Pima County	Highway	Route group 4	none
Tucson Field Office	PHX-086680	Frank and Warren Allison	Canal	Route group 4	none
Tucson Field Office	AR-035768	Pima County	Road	Route group 4	none
Tucson Field Office	AR-05978	El Paso Natural Gas Corporation	10.75 inch natural gas pipeline	Route group 4	none
Tucson Field Office	AZA-32581	Tucson Water	Fiber optic line	Route group 4	none
Tucson Field Office	AZA-32454	Trico Electric	14.4 kV powerline	Route group 4	none
Tucson Field Office	AZA-26182	Pima County	Road	Route group 4	none
Tucson Field Office	AZA-7010	Pima County	Road	Route group 4	none
Tucson Field Office	AZA-6043	Century Link	Telephone line	Route group 4	none
Tucson Field Office	PHX-015584	Union Pacific Railroad	Railroad	Route group 4	U3b
Tucson Field Office	AR-031634	Tucson Water	Sewer and utility site	Route group 4	none
Tucson Field Office	AR-031193	ADOT	Road	Route group 4	U3b
Tucson Field Office	AR-030214	ADOT	Road	Route group 4	U3b
Tucson Field Office	AR-08806	Santa Fe Pacific Pipeline	12 inch natural gas pipeline	Route group 4	U3b
Tucson Field Office	AR-0438*	Western Area Power Administration	Transmission line	Route group 4	U3b
Tucson Field Office	AZA-32485	Tucson Electric Power	Power line	Route group 4	none

Table J-1. Existing Land Use Authorizations (Continued)

BLM District/Field Office	LUA No.	LUA Holder	Type	Route*	Segments Crossed
Upgrade Section - Pantano Substation to Saguaro Substation, cont'd.					
Tucson Field Office	AZA-821	City of Tucson	Road	Route group 4	none
Tucson Field Office	PHX-086553	University Canal	Reservoir and canal	Route group 4	none
Tucson Field Office	PHX-072747	El Paso Natural Gas Corporation	10.75 inch natural gas pipeline	Route group 4	none
Tucson Field Office	PHX-060948	Union Pacific Railroad	Railroad	Route group 4	U3l, U3m
Tucson Field Office	PHX-086548	Southern Pacific Railroad	Railroad	Route group 4	U3l, U3m
Tucson Field Office	AZA-32453	Trico Electric	14.4 and 24.9 kV powerline	Route group 4	None
Tucson Field Office	AZA-34659	Century Link	Telephone Line	Route group 4	U3l, U3m
Tucson Field Office	AZA-8979	Century Link	Fiber Optic Line	Route group 4	U3l, U3m
Tucson Field Office	AZA-18286	Pima County	Road	Route group 4	None
Tucson Field Office	AZA-18705	Pima County	Road	Route group 4	None
Tucson Field Office	AZA-22075	Bureau of Reclamation	Central Arizona Project Water Canal	Route group 4	U3i
Tucson Field Office	PHX-086524	Union Pacific Railroad	Railroad	Route group 4	U3h
Tucson Field Office	PHX-086531	Arizona Narrow Gauge	Railroad	Route group 4	None

*AR-0438 is the existing Western transmission line that would be upgraded in Route group 4.

*Some LUAs occur in more than one Route Group. LUAs that occur in more than one Route Group are indicated in the Route column.

Appendix I

FINAL KEY OBSERVATION POINTS AND VISUAL CONTRAST RATING WORKSHEETS

FINAL KEY OBSERVATION POINTS AND VISUAL CONTRAST RATING WORKSHEETS

The following table provides a listing of all Key Observation Points (KOPs) as they appear along the all project alternatives and related analysis area (see section 3.11 of the EIS for a description of the analysis area). The table is followed by Visual Contrast Rating (VCR) Worksheets that were developed subsequent to field investigation(s) that occurred in May through August 2012 with supplemental specific field verifications taking place in 2013, 2014, and 2015. The development of the KOPs listed below, was a compilation of desktop analysis (through the use of digital elevation mapping and GIS to create a broad overview of topographic characteristics of the analysis area), followed by field verification which included landscape photographic cataloging of the entire analysis area including all alternatives, and completion of the technical analysis including BLM worksheets (for Scenic Quality, Sensitivity, and Visual Contrast). The final selection of KOPs included a rigorous evaluation of locations to ensure that the appropriate coverage of the analysis area was performed. The KOPs were ultimately used as representative reference points from which the analysis was conducted and aesthetic conditions and environmental impacts were disclosed in the EIS.

Table I-1. Key Observation Points Identified (* new to the Final EIS)

KOP ID	Simulated	Description and Rationale
P1-01	No	View represents the Afton Substation from background. Approximately 6 miles from the San Jose Catholic Church Historical Site and VRI/VRM Class II, High Sensitivity, Class B Scenic Quality. Approximately 8 miles from Aden Lava Flow (VRI/VRM Class III).
P2-01	Yes	2.2 miles from Aden Hills OHV, simulation represents VRI/VRM Class III OHV area.
P2-02	No	View from West Potrillo Mountains directly adjacent to VRI/VRM Class II, High Sensitivity, Class B Scenic Quality lands.
P2-03	No	Located near several private properties outside of BLM lands on the county boundary (between Luna and Doña Ana counties). This view is from NM 549, approximately 0.36 mile from an existing monopole line, and 0.6 mile from existing railroad tracks. Recommend elimination of this KOP as it is similar to P2-04 and represents low sensitivity views.
P2-04	Yes	This view is from within the I-10 transportation corridor approximately 0.85 mile from the proposed line and is located within/adjacent to VRI/VRM Class III landscape.
P2-05	Yes	This is the closest view in the Deming area (approximately 3.7 miles due north). Several potentially sensitive receptors (including local parks, churches, cemetery and residences exist in Deming). Recommend alternative KOP selection point from within community developments just north of I-10 to identify impacts from areas of community concern. Scoping revealed 2 comments in favor of the line, and 2 comments encouraging the line to bypass Deming (and not be a pass through for utility structures). This is also the closest point to the Florida Mountains (identified as a well-used recreation area and VRI/VRM Class II).
P2-06	No	View is from Padre Hill Drive NW and Overhill Drive located directly north of a residential driveway and approximately 0.5 mile from the proposed line.
P2-07	No	This view is located along an unpaved county road at the foot of Grandmother Mountain. This roadway heads west and north and provides access to a single ranch and largely open/vacant lands. This view is 2 miles east of the CDNST
P2-08	No	Located on a small parcel of BLM land (VRI/VRM Class IV). No immediate sensitive receptors, landscape is very rural and largely vacant.
P3-01	Yes	Located on non-BLM land with views to the west from Geronimo Road and Ojo Road. Rural residential area with racetrack to the northwest (approximately 0.5 mile).
P3-02	No	Florida Mountains lie 6 miles to the west and could afford direct long-distance views of the line. From the east (looking west) at the West Potrillo Mountains between 7 and 12 miles away, direct views of the line would like occur due to "superior" viewing locations and visual impacts from the substation expansion. New simulation should be oriented to the southwest to capture the proposed substation, staging area, and line.

Table I-1. Key Observation Points Identified (* new to the Final EIS), Continued

KOP ID	Simulated	Description and Rationale
P4-01	No	View is not from BLM land and is located along a portion of the CDNST that parallels NM 90 approximately 0.25 mile northeast of the intersection with NM 70. Very few residents or destinations are located along NM 90. There is no marked trailhead located here, and landscape is characterized by large expanses of open space. Recreators seeking a solitary experience on the CDNST may use this portion of the trail.
P4-02	No	Located at the intersection of Hook and Anchor Road and NM 70 (Duncan Highway). This view is oriented north approximately 0.4 mile from the proposed line. There is 1 rural residence 0.3 mile south of this view. A potential staging area is 0.45 mile northwest of this KOP on NM 70.
P5-01	Yes	Located on LD-1 (bypass of Lordsburg Playa) within VRI/VRM III, Scenic Quality C, and High Sensitivity.
P5-02	Yes	Adjacent to VRI/VRM Class II, Scenic Quality B, High sensitivity lands, located in VRI/VRM Class III. View is located in a wash southwest of Peloncillo Mountains. Simulation is rendered 2.3 miles from proposed line, views of Chiracahua Mountains in the background DZ (beyond 20 miles south).
P6-01	No	Located 6 miles from VRI/VRM Class II landscape, and 8 miles from Dos Cabezas. View is from residential community within town of Bowie.
P6-02	No	View is from roadway that accesses Ft. Bowie. Recommend replacing with KOP that includes Ft. Bowie, Dos Cabezas Mountains and other scenic features.
P6-03	Yes	View is oriented 0.5 mile from VRM Class II lands looking north away from Dos Cabezas toward Pinaleño Mountains.
P7-01	No	This view is due west of Willcox Playa, Dos Cabezas Mountains are 180 degrees east from this point. View is 0.5 mile from line, proposed staging area would be in the immediate foreground.
P7-02	Yes	Not on BLM lands. Approximately 2 miles from edge of Willcox Playa and 4 miles north of Butterfield Trail. Surrounded by agricultural fields. Facing NNW
P7-03	No	1.4 miles from BLM Class II VRI/VRM on west side of Willcox Playa. KOP oriented 8 miles from line to the SE and 1 mile from agency route alternative (unstudied).
WB-01*	Yes	View is from the Zarpara Winery Tasting Room and faces east to capture sensitive views people have visiting the vineyard and tasting room. This is an existing tasting room located approximately 2 miles from P7a.
WB-02*	Yes	View is from the existing Pillsbury Winery Tasting Room and faces east to capture sensitive views people have visiting the vineyard and tasting room. This is an existing tasting room located approximately 1 mile from P7a.
WB-03*	Yes	View is located less than 0.25 mile from route variation P7a from the privately owned Narita property.
S1-01	Yes	No highly sensitive receptors. Class IV BLM lands.
S1-02	No	View from foot of Kilbourne Hole.
S2-01	Yes	Representative view from A 008 County Road
S3-01	Yes	View is located along Hwy 9 and is oriented westward along roadway. Simulation shows structures on south side and parallel to the road along the proponent's alternative. View is located outside of any sensitive locations, or unique landscape.
S4-01	No	View is located approximately 2.2 miles from the proponent's alternative line and 2.5 miles from the US/Mexican Border. Landscape is largely flat and common, few sensitive viewers are located in this area as it is highly monitored by Border Patrol.
S5-01	No	View is located along Hwy 9 oriented southward away from the community of Columbus
S5-02	Yes	View is 1.26 miles from the proponent's alternative line and simulation shows a "superior" view from atop a mountain within the Pancho Villa State Park (just southwest of Columbus)..
S5-03	No	Though located 43 miles to the west, this view is very similar to S5-01.
S6-01	No	Also located on Hwy 9, view is representative of a slightly different landscape character than S5-03.
S7-01	No	Very similar view to S5-03

Table I-1. Key Observation Points Identified (* new to the Final EIS), Continued

KOP ID	Simulated	Description and Rationale
S7-02	Yes	Simulation shows view from Hachita oriented northward within a rural residential community.
S7-03	No	View is over 0.5 mile north of Hachita oriented toward the town. 180 degrees north of the viewpoint is a large proposed staging area.
S7-04	No	View is located immediately adjacent to the CDNST and is 0.5 mile from the proponent's alternative.
S7-05	No	View is located 1.5 miles from proponent's alternative, and is indicative of a slightly more vegetated landscape.
S8-01	Yes	Located along I-10 and simulation depicts proponent's alternative crossing the I-10 at a perpendicular angle.
S8-02	No	Located Muir Road, view is oriented to the south looking toward agricultural fields.
U1-01	Yes	On the edge of Coronado NF but facing N (away from Forest). No public sensitivity. Suggest elimination. Simulation does not included entire structure in the frame, pole appears square.
U2-01	No	0.5 mile from line; 3.5 miles from alternative. KOP located on western edge of residential area between Hwy 80 and I-10.
U2-02	No	Dark Star Rd. recently paved with turn-offs indicating additional future roads/development. Currently 1 ranch, no other sensitive viewers, existing "H" frame in middleground.
U2-03	Yes	Located from Mescal area (residential).
U2-04	No	Located on Navajo Trail Road. Low density residential homesteads with existing views of "H" frames. Same KOP as H-03
U3-03	No	Located along SR 83.
U3-04	Yes	Representative view from Sonoita Ranch
U3-05	No	Fairgrounds are 0.8 mile from E. Dawn Road, parking lot and raceways are located closest to the line (lowest sensitivity viewers are represented from this viewpoint)
U3-06	Yes	Potential EJ community to the south. This simulation is too close to the line, should be from within Mobile Home park.
U3-07	No	1.5 miles from line. Line is not visible from this location.
U3-07a*	Yes	Vantage is located on the east side of the San Xavier Mission Church oriented northeast toward proposed alternative. Due to vegetative and human-made obstruction and distance, the proposed upgrade line is barely discernable.
U3-08	No	View is representative of bike users along Santa Cruz Bikeway.
U3-09	No	Representative view from residential area
U3-10	Yes	Good representation of Kennedy Park.
U3-11	Yes	KOP is 0.11 mile from line.
U3-12	No	Sentinel Peak
U3-13	Yes	KOP shows historic fence.
U3-15	No	KOP shows multiple T line congestion
U3-16	No	KOP from Silverbell Golf Course links facing west
U3-17	Yes	KOP from Christopher Columbus Park, would be better to represent nearby residences.
U3-18	Yes	Few/no rural residences along this road. Residences are located to the southwest.
U3-19	No	Saguaro NP West, approximately 2 miles from line.
U3-20	No	KOP from within residential area
U3-21	No	View from parking lot.
U3-22	Yes	Represents a very specific point of interest.
U3-23	Yes	Silverbell Rd simulation.

Table I-1. Key Observation Points Identified (* new to the Final EIS), Continued

KOP ID	Simulated	Description and Rationale
U3-24	No	New residential area.
A-01	No	View is located along unpaved county road and is oriented to the north. Represents low sensitivity and common landscape.
B-01	No	Same as S4-01.
C-01	No	Same as S6-01
D-01	No	Not BLM land. 0.6 mile north of proponent's alternative and BLM Class IV; SQ-C; VRM-IV. Located on Muir Rd adjacent to agricultural fields and rural residential. Public sensitivity is low.
D-02	Yes	Pyramid Shadows Rd. Rural Residential on private land. KOP is from roadway.
E-01	Yes	Same as P5-01
E-02	No	Town of San Simon, sensitive residential receptors. VRI/VRM III; SQ-B; SL-High. Major transportation route with scenic areas and provides connection from Las Cruces to Tucson.
F-01	Yes	Located 0.25 mile from alternative route. From intersection of N. Central and E. Arizona St. in the town of Bowie. No public comments came from Bowie during scoping. North of the alternative line is agricultural fields and limited homes. Concentrated residential over 0.25 mile north of I-10 at Apache Pass Rd. exit. Surrounded by agricultural lands. Proponent preferred should be further considered as it avoids the community nearly 2 miles to the south.
F-02	No	View is 0.5 mile from alternative and 2.7 miles from preferred. KOP faces due south. Limited visual sensitivity in this area due to lack of receptors
G-01	No	Not on BLM lands. Cascabel Road with views of DC in the background. Does not include WC-1, Proponent Alternative, or PP (is beyond 8 miles)
G-02	No	Same as P7-03
G-03	Yes	KOP is within area which bypasses Willcox Playa and also does not consider Apache Substation upgrade. This is the last KOP to capture the New Build Section.
H-01	Yes	View from Pomerene along North Cascabel Road in a residential area.
H-02	No	Butterfield crossing in immediate foreground. 0.15 mile from AA. Very rural residential
H-03	No	Same KOP as U2-04
TH1-02	Yes	Current simulation from Sentinel Peak shows preferred line, simulation
TH1-03*	Yes	View from atop Tumamoc Hill oriented towards Local Alternatives TH1b and TH1c.
TH1-S1	Yes	View would be of the proposed line rebuilt (Segment U3) where the existing "H" frame structures are located from the vantage of W. Starr Pass Road. From this viewpoint, the proposed structures would be visible against the sky and would also be visible within the vicinity of Tumamoc Hill.
TH1-S2	No	View located along W. Starr Pass Blvd. transmission structures and lines associated with TH1-A would be visible with Tumamoc Hill in the background
TH1-S3	Yes	. View from Sentinel Peak within the Tumamoc Hill area oriented toward the agency alternative (or TH3 River Route).
TH1-S4	No	Located just south of the Tolson Elementary School on Greasewood road, providing view of the agency alternative that runs north on Greasewood Road to avoid the Tumamoc Hill area.
TH1-S5	No	View is located within the residential area (West Calle Tonala) just west of Greasewood Road and the proposed agency alternative that avoids Tumamoc Hill (TH1a).
TH1-S6	Yes	Located north of the Tumamoc Hill area from the residential area on Speedway Road oriented to the south toward the Tumamoc Hill area. From this area the project alternative would be parallel to the viewing angle and would be visible against the open sky within Tumamoc Hill.
AN-04	Yes	Representative view from within the River Route (TH3) showing existing structures and proposed SLT structures.
AN-12	Yes	Represents view of Segment U3 from planned recreation trail (N. Aguirre Rd. west of Pinal Airpark).
MA-02	Yes	Represents view (of Segment U3) from Avra Road (primary access to Saguaro NP).

Table I-1. Key Observation Points Identified (* new to the Final EIS), Continued

KOP ID	Simulated	Description and Rationale
MA-03	Yes	Represents view of Segment U3 from Marana Regional Airport and Skyline Restaurant (well visited local/regional attraction).
SA-01	Yes	View of the proposed alignment (Segment U3) to the north and northeast from use trails in Saguaro NP.
AN-03	No	View is located along the Loop on the Santa Cruz River Bikeway/Anza Trail.
TH3-R1	No	View is located along the Loop on the Santa Cruz River Bikeway/Anza Trail.
TH3-R2	No	View is located along the Loop on the Santa Cruz River Bikeway/Anza Trail.
TH3-R3	No	View is located along the Loop on the Santa Cruz River Bikeway/Anza Trail.
TH3-R4	No	View is located along the Loop on the Santa Cruz River Bikeway/Anza Trail.
NPS-02	Yes	View is located along the Loop on the Santa Cruz River Bikeway/Anza Trail.
TH1-S7	No	View is from intersection of Greasewood Road and Speedway Boulevard; both roads are very well traveled at a posted speed of 45 miles per hour (mph).
TH1-S8	No	View is from Speedway Boulevard, road is very well traveled at a posted speed of 45 mph.
TH1-S9	No	View is located near El Rio Golf Course along North El Rio Drive toward TH1c. Existing utility structures are located in this area and views are largely obstructed by development and large vegetation around the golf course.
TH1-S10	No	View is from well-traveled intersection of I-10 and West Grant Road, just east of the Santa Cruz River bikeway "the loop." Upgrade line would cross Grant Road and I-10 to connect with Tucson Substation.
TH3-S1	Yes	View from Sentinel Peak oriented toward the east..

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 9 September 2012
District/ Field Office: Las Cruces
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 25S	5. Location Sketch
2. Key Observation Point **KOP P1-01**	Range 1E	32.11095451000 106.84303415300
3. VRM Class **IV**	Section 28	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground and middleground area, though slight undulations are apparent.	Persistent horizontal coverage of landscape by vegetation outside of road way. Larger vegetation appears irregularly shaped.	Vertical electrical substation and associated transmission lines and chain link fencing present in view.
LINE	Valley floor creates strong horizontal edge while roadway creates a dominate line as it transverses the natural landscape.	Edges of vegetation apparent only along the roadway corridor.	The transmission line and electrical substation create vertical line patterning into the view. Perimeter fencing surrounding the substation creates vertical and horizon line patterns.
COLOR	Reddish and tan-colored soils are apparent beneath the vegetation beyond the gray road.	Dark greens dominate.	Dark gray, silver, and white structures evident in middleground.
TEXTURE	Stippling evident in soils which contrasts the smooth road pavement.	Shrub vegetation appears coarse.	Coarse utility poles cluster primarily near substation.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Additional vertical structures added to the landscape replicated existing forms.
LINE	No change.	No change.	New transmission towers perpetuates the vertical line patterning.
COLOR	No change.	No change.	Dark gray and silver to continue the existing color palette.
TEXTURE	No change.	No change.	Transmission towers are coarse/rough.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended _X__Yes _ __No (Explain on reverses side)

Evaluator's Names
Caitlin McCusker Date: 10/16/2012

Revised by Steve Leslie – 2/23/2015

SECTION D. (Continued)

Contrast is consistent with VRM Class IV objectives.

Distance. The KOP is approximately 0.5 mile east of New Build segments P1 and P2. Each segment moves further west of the KOP from its closest point.

Angle of Observation. The KOP is horizontally even with the proposed New Build segments P1 and P2.

Length of Time the Project Is In View. Segments P1 and P2 would be viewed briefly from the KOP as viewers come and go from the Afton substation.

Relative Size or Scale. The size of the structures would be similar to the existing transmission structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, and because the structures would appear smaller the further away from the KOP they get, there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place.

Spatial Relationships. The existing road and transmission structures lead the observers eye to the to a general convergence point on the horizon.

Atmospheric Conditions. During times of increased dust, or haze in the area, there would be reduced visual contrasts.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

Although the project meets VRM Class IV objectives, the following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 25S	5. Location Sketch 32.14777611400 -107.15328641800
2. Key Observation Point **P2-02**	Range 3W	
3. VRM Class **IV**	Section 9	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land forms in foreground create amorphous volcanic outcroppings. Middleground is composed of relatively flat desert valley, with a single conical rise at the end of the valley. in foreground area, though slight undulations are apparent. Steep mountain forms visible in middleground. Dirt road cuts creates scar across landscape.	Extremely sparse, irregularly shaped vegetative coverage in foreground; indistinguishable, low growing vegetation occurs in middleground.	Two transmission lines transverse the landscape in a horizontal pattern. Vertical radio towers protrude from the peak of the volcanic cone.
LINE	Distant limits of valley floor and volcanic cone create a strong horizon. Distant mountain range provides a jagged line. Volcanic outcropping in foreground creates inconsistent horizontal line patterning.	Edge of vegetation in foreground created by volcanic soil. Distance limits of vegetation unclear as it blends in with landscape forms.	Vertical radio towers skyline above cone peak. Vertical transmission towers nearly indiscernible at this distance.
COLOR	Volcanic red, tan and charcoal colored exposed soils are present in the foreground. A light brown cone occurs in the middleground. The mountain range in the background appears blue at this distance.	Light greens and browns dominate.	Structure visibility decays with distance; towers appear dark gray.
TEX-TURE	Stippling is evident in the volcanic soils in the foreground. The volcanic cone appears striated at this distance, while the mountain range in the background appears smooth from this distance.	Shrub vegetation appears coarse in foreground and grainy in the middleground.	Utility poles appear striated and coarse at this distance.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Proposed transmission line adds a new set of vertical towers across the horizon.
LINE	No change.	No change.	Additional vertical towers introduced into view are consistent with existing patternings.
COLOR	No change.	No change.	Structure visibility decays with distance; towers appear dark gray, consistent with existing structure coloring.
TEX-TURE	No change.	No change.	Utility poles appear striated and coarse at this distance.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				x				x			x	
	LINE				x				x			x	
	COLOR				x				x				x
	TEXTURE				x				x			x	

2. Does project design meet visual resource management objectives? _X_Yes ___No _ (Explain on reverses side)

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie – 2/23/2015

SECTION D. (Continued)

View from West Potrillo Mountains

Distance. The KOP is approximately 2.6 miles south of New Build segment P2. Segment P2 crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment P2.

Length of Time the Project Is In View. Segment P2 would potentially be viewed for extended periods by viewers visiting the West Potrillo mountains.

Relative Size or Scale. The size of the structures would be similar to the existing transmission structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, and because of the distance to the structures, they would appear smaller, and there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required, there would be no visible contrast.

Spatial Relationships. The landscape is very open, horizontal, and flat with mountains in the distance.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be limited visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

Although the project meets VRM Class IV objectives, the following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 9 September 2012
District/ Field Office: Las Cruces
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township__24S____	5. Location Sketch 32.20989936900 -107.09049302400
2. Key Observation Point **KOP P2-01**	Range___2W_____	
3. VRM Class **IV**	Section___19____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground and middleground area, though slight undulations are apparent. Clearly defined mountainous forms extend across the majority of the background in the most distant portion of the view.	Consistent coverage of landscape by vegetation outside of gravel parking lot. Occasional clusters of shrubs. Larger vegetation appears irregularly shaped.	Distribution line traverses landscape and appears small in scale compared to overall landscape.
LINE	Smooth angular mountains in middleground rise from flat valley floor, backdropped by distant jagged mountains against skyline.	Edges of vegetation apparent at edge of unpaved parking lot.	Vertical distribution line towers visible in background parallels the mountain range.
COLOR	Reddish-colored soils are apparent in foreground and middleground. Dark blue mountains are visible in the middleground.	Light greens and tans dominate.	Dark gray structures evident in middleground.
TEXTURE	Stippling evident in soils in foreground. Smooth and uniform hill and mountains visible in the distance.	Shrub vegetation appears coarse.	Coarse utility poles.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Towers add narrow, vertical forms in the view.
LINE	No change.	No change.	Transmission lines introduce horizontal patterning evident across landscape. Transmission towers perpetuate existing vertical patterning in the view.
COLOR	No change.	No change.	Gray visible in towers and lines.
TEXTURE	No change.	No change.	Transmission lines appear coarse and striated in this view.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie – 2/23/2015

SECTION D. (Continued)

Contrast is consistent with VRM Class IV objectives.

2.2 miles from Aden Hills OHV. Segment P2 crosses a combination of BLM VRM Class IV administered lands and private land.

Distance. The KOP is approximately 2.4 miles north of New Build segment P2. Segment P2 crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment P2.

Length of Time the Project Is In View. Segment P2 would potentially be viewed for extended periods as viewers enjoy the Aden Hills OHV area

Relative Size or Scale. The size of the structures would be similar to the existing transmission structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, and because of the distance to the structures, they would appear smaller, and there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required, there would be no visible contrast.

Spatial Relationships. The landscape is very open, horizontal, and flat with mountains in the distance.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be limited visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. There could be passenger vehicles and OHV movement. In the short term, motion associated with construction equipment would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

Although the project meets VRM Class IV objectives, the following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

SIMULATED

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township___24S___ Range___5W_____ Section____12___	5. Location Sketch 32.22901306200 -107.29850372100
2. Key Observation Point **P2-03**		
3. VRM Class IV and **non BLM land**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground, with slight topographic variations apparent. Steep, jagged mountains form the background.	Sparse, low growing vegetation consistently covers the valley floor. Larger vegetation appears irregularly shaped.	Two transmission lines and one distribution line are visible and recede into the distance as they traverse angularly across the view. Agricultural fencing and a corral appear in this view.
LINE	Edge of valley floor creates a strong horizon. The mountains provide a jagged skyline. Edge of roadbed forms an angled, straight line that recedes into the distance.	Roadbed creates edge of vegetation.	The utility lines introduce vertical patterning into the view, with the tower structures themselves creating a criss-cross lattice pattern. The fence creates a short segment of vertical and horizontal until it is absorbed by the vegetation. The corral creates additional horizontal and vertical linear patterning.
COLOR	Reddish and tan-colored soils are apparent beneath the vegetation and beyond the road shoulders. The roadbed provides gray and white hues, while the mountain range appears blue from this distance.	Greens and grays dominate.	Dark grays and browns evident in the structures; discernible structure color diminishes with distance.
TEXTURE	Slight stippling evident in the asphalt roadbed and visible soils. The mountains appear smooth from this distance.	Shrub vegetation appears coarse.	Fence posts, corral, and utility poles appear coarse.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	The proposed transmission line parallels the direction of existing lines. The proposed line introduces additional vertical lattice towers.
LINE	No change.	No change.	Proposed towers add additional lattice patterning into view though at a larger scale than existing structures.
COLOR	No change.	No change.	Dark grays and browns evident in the structures; discernible structure color diminishes with distance.
TEXTURE	No change.	No change.	Additional towers and lines continue the coarse patterning already evident in the view.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				x				X			X	

2. Does project design meet visual resource management objectives? X__Yes ___No _ (Explain on reverses side)

3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie – 2/23/2015

SECTION D. (Continued)

Located near several private properties on the county boundary (between Luna and Doña Ana counties). This view is from NM 549, approximately 0.36 mile from an existing monopole line, and 0.6 mile from existing railroad tracks. KOP is similar to P2-04 and represents low sensitivity views. Segment P2 crosses a combination of BLM VRM IV administered lands and private land from this KOP.

Distance. The KOP is between 0.4 and 0.8 mile north and east of New Build segment P2. Segment P2 crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment P2.

Length of Time the Project Is In View. Segment P2 would potentially be viewed for a limited to extended periods as viewers travel NM 549 directly toward Segment P2 and then along the segment for approximately 3.5 miles.

Relative Size or Scale. The size of the structures would be similar to the existing transmission structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, and because of the decreasing distance to the structures as the viewer travels NM 549, they would get larger, and contrasts would increase as viewers approached the structures and then followed parallel to them for 3.5 miles.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place.

Spatial Relationships. The landscape is very open, horizontal, and flat with mountains in the distance. NM 549 and the existing transmission structures draws the viewers eyes forward.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be limited visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. There will be passenger vehicles moving along NM 549. In the short term, motion associated with construction equipment would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

Although the project meets VRM Class IV objectives, the following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 31 August 2012
District/ Field Office: Las Cruces
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township___24S___	5. Location Sketch
2. Key Observation Point **P3-01**	Range___6W_____	32.23047714900 -107.41868520100
3. VRM Class III and **non BLM land**	Section___11____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground and middleground areas. Three slight undulations protrude above the horizon in the background.	Persistent horizontal coverage of landscape by low growing grasses outside of road way. Larger shrubs appear irregularly shaped.	The fence line alongside roadway creates vertical forms occurring horizontal across the view in the foreground. A single vertical traffic sign is visible in the foreground.
LINE	The edge of road and the valley floor form two parallel, horizontal lines.	Vegetation grows in patches. Edges of vegetation apparent along the roadway corridor.	The fence posts and traffic sign are vertical features. The wire fencing creates horizontal patterning.
COLOR	Tan-colored soils are apparent beneath the vegetation along the road shoulders. Gray and tan gravel forms the visible driveway and roadway.	Light yellows and sage green dominate.	Dark grays, browns, and white evident in fence; red, green, and white evident in traffic sign.
TEXTURE	Stippling evident in gravel and asphalt roadbed. Exposed soils beneath the vegetation appear smooth.	Shrub vegetation appears coarse, grasses appear fine to medium.	Fence posts and traffic sign appear striated and coarse.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	New tall, vertical structures skyline above the strong horizon.
LINE	No change.	No change.	Proposed towers contribute to the existing vertical patterning present in this view.
COLOR	No change.	No change.	Towers appear gray from this viewpoint.
TEXTURE	No change.	No change.	Towers and lines appear striated and coarse.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X		X		
	COLOR				X				X			X	
	TEXTURE				X				X		X		

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended X___Yes _ __No (Explain on reverses side)

Evaluator's Names Date: 10/30/2012
MariaElena Conserva, Tom Priestley
Revised by Steve Leslie – 2/23/2015

SECTION D. (Continued)

Located on Geronimo Road and Ojo Road. Rural residential area with racetrack to the northwest.
Distance. The KOP is 0.8 mile west of New Build segment P3. Segment P3 crosses the view from the KOP north to south. Segment P3 crosses into BLM VRM III administered lands 1.5 miles to the southeast of the KOP.

Angle of Observation. The KOP is at an even horizontal angle to segment P3.

Length of Time the Project Is In View. Segment P3 would potentially be viewed for a limited to extended periods as viewers travel Highway 70 directly toward the Segment.

Relative Size or Scale. The size of the structures immediately east of the KOP would be taller than any of the existing structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, there would be a moderate contrast that would decrease as segment P3 extends away from the KOP. They would appear smaller, and contrasts would decrease with increasing distance.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place.

Spatial Relationships. The landscape is very open, flat, and horizontal. The proposed structures and conductors would be visible against the sky.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. There will be passenger vehicles moving along Geronimo and Ojo roads. In the short term, motion associated with construction equipment along segment P3 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

Although the project meets VRM Class objectives, the following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township___22S___	5. Location Sketch 32.40857860700 -108.74111969700
2. Key Observation Point P4-02	Range____18W____	
3. VRM Class **private land.**	Section_____7____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground and middleground areas, with a mountain range forming low undulations visible in the background.	Persistent horizontal coverage of landscape by vegetation beyond the road way. Larger vegetation appears irregularly shaped.	Fence line alongside roadway provides vertical forms descending into horizon from viewpoint. Utility poles introduce vertical patterning across the horizon.
LINE	The horizon in the background and the edge of road form two strong, hard lines.	Edges of vegetation apparent only along the roadway corridor and the horizon in the distance.	The visible physical structures – fence line and utility line – are vertical linear features. The fence line creates a regular angular patterning, as it parallels the road.
COLOR	Tan-colored soils are apparent beneath the vegetation along the road shoulders.	Light greens and browns occupy the color palette.	Dark grays and browns evident in foreground; structure visibility decays with distance.
TEXTURE	Slight stippling from roadway evident. The mountains that appear smooth from this distance.	Grass vegetation appears fine and disordered, while shrubs appear coarse.	Fence posts and utility poles appear ordered and coarse.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Distinct vertical structures add to the existing vertical patterning occurring in the view.
LINE	No change.	No change.	The proposed structures continue the regular, vertical patterning across the horizon in the distance.
COLOR	No change.	No change.	Proposed structures continue the gray color palette.
TEXTURE	No change.	No change.	Proposed structures appear coarse and striated at this distance.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___ Yes ___No _X_N/A (Explain on reverses side)

3. Additional mitigating measures recommended __X__Yes __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie – 2/23/2015

SECTION D. (Continued)

Located at the intersection of Hook and Anchor Road and NM 70 (Duncan Highway). This view is oriented north approximately 1.5 miles from the proposed line. There is 1 rural residence 0.3 mile south of this view. A potential staging area is 0.45 mile northwest of this KOP on NM 70. Few sensitive receptors and common landscape character represent this view.

Distance. The KOP is 1.5 miles south of New Build segment P4b. Segment P4a crosses the view from the KOP east to west. Segment P4b crosses private land.

Angle of Observation. The KOP is at an even horizontal angle to segment P4b.

Length of Time the Project Is In View. Segment P4b would potentially be viewed for a somewhat extended period for viewers from traveling towards it on Highway 70.

Relative Size or Scale. The size of the structures would be similar to the existing transmission structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, and because of the distance to the structures, they would appear smaller, and there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast.

Spatial Relationships. The landscape is very open, flat, and horizontal with mountains in the distant background. The proposed structures and conductors would be visible against the sky and the distant mountains.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. There will be passenger vehicles moving along Highway 70. In the short term, motion associated with construction equipment along segment P4b would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

Although the project meets VRM Class objectives, the following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township__22S_____	5. Location Sketch 32.38563898000 -108.70551249700
2. Key Observation Point **P4-01**	Range____18W_____	
3. VRM Class III/ **private land.**	Section____16_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground area, though slight undulations are apparent. Steep mountain forms create complexity visible in background.	Consistent groundcover of landscape by vegetation outside of road way. Larger vegetation appears irregularly shaped.	Fence line alongside roadway creates regular vertical patterning that recedes into horizon from viewpoint. Vertical trail marker signs create irregular vertical patterning.
LINE	The jagged mountain range forms the dominate line in this view.	Limits of vegetation apparent along the edge of roadway and to the edge of the valley floor in the background.	The fence posts and trail marker signs create vertical lines, while metal fencings providing horizontal and vertical lines.
COLOR	Warms hues of reddish and tan-colored soils are apparent beneath the vegetation. The mountains in the background are dark brown and blue.	Sage green, yellow, brown, and gray dominate.	Dark green, brown, white and silver evident in foreground in the fence and trail markers.
TEX-TURE	Patchy soils appear beneath vegetation. Stippling evident on the articulated mountains from this distance.	Clumped grasses appear fine, while shrub vegetation appears coarse.	Fence posts appear striated. Trail marker signs appear smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	The proposed towers would be vertical structures, though they would not skyline above the horizon at this distance.
LINE	No change.	No change.	The proposed structures create regular vertical line patterning across the width of the valley floor.
COLOR	No change.	No change.	The towers introduce dark gray into the structures color palette.
TEX-TURE	No change.	No change.	Towers would appear striated and coarse from this distance.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? X__Yes ___No _ (Explain on reverses side)

3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie – 2/23/2015

SECTION D. (Continued)

View is not from BLM land and is located along a portion of the CDNST that parallels NM 90 approximately 0.25 mile northeast of the intersection with NM 70. Very few residents or destinations are located along NM 90. There is no marked trailhead located here, and landscape is characterized by large expanses of open space. Recreators seeking a solitary experience on the CDNST may use this portion of the trail.

Distance. The KOP is 3.5 miles south of New Build segment P4b. Segment P4b crosses the view from the KOP east to west. Segment P4b crosses VRM Class III and private land.

Angle of Observation. The KOP is at an even horizontal angle to segment P4b.

Length of Time the Project Is In View. Segment P4b would potentially be viewed for a somewhat extended period for viewers from traveling towards it along the Continental Divide Trail as well as drivers along Highway 90.

Relative Size or Scale. The size of the structures would be similar to the existing transmission structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, and because of the distance to the structures, they would appear smaller, and there would be weak contrasts. As viewers travel towards Segment P4b, structures would appear larger and contrasts would increase.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast.

Spatial Relationships. The landscape is very open, flat, and horizontal with mountains in the. The proposed structures and conductors would be visible against distant mountains as a background.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. There will be passenger vehicles moving along Highway 90. In the short term, motion associated with construction equipment along segment P4b would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

Although the project meets VRM Class III objectives, the following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 23S	5. Location Sketch 32.33288761200 -108.38981765400
2. Key Observation Point **P2-08**	Range 15W	
3. VRM Class Private Land	Section 4	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground area, with undulations apparent in middleground on either edge of view. A series of mountain forms visible in background.	Consistent vegetative coverage of valley floor. Low-growing shrubs appear irregularly shaped.	Vertical utility pole skylines above horizon in foreground. Two additional transmission lines slightly visible in background, though remain below horizon.
LINE	Edge of valley floor in background form strong horizontal line, while mountains in background create jagged, undulating line.	Edges of vegetation formed by valley floor in the middleground and background. Vegetation growth patterns do not mimic topographic variations.	The visible physical structures – the utility poles and lines – are linear features.
COLOR	Warm reddish-colored soils are apparent beneath the vegetation. Brown hills and bluish mountains evident in the middleground and background.	Dark and light greens dominate color palette.	Brown evident in utility pole in foreground; structure visibility decays with distance.
TEXTURE	Slight stippling evident from exposed soils in foreground and hillsides in the middleground. The mountains appear smooth from this distance.	Shrub vegetation appears coarse, but grass vegetation appears fine.	Utility pole appears coarse.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Additional vertical towers added to the view in the distance.
LINE	No change.	No change.	The proposed towers and lines perpetuate the vertical and horizontal patterning that is already present in the view.
COLOR	No change.	No change.	Structure visibility decays with distance; color appears gray.
TEXTURE	No change.	No change.	Utility poles appear coarse from this distance.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? __Yes __No (Explain on reverses side)

3. Additional mitigating measures recommended X__Yes __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie – 2/23/2015

SECTION D. (Continued)

No immediate sensitive receptors, landscape is very rural and largely vacant.

Distance. The KOP is 2.0 miles north of New Build segment P2. Segment P2 crosses the view from the KOP generally east to west. Segment P2 crosses private land.

Angle of Observation. The KOP is at an even horizontal angle to segment P2.

Length of Time the Project Is In View. Segment P2 would potentially be viewed for a somewhat extended period for at rural residences near the Langford Mountains.

Relative Size or Scale. The size of the structures would be similar to the existing transmission structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, and because of the distance to the structures, they would appear smaller, and there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast.

Spatial Relationships. The landscape is very open, flat, and horizontal with mountains in the. The proposed structures and conductors would be visible mostly against the darker backdrop of the distant mountains.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment P2 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

Although the project crosses private land at this segment, the following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 31 August 2012
District/ Field Office: Las Cruces
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 23S	5. Location Sketch
2. Key Observation Point **P2-07**	Range 13W	32.29367269100 -108.15930854200
3. VRM Class **III**	Section 23	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land in the valley floor appears flat in the foreground. Jagged mountains are visible in the middleground and background.	Scattered coverage of landscape by grasses across the valley floor. Low-growing shrubs appear irregularly shaped.	Utility poles form vertical patterning across the horizon, skylining occasionally above the mountain range in the background. The fence line alongside roadbed ruts are vertical forms descending into horizon from this viewpoint.
LINE	Edge of valley floor in middleground creates strong horizontal line. Jagged mountains contrast against skyline.	Edges of vegetation apparent only along the roadbed ruts and at distance limit on the valley floor in the background.	The fence and utility line are vertical, linear features.
COLOR	Reddish- tan colored soils are apparent beneath the vegetation and in the roadbed ruts.	Light and dark greens and tans visible.	Dark grays and browns evident in foreground and middleground; structure visibility decays with distance.
TEX-TURE	Soil appears smooth, while mountains in middleground appear fine grain. Mountains in background appear smooth from this distance.	Shrub vegetation appears coarse, while grasses appear fine to medium, growing in a patchy manner across the valley floor.	Fence posts appear striated, and utility poles appear coarse from this distance.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Vertical transmission towers occur at regularly spaced distances across the landscape.
LINE	No change.	No change.	Vertical patterns continue under proposed conditions with additional transmission towers.
COLOR	No change.	No change.	Dark grays remain dominant color palette for structures.
TEX-TURE	No change.	No change.	Towers appear coarse from this distance.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie – 2/23/2015

SECTION D. (Continued)

Change consistent with VRM Class III objectives.

This view is located along an unpaved county road at the foot of Grandmother Mountain. This roadway heads west and north and provides access to a single ranch and largely open/vacant lands. This view is 2 miles east of the CDNST which received many scoping comments of concern.

Distance. The KOP is 1.2 miles north of New Build segment P2. Segment P2 crosses the view from the KOP generally east to west. Segment P2 crosses BLM VRM class III administered lands and private lands.

Angle of Observation. The KOP is at an even horizontal angle to segment P2.

Length of Time the Project Is In View. Segment P2 would potentially be viewed for a somewhat extended period for at rural residences near the Langford Mountains.

Relative Size or Scale. The size of the structures would be similar to the existing transmission structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, and because of the distance to the structures, they would appear smaller, and there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the season and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape is very open, flat, and horizontal with mountains in the. The proposed structures and conductors would be visible against the sky and the darker backdrop of the distant mountains.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment P2 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

Although the project meets VRM Class objectives, the following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township__27S____	5. Location Sketch 31.96225474600 -106.89030239600
2. Key Observation Point **S1-01**	Range__1W_____	
3. VRM Class **IV**	Section___13_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Roadbed in foreground appears depressed below the surrounding land. However, vegetation obscures visibility of landforms in foreground and middleground. Low mountain range visible in background.	Persistent horizontal coverage of landscape by vegetation outside of road way. Larger vegetation appears irregularly shaped.	No structures visible from this viewpoint.
LINE	Roadbed forms a dominant curving line, with the edge of road paralleling the curves. The mountain ranges forms a second, lesser, jagged line.	Edges of vegetation apparent only along the roadway corridor.	No structures visible from this viewpoint.
COLOR	The roadbed is composed of reddish and tan-colored sandy soils. Soils are also visible on along the road shoulders.	Greens and tans dominate the vegetation color palette.	No structures visible from this viewpoint.
TEX-TURE	Roadbed creates striation effect. Some stippling evident along the road shoulders. The mountains appear smooth from this distance.	Shrub vegetation appears coarse.	No structures visible from this viewpoint.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	The proposed structure introduces tall, prominent towers, with numerous lines between each tower.
LINE	No change.	No change.	The proposed structure creates strong horizontal line patterning with the transmission lines. The towers create tall vertical lines.
COLOR	No change.	No change.	Gray dominates the color palette.
TEX-TURE	No change.	No change.	The towers lines appear coarse and striated.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X	X			
	LINE				X				X	X			
	COLOR				X				X			X	
	TEXTURE				X				X		X		

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie 2/24/2015

SECTION D. (Continued)

The proposed contrast is consistent with the objectives of the VRM Class IV.

No highly sensitive receptors. Class IV BLM lands.

SIMULATION

Distance. The KOP is 0.1mile west of New Build segment S1. Segment S1 crosses the view from the KOP generally north to south. Segment S1 crosses BLM VRM class IV administered lands.

Angle of Observation. The KOP is at an even horizontal angle to segment S1.

Length of Time the Project Is In View. Segment S1 would potentially be viewed for limited periods of time.

Relative Size or Scale. The size of the structures would be the largest visible structures within the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, and because of the distance to the structures, they would appear very larger, and there would be strong contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape is very open, flat, and horizontal with mountains in the distant background. The proposed structures and conductors would primarily be visible against the sky resulting in strong contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment S1 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

Although the project meets VRM Class IV objectives, the following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012
	District/ Field Office: Las Cruces
	Resource Area:
	Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 27S	5. Location Sketch 31.95857990500 -106.95401187900
2. Key Observation Point **S1-02**	Range 1W	
3. VRM Class **IV**	Section 16	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land slopes downward toward the valley floor in the foreground. Dirt roadbed visible in foreground. Tall mountains evident in background, with smaller topographic undulations just in front.	Sporadic growth of vegetation outside of road way. Larger vegetation appears irregularly shaped.	Indistinguishable structures in the far distance. Transmission line towers visible backdropped by the mountain range.
LINE	Edge of valley floor in the distance creates a strong horizon. and mountainous skyline forms a jagged line. The roadbed creates a continuous, angular line across the viewpoint.	Edges of vegetation apparent along the roadway corridor and at far distance edge of valley floor.	Line patterning indistinguishable from this distance.
COLOR	Gray and tan-colored soils are apparent surrounding the vegetation and along the roadbed.	Greens and tans dominate.	Structures appear white and gray. Structure visibility decays with distance.
TEX-TURE	Slight stippling evident in soils. Mountains appear smooth from this distance.	Shrub vegetation appears coarse.	Structures appear coarse from this distance.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Proposed towers introduce additional vertical patterning into view.
LINE	No change.	No change.	Vertical line patterning occurs at regular intervals across the landscape. From this distance, structure visibility decays with distance.
COLOR	No change.	No change.	Structures appear gray.
TEX-TURE	No change.	No change.	Structures appear coarse from this distance.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X		X		
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X__ Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended X___Yes ___No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie 2/24/2015

SECTION D. (Continued)

Contrast consistent with VRM Class IV objectives.

View from foot of Kilbourne Hole.

Distance. The KOP is 3 miles west of New Build segment S1. Segment S1 crosses the view from the KOP generally north to south. Segment S1 crosses BLM VRM class IV administered lands.

Angle of Observation. The KOP from the eastern rim of the Kilbourne Hole has a slight superior angle of observation of segment S1.

Length of Time the Project Is In View. Segment S1 would potentially be viewed for extended periods of time.

Relative Size or Scale. The size of the structures would be the largest visible structures within the landscape. Because of the relative size of the structures when compared with the undeveloped open landscape, and because of the distance to the structures, they would appear large, and there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape is very open, flat, and horizontal with mountains in the distant background. The proposed structures and conductors would primarily be visible against the distant mountains and sky resulting in moderate contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment S1 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

Although the project meets VRM Class IV objectives, the following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 23S	5. Location Sketch 32.30771311400 -107.69590563000
2. Key Observation Point **P2-05**	Range 8W	
3. VRM Class **III/Private Land.**	Section 17	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land in the foreground appears relatively flat with slight variations in slope apparent. Jagged mountains rise from the valley floor in the distance in half of the view. The roadbed cuts through the center of the view and descends into the distant horizon.	Vegetation creates an amorphous, rolling, low profile shape.	A distribution line parallels the roadway, while two transmission lines traverse the view and recede at an angle into the distance.
LINE	Edge of valley floor creates strong horizon in the distance, and mountainous skyline creates a jagged line. Edge of roadbed forms an angled, straight line.	Edges of vegetation apparent along the roadway corridor and at base of mountain range.	The utility lines comprise the only manmade structures visible in this view.
COLOR	Gray and tan-colored soils are apparent beneath the vegetation and along the road shoulders.	Yellows, light greens, and dark greens dominate.	Dark grays and browns evident in the utility structures.
TEXTURE	Smooth roadway bisects the stippled gravel shoulders. The mountains that appear relatively smooth from this distance.	Shrub vegetation appears coarse, and grasses appear fine to medium grain.	The utility poles appear coarse against the landscape.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Tall, dominant lattice structure and numerous line horizontal lines quite visible at this distance.
LINE	No change.	No change.	Bold, vertical line patterning from towers and horizontal patterning from line becomes more apparent.
COLOR	No change.	No change.	Lighter gray introduced with proposed structures.
TEXTURE	No change.	No change.	Striated patterning evident in lattice structure. Lines appear coarse.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? X Yes ___No _ (Explain on reverses side)

3. Additional mitigating measures recommended X ___Yes _ __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie 2/24/2015

SECTION D. (Continued)

This is the closest view in the Deming area (approximately 3.7 miles due north). Several potentially sensitive receptors (including local parks, churches, cemetery and residences exist in Deming). This is also the closest point to the Florida Mountains (identified as a well-used recreation area and VRI/VRM Class II).

Distance. The KOP is 0.4 mile south of New Build segment P2. Segment P2 crosses the view from the KOP east to west. Segment P2 crosses into BLM VRM III administered lands 1.5 miles to the northeast of the KOP.

Angle of Observation. The KOP is at an even horizontal angle to segment P2.

Length of Time the Project Is In View. Segment P2 would potentially be viewed for a limited to extended periods as viewers travel Highway 26 directly toward the Segment. The Segment would be visible for extended periods from Deming.

Relative Size or Scale. The size of the structures immediately north of the KOP would be taller than any of the existing structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, there would be a moderate contrast that would decrease as segment P2 extends away from the KOP. They would appear smaller, and contrasts would decrease with increasing distance.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place.

Spatial Relationships. The landscape is very open, flat, and horizontal. The proposed structures and conductors would be visible against the sky and the distant mountains.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. There will be passenger vehicles moving along Highway 26. In the short term, motion associated with construction equipment along segment P2 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township__27S____	5. Location Sketch 31.92390944800 -106.91119823000
2. Key Observation Point **A-01**	Range____1W____	
3. VRM Class **IV**	Section___26____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground and middleground areas, though slight undulations are apparent. Distant mountain range visible through vegetation.	Persistent horizontal coverage of landscape by vegetation outside of road way. Larger vegetation appears irregularly shaped.	Single windmill visible from viewpoint.
LINE	Edge of valley floor creates strong horizontal line. Roadbed creates curving line.	Edges of vegetation apparent along the roadway shoulder.	The windmill introduces a circle line pattern into the view.
COLOR	Reddish and tan-colored soils are apparent surrounding the vegetation and the roadbed and shoulders.	Dark greens and browns dominate.	Dark grays evident in windmill.
TEX-TURE	Slight striation from roadbed soils.	Shrub vegetation appears coarse and clumped.	Windmill appears striated.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Proposed towers add vertical structures into the landscape.
LINE	No change.	No change.	Structures create vertical line patterning at regular intervals across the horizon.
COLOR	No change.	No change.	Structures appear gray from this distance.
TEX-TURE	No change.	No change.	Towers and lines appear coarse and striated.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X	X			
	LINE				X				X	X			
	COLOR				X				X			X	
	TEXTURE				X				X		X		

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Contrast consistent with VRM Class IV objectives.

Distance. The KOP is less than 0.1 mile west of segment A. Segment A crosses the view from the KOP north to south Segment A crosses into BLM VRM Class IV Administered lands 0.06 miles south of the KOP.

Angle of Observation. The KOP is at an even horizontal angle to segment A.

Length of Time the Project Is In View. Segment A would potentially be viewed for limited periods by viewers traveling through the area.

Relative Size or Scale. The relative size of the structures would appear to be the largest structures on the landscape. Because of the relative size of the structures when compared with the existing windmill, vegetation, and the open landscape, and because of the close proximity distance to the structures, they would appear large, and there would be strong contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required, there would be no visible contrast.

Spatial Relationships. The landscape is very open, horizontal, and flat. The existing windmill currently draws the attention of the casual viewer, but there are no other structures to draw in the viewer.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be limited visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 23S	5. Location Sketch 32.31785247300 -107.76068193500
2. Key Observation Point **P2-06**	Range 9W	
3. VRM Class **Private land.**	Section 10	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground area, with manmade mounds of dirt visible. No visible evidence of form in the background.	Sporadic growth patterns of vegetation. Larger vegetation appears irregularly shaped.	Transmission lines, distribution lines, fences, and mailboxes form disorganized vertical patterning across the view. Residences and ancillary structures dot the view, creating mass.
LINE	Edge of roadbed forms an angled, straight line. Edge of the valley floor forms the horizon in the distance.	Edges of vegetation apparent along the edge of roadway shoulder.	Electrical lines, fences, and mail boxes are numerous vertical features. Residential and ancillary structures create horizontal line patterning.
COLOR	Reddish and tan-colored soils are apparent beneath the vegetation, and gray gravels are visible along the road shoulders.	Greens and grays dominate.	Dark grays and browns evident in foreground; structure visibility decays with distance.
TEXTURE	Stippling evident in the driveway gravel and dirt mounds.	Patchy vegetation appears coarse.	Fence posts and utility poles create striation.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Tall, linear structures added to an existing landscape containing tall vertical structures.
LINE	No change.	No change.	Addition of vertical structures and horizontal lines continue existing vertical and horizontal patterning.
COLOR	No change.	No change.	Dark gray continues to be dominant color palette among structures.
TEXTURE	No change.	No change.	Uniformity in striated, coarse towers and transmission lines.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? __ Yes ___No N/A X
(Explain on reverses side)

3. Additional mitigating measures recommended
X ___Yes ___No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie 2/24/2015

SECTION D. (Continued)

Representative ROW occurs on private land. No VRM objectives to meet.
View is from Padre Hill Drive NW and Overhill Drive located directly north of a residential driveway and approximately 0.5 mile from the proposed line.

Distance. The KOP is 0.5 mile north of New Build segment P2. Segment P2 crosses the view from the KOP east to west. Segment P2 crosses private land in this area.

Angle of Observation. The KOP is at an even horizontal angle to segment P2.

Length of Time the Project Is In View. Segment P2 would potentially be viewed for a limited to extended periods as viewers travel directly toward the Segment. The Segment would be visible for extended periods from rural residences in the area.

Relative Size or Scale. The size of the structures south of the KOP would be similar to the existing structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, there would be a moderate contrast that would decrease as segment P2 extends away from the KOP. They would appear smaller, and contrasts would decrease with increasing distance.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place.

Spatial Relationships. The landscape is very open, flat, and horizontal. The proposed structures and conductors would be visible against the sky.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. There will be passenger vehicles moving in the area. In the short term, motion associated with construction equipment along segment P2 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 24S	5. Location Sketch 32.24388236700 -107.34235147400
2. Key Observation Point **P2-04**	Range 5W	
3. VRM Class at location of KOP **III**	Section 3	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground area, though slight undulations are apparent. Low mountain forms rise in background.	Vegetation at the edge of roadway creates one cohesive, amorphous form. Persistent horizontal coverage of landscape by vegetation outside of road way.	Two transmission lines transect the view, receding at an angle into the distance. The towers skyline above the horizon. Right of way wire fencing occurring along the edge of roadway.
LINE	Valley floor creates strong horizon. Mountainous skyline creates rugged line.	Edges of vegetation apparent only along the roadway corridor.	The transmission towers create vertical patterning across the view, with the tower structures themselves creating a criss-cross lattice pattern. The fence creates a short segment of vertical and horizontal until it is absorbed by the vegetation.
COLOR	Dark gray asphalt contrasts against light gray gravel beyond the roadbed, and reddish-tan colored soils are apparent beneath the vegetation.	Light greens and yellows dominate.	Dark browns evident in the towers; dark green and white visible in the wire fencing.
TEXTURE	Slight stippling evident at edge of road; road surface appears smooth. Mountains appear granular at this distance.	Shrub vegetation appears coarse.	Fence posts and utility poles appear coarse.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Additional towers and lines introduced into view, paralleling the direction of the existing lines.
LINE	No change.	No change.	Introduction of the proposed transmission line brings additional vertical towers and horizontal lines into view.
COLOR	No change.	No change.	Light gray towers and lines.
TEXTURE	No change.	No change.	Transmission lines appear striated against the mountain range in the distance. Towers are absorbed into mountain range in the backdrop.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Change is consistent with VRM Class III objectives.

Distance. The KOP is 0.6 mile north of New Build segment P2. Segment P2 crosses the view from the KOP east to west. Segment P2 crosses BLM VRM Class III administered lands in this area.

Angle of Observation. The KOP is at an even horizontal angle to segment P2.

Length of Time the Project Is In View. Segment P2 would potentially be viewed for a limited to extended periods as viewers travel directly toward the Segment. The Segment would be visible for extended periods from rural residences in the area.

Relative Size or Scale. The size of the structures south of the KOP would be similar to the existing structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, there would be a weak contrast that would decrease as segment P2 extends away from the KOP and the I-10. They would appear smaller, and contrasts would decrease with increasing distance.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place.

Spatial Relationships. The landscape is very open, flat, and horizontal. There are some mountains in distant background. The proposed structures and conductors would be visible against the sky and the distant mountains. Contrasts would be reduced where the lattice structures are viewed against the darker mountain background.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. There will be vehicle traffic moving along the I-10 in the area. In the short term, motion associated with construction equipment along segment P2 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 31 August 2012
District/ Field Office: Las Cruces
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 28S	5. Location Sketch
2. Key Observation Point **S2-01**	Range 1W	31.85766163900 -106.97810179900
3. VRM Class **IV**	Section 19	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land in foreground slopes at an angle. The low undulating hills in the middleground rise from the valley floor.	Patchy shrub growth in foreground, with shrubs blending into one mass in middleground. Vegetation in foreground appears irregularly shaped.	Single radio tower visible on leftmost knob on hills.
LINE	The hills in the middleground create a bold, curvilinear pattern.	Vegetation forms no apparent line in foreground. Edges of vegetation blends into the base on the hills.	The radio tower introduces a vertical line into the view.
COLOR	Gray and tan colors soils are visible.	Greens and browns dominate.	Gray is visible. Structure visibility limited by distance.
TEX-TURE	Stippling evident in soils. Horizontal striation visible on hillside.	Shrub vegetation appears coarse in foreground, and medium in the middleground.	Tower appears striated.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Proposed structures well absorbed by mountain range in background. Structures contrast against sky where they extend above the landform.
LINE	No change.	No change.	Introduce tall, vertical structures into view.
COLOR	No change.	No change.	Structures contain gray hues.
TEX-TURE	No change.	No change.	Structures and lines are coarse.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X		X		
	COLOR				X				X			X	
	TEXTURE				X				X		X		

2. Does project design meet visual resource management objectives? _X_Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended X ___Yes ___No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie 2/24/2015

SECTION D. (Continued)

Contrast consistent with VRM Class IV objectives.

Distance. The KOP is 0.3mile west of New Build segment S2. Segment S2 crosses the view from the KOP generally NNE to SSW. Segment S2 crosses BLM VRM class IV administered lands.

Angle of Observation. The KOP is at an even horizontal angle to segment S2.

Length of Time the Project Is In View. Segment S2 would potentially be viewed for limited periods of time from County Road A16.

Relative Size or Scale. The size of the structures would be the largest visible structures within the landscape. Because of the relative size of the structures when compared with the undeveloped open landscape, and because of the distance to the structures, they would appear large, and there would be moderate contrasts. The apparent size would reduce as the segment structures move further from the KOP.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the middle ground. The proposed structures and conductors would be visible against the sky and against the mountains resulting in moderate contrasts. The segment crosses the low mountains and additional structures are screened from view in that direction.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment S2 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

SIMULATION
The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 29S	5. Location Sketch 31.81357832800 -107.39220266200
2. Key Observation Point **P3-02**	Range 5W	
3. VRM Class at KOP location **IV**	Section 6	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Viewpoint from an embankment, though middleground appears relatively flat, with a series of low mountain ranges in the distant background.	Sporadic growth of vegetation outside of road way. Larger vegetation appears irregularly shaped.	None present.
LINE	Edge of valley floor and mountainous skyline are the two dominant lines.	Vegetation grows in a patchy, incongruent manner and creates no defined line.	None present.
COLOR	Reddish and tan-colored soils are visible beyond the vegetation along the road shoulders. Some dark gray gravel is visible along the edge of road. Shades of blue are visible in the distant mountains.	Yellowish-greens and tans are visible.	None present.
TEX-TURE	Slight stippling evident in soils. Mountains appear smooth from this distance.	Shrub vegetation appears coarse and grows in a patchy, incongruent manner.	None present.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Towers introduce tall, vertical structures.
LINE	No change.	No change.	Towers create tall, vertical patterning. Wires create horizontal patterning.
COLOR	No change.	No change.	Gray is visible.
TEX-TURE	No change.	No change.	Structures appear coarse and create striation.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X		X		
	COLOR				X				X			X	
	TEXTURE				X				X		X		

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended _X_Yes ___No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Contrast consistent with VRM Class IV objectives.

Florida Mountains lie 6 miles to the west and could afford direct long-distance views of the line. From the east (looking west) at the West Potrillo Mountains between 7 and 12 miles away, direct views of the line would like occur due to "superior" viewing locations and visual impacts from the substation expansion.

Distance. The KOP is approximately 0.5 mile east of New Build segment P3. Segment P3 crosses the view from the KOP north to south.

Angle of Observation. The KOP is at a slightly elevated angle to segment P3.

Length of Time the Project Is In View. Segment P3 would potentially be viewed for limited to extended periods by viewers traveling NM 9.

Relative Size or Scale. The size of the structures immediately west of the KOP would be taller than any of the existing structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, there would be a moderate contrast that would decrease as segment P3 extends away from the KOP. They would appear smaller, and contrasts would decrease with increasing distance.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place. Because of the small scale of vegetation disturbance required, there would be no visible contrast.

Spatial Relationships. The landscape is very open, flat, and horizontal with the West Potrillo Mountains in the background. The proposed structures and conductors would be visible against the sky.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts.

Motion. There is limited motion within the landscape from vehicle traffic along NM 9. In the short term, motion associated with construction equipment would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 31 August 2012
District/ Field Office: Las Cruces
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 29S	5. Location Sketch
2. Key Observation Point **B-01**	Range 4W	31.82100698000 -107.22667280300
3. VRM Class **IV land**	Section 2	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land slopes in the foreground toward the conical formations in the middleground. Several mountain ranges are visible in the background.	Patchy, low growing vegetation grows across landscape.	No structures visible in this view.
LINE	Valley floor creates a prominent horizon. Topographic undulations generate curvilinear lines in middleground and background.	Vegetation grows in patchy pattern.	No structures visible in this view.
COLOR	Reddish and tan-colored soils are apparent beneath the vegetation along the road shoulders. Landforms in middleground appear reddish, while mountain range in background appears blue.	Yellows, browns, grays, and greens dominate.	No structures visible in this view.
TEX-TURE	Slight stippling evident in soils and mountains.	Vegetation growth pattern creates stippled effect.	No structures visible in this view.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Proposed towers bring structures into view.
LINE	No change.	No change.	Towers create vertical line patterning in a regular spacing across the horizon.
COLOR	No change.	No change.	Structure visibility degrades with distance; towers appear to be dark gray at this distance.
TEX-TURE	No change.	No change.	Structure visibility degrades with distance; towers appear coarse.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X__Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended _X__Yes _ __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

The representative ROW crosses VRM Class IV land. Contrast would be consistent with the VRM Class IV objectives.

Similar to S4-01.

Distance. The KOP is 2.2 miles north of New Build segment B. Segment B crosses BLM VRM class IV administered lands.

Angle of Observation. The KOP is at superior viewing angle to segment B.

Length of Time the Project Is In View. Segment B would potentially be viewed for extended periods.

Relative Size or Scale. The size of the structures would be the largest visible structures within the landscape. However, because of the distance to the structures, and the view of structures against a darker background, there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the background. Because of the superior viewing angle; the proposed structures and conductors would be visible against the ground and the mountains resulting in weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic along NM 9. In the short term, motion associated with construction equipment along segment B would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012
	District/ Field Office: Las Cruces
	Resource Area:
	Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 29S	5. Location Sketch 31.82100698000 -107.22667280300
2. Key Observation Point **S4-01**	Range 4W	
3. VRM Class **IV land**	Section 2	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land slopes in the foreground toward the conical formations in the middleground. Several mountain ranges are visible in the background.	Patchy, low growing vegetation grows across landscape.	No structures visible in this view.
LINE	Valley floor creates a prominent horizon. Topographic undulations generate curvilinear lines in middleground and background.	Vegetation grows in patchy pattern.	No structures visible in this view.
COLOR	Reddish and tan-colored soils are apparent beneath the vegetation along the road shoulders. Landforms in middleground appear reddish, while mountain range in background appears blue.	Yellows, browns, grays, and greens dominate.	No structures visible in this view.
TEX-TURE	Slight stippling evident in soils and mountains.	Vegetation growth pattern creates stippled effect.	No structures visible in this view.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Proposed towers bring structures into view.
LINE	No change.	No change.	Towers create vertical line patterning in a regular spacing across the horizon.
COLOR	No change.	No change.	Structure visibility degrades with distance; towers appear to be dark gray at this distance.
TEX-TURE	No change.	No change.	Structure visibility degrades with distance; towers appear coarse.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? X Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended X Yes ___No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie 2/24/2015

SECTION D. (Continued)

The representative ROW crosses VRM Class IV land. Contrast would be consistent with the VRM Class IV objectives.

View is located approximately 2.2 miles from the proponent's alternative line and 2.5 miles from the US/Mexican Border. Landscape is largely flat and common, few sensitive viewers are located in this area as it is highly monitored by Border Patrol.

Distance. The KOP is 2.2 miles north of New Build segment S4. Segment S4 parallels Highway 9. Segment S4 crosses BLM VRM class IV administered lands.

Angle of Observation. The KOP is at superior viewing angle to segment S4.

Length of Time the Project Is In View. Segment S4 would potentially be viewed for extended periods.

Relative Size or Scale. The size of the structures would be the largest visible structures within the landscape. However. because of the the distance to the structures, and the view of structures against a darker background; there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons and would not result in changes to visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the background. Because of the superior viewing angle; the proposed structures and conductors would be visible against the ground and the mountains resulting in weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic along NM 9. In the short term, motion associated with construction equipment along segment S4 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 29S	5. Location Sketch 31.81549816600 -107.07477049900
2. Key Observation Point **S3-01**	Range 2W	
3. VRM Class **IV**	Section 5	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground area, though slight undulations are apparent. Rolling mountain forms visible in background.	Consistent horizontal coverage of landscape by vegetation outside of road way. Larger vegetation appears irregularly shaped.	Structures are no visible in this view.
LINE	The road creates a strong, angular line as it recedes into the distance. The mountains create an undulating line across the horizon.	Edges of vegetation apparent only along the roadway corridor.	Structures are no visible in this view.
COLOR	Reddish and tan-colored soils are apparent beneath the vegetation along the road shoulders. The roadbed and mountains appear gray.	Greens and browns dominate.	Structures are no visible in this view.
TEXTURE	Slight stippling evident in roadbed and roadway shoulder. The mountains appear smooth from this distance.	Shrub vegetation appears coarse.	Structures are no visible in this view.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Tall, prominent structures would be introduced into a landscape absent of manmade structures.
LINE	No change.	No change.	Towers create vertical patterning; lines create strong angular patterning, which mirrors the direction of the roadway.
COLOR	No change.	No change.	Gray dominates the color palette.
TEXTURE	No change.	No change.	Lines and towers appear coarse and striated.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X		X		
	COLOR				X				X			X	
	TEXTURE				X				X		X		

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie 2/24/2015

SECTION D. (Continued)

Contrast consistent with the VRM Class IV objectives.

View is located along Hwy 9 and is oriented westward along roadway. Simulation shows structures on south side and parallel to the road along the proponent's alternative. View is located outside of any sensitive locations, or unique landscape.

Distance. The KOP is less than 0.1 mile north of New Build segment S3. Segment S3 parallels Highway. Segment S3 crosses BLM VRM class IV administered lands.

Angle of Observation. The KOP is at an even horizontal angle to segment S3.

Length of Time the Project Is In View. Segment S3 would potentially be viewed for extended periods from NM 9.

Relative Size or Scale. The size of the structures would be the largest visible structures within the landscape. Because of the relative size of the structures when compared with the undeveloped open landscape, and because of the distance to the structures, they would appear large, and there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the background. The proposed structures and conductors would be visible against the sky and against the mountains resulting in moderate contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic along NM 9. In the short term, motion associated with construction equipment along segment S3 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 31 August 2012
District/ Field Office: Las Cruces
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township___28S____	5. Location Sketch 31.82996968500 -107.61735231600
2. Key Observation Point **S5-01**	Range___8W_____	
3. VRM Class **N/A. non BLM land.**	Section____36____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground area, with slight undulations are apparent. Gently slopes mountain forms visible in background.	Patchy, low growing grasses create consistent coverage of landscape. Larger vegetation appears irregularly shaped.	KOP is located in urban setting. Buildings visible in view. Additional vertical structures occur including distribution line, water tower, traffic signage, agricultural fencing.
LINE	Edge of valley floor and undulating mountainous skyline are the two dominant lines.	Edges of vegetation apparent only along the roadway corridor. No apparent line created by vegetation.	The fencing creates regular, angular vertical patterning. Buildings in background create no discernible line patterning.
COLOR	Reddish and tan-colored soils are apparent beneath the vegetation along the road shoulders.	Light greens and tans dominate.	Dark grays, browns, reds, and whites evident in foreground; structure visibility decays with distance.
TEX-TURE	Slight stippling evident in soils, mountains and in roadway asphalt.	Shrub vegetation appears coarse.	Buildings appear clumped. Fence posts and utility poles appear smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Tall, prominent structures would be introduced into the landscape.
LINE	No change.	No change.	Towers create vertical patterning; lines create strong angular patterning, which mirrors the direction of the roadway.
COLOR	No change.	No change.	Gray dominates the color palette.
TEX-TURE	No change.	No change.	Lines and towers appear coarse and striated.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X		X		
	COLOR				X				X			X	
	TEXTURE				X				X		X		

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes _X_No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie 2/24/2015

SECTION D. (Continued)

View is located along Hwy 9 oriented southward away from the community of Columbus. This view does not represent a sensitive location.

Distance. The KOP is less than 0.1 mile north and west of New Build segment S5. Segment S5 parallels portions of NM 9. Segment S5 crosses private land in this area.

Angle of Observation. The KOP is at an even horizontal angle to segment S5.

Length of Time the Project Is In View. Segment S5 would potentially be viewed for extended periods from NM 9.

Relative Size or Scale. The size of the structures would be larger than existing distribution poles in the within the landscape. Because of the relative size of the structures when compared with the existing poles, and because of the close proximity to the structures, they would appear large, and there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the background. The proposed structures and conductors would be primarily visible against the sky and partially visible against the mountains resulting in moderate contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic along NM 9. In the short term, motion associated with construction equipment along segment S5 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township___28S____	5. Location Sketch 31.82653852900 -107.64158590200
2. Key Observation Point **S5-02**	Range___8W_____	
3. VRM Class **on state land**	Section___34_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground, with slight undulations are apparent. Low rising mountain forms visible in background.	Sporadic coverage of landscape by vegetation. Vegetation appears irregularly shaped. Multitude of shapes and sizes.	Picnic umbrellas create triangular forms. Wooden fencing creates short, vertical patterning. Mobile homes visible in middleground.
LINE	Edge of valley floor and mountainous skyline create strong horizon.	Tall trees' trunks create vertical patterning. Low growing vegetation creates no discernible line patterning.	Wooden fencing creates short, circular and vertical patterning.
COLOR	Reddish and tan-colored soils are apparent beyond the vegetation growth.	Greens and browns dominate.	White, dark grays and browns evident in foreground; structure visibility decays with distance.
TEXTURE	Slight stippling evident in visible soils. The mountains appear smooth from this distance.	Vegetation appears coarse.	Structures appear coarse.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Proposed structures remain consistent with existing vertical patterning.
LINE	No change.	No change.	Proposed structures consistent with existing vertical patterning. Towers are visible above horizon.
COLOR	No change.	No change.	Proposed structures contain gray.
TEXTURE	No change.	No change.	Structures appear coarse from this distance.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				x				x			x	
	LINE				x				x			x	
	COLOR				x				x			x	
	TEXTURE				x				x			x	

2. Does project design meet visual resource management objectives? ___Yes ___No _X_ N/A (Explain on reverses side)

3. Additional mitigating measures recommended X___Yes ___No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

No change to the historic interpretation of the Pancho Villa State Park.

View is 1.26 miles from the proponent's alternative line and simulation shows a "superior" view from atop a mountain within the Pancho Villa State Park (just southwest of Columbus. Park users tend to be sensitive to change from this location, however distance and angle (superior viewing conditions) would result in a lesser visual obstruction from this vantage.

Distance. The KOP is 1.3 miles north and west of New Build segment S5. Segment 5 parallels portions of NM 9. Segment S5 crosses private land in this area.

Angle of Observation. The KOP is at superior viewing angle to segment S5.

Length of Time the Project Is In View. Segment S5 would potentially be viewed for extended periods from the park.

Relative Size or Scale. The relative size of the structures would appear smaller from the KOP when compared with the taller vegetation and existing distribution line structures visible in the fore ground. Because of the relative size of the structures when compared with the existing poles, and because of the greater distance to the structures there would be weak apparent contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the background. The proposed structures and conductors would be primarily visible against the sky and partially visible against the darker backdrop of the ground and distant mountains. The use of lattice structures in this area would result in weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed

structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. There would be vehicle traffic in Columbus and associated with recreational use of the park. In the short term, motion associated with construction equipment along segment S5 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township___29S____	5. Location Sketch 31.81030555800 -107.81537493200
2. Key Observation Point **S5-03**	Range_____10W___	
3. VRM Class **private land.**	Section____1_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground, with slight undulations are apparent. Low rising mountains form middleground and background.	Persistent coverage of landscape by vegetation in between two road ways. Larger vegetation appears irregularly shaped and sporadic.	Utility poles alongside roadway are vertical forms descending into horizon from viewpoint. Second distribution line and farm buildings visible in middleground, rural clustered development visible in background.
LINE	Jagged mountainous skyline creates dominant horizon. Two parallel roadways create angular line patterning.	Edges of vegetation occur between edge of pavement and edge of unpaved road.	Utility poles are vertical linear features. Farm buildings and rural clustered development create no coherent line patterning.
COLOR	Reddish and tan-colored soils are visible. Gray asphalt visible in foreground.	Dark and light greens and tans dominate.	Dark grays and browns evident in foreground; farm building appear white. Structure visibility decays with distance.
TEXTURE	Slight stippling evident in asphalt and mountains. Stippling and striation evident in farmed soils.	Vegetation in foreground appears fine. Larger vegetation in middleground appears coarse.	Utility poles and farm structures appear coarse.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Tall vertical structures add to existing vertical structures.
LINE	No change.	No change.	Structures generate additional vertical line patterning in view.
COLOR	No change.	No change.	Dark grays and browns visible.
TEXTURE	No change.	No change.	Towers appear coarse and create striation.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)

Evaluator's Names Date: 10/16/2012
Caitlin McCusker
Revised by Steve Leslie 2/24/2015

SECTION D. (Continued)

Though located 43 miles to the west, this view is very similar to S5-01 and does not represent a sensitive viewpoint or distinctive lands.

Distance. The KOP is 0.75 mile north and west of New Build segment S5. Segment S5 crosses private land in this area. 1.6 miles west of the KOP, segment S5 crosses into BLM VRM Class II administered lands.

Angle of Observation. The KOP is at an even horizontal angle to segment S5.

Length of Time the Project Is In View. Segment S5 would potentially be viewed for extended periods from NM 9.

Relative Size or Scale. The relative size of the structures is similar to the existing distribution poles in the within the landscape. Because of the relative size of the structures when compared with the existing poles, and because of the close proximity to the structures, there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the middle ground and background. The proposed structures and conductors would be primarily visible against the sky and partially visible against the mountains resulting in weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic along NM 9. In the short term, motion associated with construction equipment along segment S5 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 28S Range 11W Section 32	5. Location Sketch 31.822829161 x -107.995497078
2. Key Observation Point **C-01**		
3. VRM Class II		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Rolling hills across view; gently sloped foothills frame the left and right sides of the view.	Some rounded shapes in immediate foreground, with less defined, but evenly dispersed, forms extending away from the viewpoint.	Utility poles appear tall and slender, with at least one prominently breaching the skyline formed by most distant foothills.
LINE	Roadways are primary linear features in landscape; paved highway is more prominent than dirt road to south (right). Utility line also visible to right of highway and railroad to the left.	In foreground area, vegetation appears where main linear features (roads) do not.	Utility poles appear in a line. Road signs and guard rails appear within highway corridor, and reinforce the linear land form in that area.
COLOR	Landform is diverse in color from lighter to darker browns and grays.	Primarily green, though bushes without leaves appear dark gray and brown.	Utility poles are wooden and generally match the light tans present in the landscape. Guard rail reflectors and road signs are source of vibrant yellow color.
TEXTURE	Underlying variation in elevation gives the landscape a gradational texture.	Patchy and coarse.	Relegation of structures to a utility corridor and roadway corridor results in directional, ordered texture.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	A tower associated with Alternative C would likely be visible in the left center of the view, potentially visible above the skyline as the most prominent built form in the view.
LINE	No change.	No change.	Tower components would form vertical, diagonal, and horizontal lines. New conductors would be visible across view, particularly where the only backdrop is sky.
COLOR	No change.	No change.	New tower and lines would appear gray, based on anticipated galvanized steel finish.
TEXTURE	No change.	No change.	From this distance, the towers would create a line of coarse texture.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? __ Yes _X_ No (Explain on reverse side)

3. Additional mitigating measures recommended _X_ Yes __ No (Explain on reverses side)

Evaluator's Names Date
Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Distance. The KOP is 2.0 miles east of where segment C. Segment C parallels NM 9. Segment C crosses a combination of BLM VRM class II administered lands and private lands.

Angle of Observation. The KOP is at an even horizontal angle to segment C.

Length of Time the Project Is In View. Segment C would potentially be viewed for extended periods from NM 9.

Relative Size or Scale. The size of the structures would be the largest visible structures within the landscape. Because of the relative size of the structures when compared with the undeveloped open landscape, and because of the distance to the structures, they would appear large, and there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is rolling. There are low mountains in the background. The proposed structures and conductors would be visible against the sky and against the mountains resulting in moderate contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic along NM 9. In the short term, motion associated with construction equipment along segment C would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 24S	5. Location Sketch
2. Key Observation Point **D-01**	Range 16W	32.174955486 x -108.537030271
3. VRM Class **N/A; non BLM land**	Section 31	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat valley framed in distance by mostly rounded (but jagged in spots) hills and mountains.	Rounded and triangular bushes on right side of road, with more indistinct and low vegetation on left side.	Utility poles are vertical structures clearly defined in view on right side of road. Fence posts are similar, but to a lesser degree, along the left side of the road.
LINE	Road extending away from viewpoint is primary linear feature in land, along with evident edge of the valley and skyline along back of view.	Only apparent edge of vegetation is along roadway.	Utility line and fence line are aligned with the roadway.
COLOR	Generally light colored soils offset by darker hues of distant elevated areas.	Varied greens (dark to light) and some grayish grasses.	Most structures (poles, fence posts) are wooden and dark. Roadside marker bright (green) and metallic.
TEX-TURE	Smooth valley floor, skyline consists of land that varies between smooth and rough in outlined appearance.	Patchy and somewhat discontinuous on the right side of the road; more continuous and rough on left side.	Utility line and fence line are relatively uniform structures within landscape.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	New towers would be visible crossing roadway approximately 0.4 mi. away from viewpoint as vertical structures above the skyline, similar to visible existing utility poles.
LINE	No change.	No change.	Transmission line would appear perpendicular to roadway/utility corridor in view. Tower components would form vertical, diagonal, and horizontal lines.
COLOR	No change.	No change.	Tower and conductors would appear light gray from this distance and based on anticipated galvanized steel treatment.
TEX-TURE	No change.	No change.	Towers create a coarse texture.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___Yes ___No _X_NA (Explain on reverse side)

3. Additional mitigating measures recommended _X___Yes __No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Proposed transmission line would result in weak contrast with existing conditions, based on distance from viewpoint and on the presence of an existing utility corridor already visible in view.

Not BLM land. 0.6 mile north of proponent's alternative and BLM Class IV; SQ-C; VRM-IV. Located on Muir Rd adjacent to agricultural fields and rural residential. Public sensitivity is low. Similar view as S8-02

Distance. The KOP is 0.25 mile east of segment D and 0.5 mile north of where segment D crosses Muir Road. Segment D crosses private lands.

Angle of Observation. The KOP is at a horizontal viewing angle to segment D.

Length of Time the Project Is In View. Segment D would potentially be viewed for limited periods as viewers traveling Muir Road intersect the segment.

Relative Size or Scale. The relative size of the structures would appear larger than the existing monopole structures within the landscape. Because of the proximity to the structures from the KOP, and the view of structures against the sky; there would be moderate contrasts. The structures would appear smaller the further from the KOP they get.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the background. Because of the superior viewing angle; the proposed structures and conductors would be visible against the ground and the mountains resulting in weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic along Muir Road. In the short term, motion associated with construction equipment along segment D would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 23S	5. Location Sketch
2. Key Observation Point **D-02**	Range 18W	32.294747826 x -108.653356887
3. VRM Class **Representative ROW would pass through VRM III**	Section 24	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat valley floor, partially framed by conical mountains.	Occasional rounded scrub vegetation outside of collection of relatively tall, conical/cylindrical trees near residence.	Rectilinear residence and associated structures. Tall, slender utility poles extend across view.
LINE	Roadway evident in immediate foreground, and valley edge visible across view, beneath a skyline that is both undulating and jagged.	Trees associated with residence form strong line within a portion of the middle of the view.	Utility poles appear as part of a continuous line.
COLOR	Tans and grays in valley floor appear in contrast with darker color of hills and mountains.	Subtle variation of ground cover in immediate foreground (reds, purples and browns), along with greens of trees and larger bushes.	Residence is mostly white and reddish, as are associated structures. Visible utility poles are wooden and brown.
TEX-TURE	Smooth valley floor appears consistent with smoother, rounded portions of distant hillsides, but in contrast with the more pointed parts of the skyline.	Preponderance of grasses in the immediate foreground gives appearance of medium but uniform texture. Scrub brush appears patchy and trees are ordered.	Consolidation of utility poles and structures associated with residence result in an ordered appearance.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	New transmission tower visible in view would be dominant vertical form in view and would appear above mountain skyline.
LINE	No change.	No change.	Conductors would be noticeable, extending across view within an existing transmission corridor but occupying substantially more space than the existing line does. Tower components would form vertical, diagonal, and horizontal lines.
COLOR	No change.	No change.	Tower and lines would appear gray in color.
TEX-TURE	No change.	No change.	Towers would create nodes of coarse texture.

SECTION D. CONTRAST RATING __SHORT TERM _X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X	X			
	LINE				X				X		X		
	COLOR				X				X		X		
	TEXTURE				X				X		X		

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverse side)

3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)

Evaluator's Names Date
Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Visible tower and conductors would result in moderate contrast with regard to form and line. Proposed transmission line meets management objectives for VRM Class III (to partially retain the existing character of the landscape).

Pyramid Shadows Rd. Rural Residential on private land. KOP is from roadway. Sensitive receptors not identified.

Distance. The KOP is 0.25 mile east of segment D. Segment D crosses BLM VRM Class III administered lands and private lands in this area.

Angle of Observation. The KOP is at a horizontal viewing angle to segment D.

Length of Time the Project Is In View. Segment D would potentially be viewed for limited periods as viewers traveling Muir Road intersect the segment.

Relative Size or Scale. The relative size of the structures would appear larger than the existing monopole structures and other structures within the landscape. Because of the proximity to the structures from the KOP, and the view of structures against the sky; there would be strong contrasts. The structures would appear smaller the further from the KOP they get.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the middle ground and background. Because the proposed structures and conductors would be visible against the sky there would be moderate contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic and activities round the rural residential area. In the short term, motion associated with construction equipment along segment D would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 23S	5. Location Sketch
2. Key Observation Point **E-01**	Range 20W	32.280745088 x -108.880628161
3. VRM Class **III**	Section 27	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	With the exception of the raised railroad tracks, the view is primarily occupied by the level South Alkali Flat, which contrasts sharply with the form of the Peloncillo Mountains, visible beyond.	Sparse, rounded clumps.	A series of posts indicating a property line fence are the only structures visible beyond the railroad corridor rails atop the berm in the immediate foreground.
LINE	Raised railroad tracks and defined edge of alkali flat are the most prominent linear features in the view.	Irregular.	The fence and rails are linear structures, visible extending across the view.
COLOR	Salt flat color distinctively light; darker colors of distant mountains and railroad corridor appear in contrast.	Green vegetation prominently visible against salt flat background.	Fence posts and rails appear dark.
TEXTURE	Salt flat appears smooth, though a bit granular in the immediate foreground. Mountains visible appear to protrude roughly from flat surface. Raised railroad berm is coarse.	Patchy vegetation in foreground.	Rails appear smooth, particularly in contrast with the graveled berm upon which they sit. From this distance, the fence posts appear to punctuate the land in a uniform manner.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Vertical forms visible along middle of view, some visible above the distant mountain skyline.
LINE	No change.	No change.	Towers appear as linear feature across the view, and are distinct enough to appear as individual vertical lines. Relates to railroad corridor and fence posts in foreground.
COLOR	No change.	No change.	Light color of towers noticeable against dark mountain backdrop.
TEXTURE	No change.	No change.	Towers appear ordered.

SECTION D. CONTRAST RATING __SHORT TERM _X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverse side)

3. Additional mitigating measures recommended X___Yes __ No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Proposed transmission line meets management objectives for VRM Class III (to partially retain the existing character of the landscape).

Similar to P5-01

Distance. The KOP is 2.6 miles southeast of segment E. Segment E crosses BLM VRM Class III administered lands in addition to private land.

Angle of Observation. The KOP is at a horizontal viewing angle to segment E.

Length of Time the Project Is In View. Segment E would potentially be viewed for limited periods as viewers travel the I-10.

Relative Size or Scale. The relative size of the structures would appear comparable to existing structures within the landscape. Because of the distance to the structures from the KOP, and the view of structures against a dark backdrop; there would be weak contrasts. The structures would appear smaller the further from the KOP they get.

Season of Use. The open landscape and low flat alkali flat would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. There is patchy vegetation apparent on the alkali flat. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the background. Because the proposed structures and conductors would be visible primarily against the ground and the mountains, there would be in weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic along the I-10. In the short term, motion associated with construction equipment along segment E would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 31 August 2012
District/ Field Office: Safford
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 13S	5. Location Sketch
2. Key Observation Point **E-02**	Range 31E	32.270965673 x -109.224478383
3. VRM Class **III**	Section 30	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat valley appears in front of prominent, angular Peloncillo Mountains to the north.	Varied forms apparent in immediate foreground (rounded, triangular, cylindrical), but not apparent in more distant views.	Residence and sheds are rectilinear, while other associated structures are diverse and vary by function. Utility poles and lines are clearly defined in the skyline.
LINE	Edge of valley somewhat discernible. Jagged, lines indicate mountain skyline and tops of ridgelines beneath the skyline.	Mostly irregular, though vegetated area at base of mountains appears as a horizontal band.	Utility lines are one identifiable linear feature. Remaining structures appear collectively more as a cluster.
COLOR	Lighter appearing valley floor contrasts with dark mountains.	Dark to light green trees and scrub brush appear above mostly tan grasses.	Varied – dark residential structure and light sheds, along with dark (wooden) utility poles.
TEXTURE	Contrasting textures apparent: generally smooth valley floor sits beneath a continuous series of mountains that appear rough as a whole.	Vegetation appears coarse.	Ordered to the extent that all structures visible in this view appear clustered around the rural residence.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	New towers would likely be visible beyond the developed portion of San Simon, across the view in front of the distant mountains. The vertical features would likely extend above the skyline.
LINE	No change.	No change.	New conductors would be visible across the view, in areas where they wouldn't blend in against a mountain backdrop.
COLOR	No change.	No change.	Towers and lines would appear gray based on assumed galvanized steel finish.
TEXTURE	No change.	No change.	Towers and conductors would appear smooth.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverse side)

3. Additional mitigating measures recommended _X_ Yes __No (Explain on reverses side)

Evaluator's Names — Date
Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Proposed transmission line meets management objectives for VRM Class III (to partially retain the existing character of the landscape).

Town of San Simon, sensitive residential receptors. VRI/VRM III, SQ-B; SL-High. Major transportation route with scenic areas and provides connection from Las Cruces to Tucson.

Distance. The KOP is 0.6 miles south of segment E. Segment E crosses private land and BLM VRM Class III administered land. The BLM VRM Class III is approximately 1 mile to the northeast of the KOP.

Angle of Observation. The KOP is at a horizontal viewing angle to segment E.

Length of Time the Project Is In View. Segment E would potentially be viewed for limited periods as viewers travel the I-10.

Relative Size or Scale. The relative size of the structures would appear comparable to existing structures within the foreground of the landscape. Because of the distance to the structures from the KOP, and the view of structures against a dark backdrop; there would be weak contrasts. The structures would appear smaller the further from the KOP they get.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are larger mountains in the middle ground and background. Because the proposed structures and conductors would be visible primarily against the ground and the mountains, there would be in weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment E would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Safford Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 13S	5. Location Sketch
2. Key Observation Point **F-01**	Range 28E	32.329841832 x -109.485849107
3. VRM Class **N/A; Rep ROW visible passes through non BLM lands**	Section 4	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Generally flat with some minor topographic variation visible in foreground. Distant mountains visible along part of horizon.	The relatively tall and slender trees visible throughout the left side of the view are the dominant vegetative feature in the view.	Varied angular rooflines of mostly rectilinear residences and other structures. Windmill and rounded shed in center of the view draw the viewer's eye.
LINE	Roadways appear as broad lines cutting through a mildly rugged landscape.	Vertically-oriented trees appear somewhat aligned across the left portion of the view.	Utility lines along and across the roadway in the center of the view are the only linear components within a view that is otherwise lacking in intactness.
COLOR	Gray, brown, and red tones in foreground (dirt and roadways); purplish mountains in the horizon.	Dark to light greens associated with the trees and scrub vegetation along the western side of the road are main source of vegetative color.	Colors of homes and sheds range from bright (metallic and fabric) to dark (wood).
TEXTURE	Smooth roadways appear within a somewhat coarse terrain.	Vegetation is dense and somewhat rough on left side of road in center of view. On the right side, patchy vegetation (trees and groundcover) are visible within a residential area.	Residences, sheds, and associated structures appear concentrated in right side of view.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Two vertically oriented structures visible in view, along with conductors. Towers relate to other utility poles in view, as do the conductors.
LINE	No change.	No change.	Conductors add visible linear features across the view, beyond other similarly oriented transmission lines. New lines would intensify presence of such lines in view, somewhat.
COLOR	No change.	No change.	Towers appear light to dark gray.
TEXTURE	No change.	No change.	Towers and lines appear ordered and smooth in view.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___Yes ___No _X_ NA (Explain on reverse side)

3. Additional mitigating measures recommended _X_ Yes __ No (Explain on reverses side)

Evaluator's Names — Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

N/A; ROW visible passes through private and state lands

From intersection of N. Central and E. Arizona St. in the town of Bowie. North of the alternative line is agricultural fields and limited homes. Concentrated residential over 0.25 mile north of I-10 at Apache Pass Rd. exit. Surrounded by agricultural lands.

Distance. The KOP is 0.7 mile south of segment F. Segment F crosses private land.

Angle of Observation. The KOP is at a horizontal viewing angle to segment F.

Length of Time the Project Is In View. Segment F would potentially be viewed for extended periods from the community of Bowie.

Relative Size or Scale. The relative size of the structures would appear comparable or smaller than existing structures within the foreground of the landscape. Because of the distance to the structures from the KOP, and the existing structures in the fore ground of the view; there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are mountains in the background. Because the proposed structures and conductors would be visible against a combination of the sky and the darker mountains, there would be in weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment F would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Safford Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 12S	5. Location Sketch
2. Key Observation Point **F-02**	Range 26E	32.365548347 x -109.679696953
3. VRM Class **N/A; Rep ROW visible passes through state lands**	Section 27	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Center of view shows intersection of two roadways (AZ SR 191 and I-10) in a valley setting, with mountains beyond the intersection.	A low patchwork of vegetation is visible along the sides of the roads.	Signage, lights and berms (including stockpile of dirt in right side of view) associated with roads are the most detectable structures.
LINE	Curvilinear form of SR 191 as it approaches intersection with I-10 (which runs across the middle of the frame) is dominant form, along with pronounced geometric form of mountains.	Irregular, broken patchwork.	Lights and signs are dispersed somewhat irregularly along roadway corridor.
COLOR	Mostly tan and brown outside of the grayish roadway corridor.	Grassy roadside scrub vegetation is light green to tan in color.	Yellow and green signs are sources of the view's most vibrant colors.
TEX-TURE	Smooth roadway set amid a relatively ordered valley landscape, which contrasts moderately with subtly striated mountain slopes that appear as backdrop.	Patchy roadside vegetation.	Placement of signs and lights along roadway appears ordered.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Series of new transmission towers and conductors would appear across the middle of the view. Lattice-style towers may be difficult to discern with mountain backdrop.
LINE	No change.	No change.	Proposed towers and lines would appear larger than, but generally aligned with, existing utility corridor which parallels I-10. Conductors, where visible, would reinforce linear presence.
COLOR	No change.	No change.	Would appear gray based on assumption of galvanized steel finish.
TEX-TURE	No change.	No change.	Towers and lines would appear ordered in this view.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___Yes ___No _X_NA (Explain on reverse side)

3. Additional mitigating measures recommended _X___Yes __No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Proposed towers and lines would be visible but not prominent and appear within an existing road/utility line corridor.

Distance. The KOP is 0.3 mile north of segment F on 191. Segment F crosses private land, and crosses the view of the KOP from east to west..

Angle of Observation. The KOP is at a horizontal viewing angle to segment F.

Length of Time the Project Is In View. Segment F would potentially be viewed for limited periods as traveler on the 191 cross the segment.

Relative Size or Scale. The relative size of the structures would appear somewhat larger than existing structures within the foreground of the landscape.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are mountains in the middle ground to background. Because the proposed structures and conductors would be visible against the darker mountains as a backdrop, there would be weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic on the 191 and on the I-10. In the short term, motion associated with construction equipment along segment F would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Safford Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 13S	5. Location Sketch
2. Key Observation Point **G-01**	Range 24E	32.253445488 x -109.920267256
3. VRM Class **N/A. Representative ROW crosses non BLM lands**	Section 32	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Land appears relatively flat in foreground area, though slight undulations are apparent. Steep mountain forms visible in middleground.	Persistent horizontal coverage of landscape by vegetation outside of road way. Larger vegetation appears irregularly shaped.	Utility poles and fence line alongside roadway are vertical forms descending into horizon from viewpoint.
LINE	Edge of valley floor and mountainous skyline are the two dominant lines, along with road.	Edges of vegetation apparent only along the roadway corridor.	The two visible physical structures – fence line and utility line – are linear features.
COLOR	Reddish and tan-colored soils are apparent beneath the vegetation along the road shoulders.	Dark greens dominate.	Dark grays and browns evident in foreground; visibility of individual structures decays with distance.
TEXTURE	Slight stippling evident in otherwise flat valley edge, which is offset from the articulated mountains that appear smooth from this distance.	Scrub vegetation appears coarse.	Mostly smooth roadway, while fence posts and utility poles appear striated.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	New towers would appear in a row across the view, along the valley horizon. In the left side of the view, they would be visible with only the sky as backdrop, and with lower portions screened.
LINE	No change.	No change.	Conductors, likely to be discernible only in the left side of the view (without the mountain backdrop).
COLOR	No change.	No change.	Towers and conductors would be gray, based on anticipated galvanized steel finish.
TEXTURE	No change.	No change.	Transmission line would appear ordered from this vantage point.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___Yes ___No _X_NA (Explain on reverse side)

3. Additional mitigating measures recommended _X___Yes __No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

From this location, and given presence of existing road and utility corridor in view, the presence of the proposed transmission line across the middle of the view would result in a weak degree of contrast.

Not on BLM lands. Cascabel Road with views of DC in the background.

Distance. The KOP is 1.4 miles east of segment G. Segment G crosses the view from the KOP from north to south and crosses private land.

Angle of Observation. The KOP is at a slightly inferior viewing angle to segment G.

Length of Time the Project Is In View. Segment G would potentially be viewed for limited periods from Cascabel Road as the road crosses the segment.

Relative Size or Scale. The relative size of the structures would appear comparable to the existing structures within the foreground of the landscape. Because of the distance to the structures from the KOP, and the existing structures in the fore ground of the view; there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open. There are taller berms with shrubbery along both sides of the road that provide limited visual screening. There are mountains in the background. Because the proposed structures and conductors cross the view horizontally, they would be visible against a combination of the sky and the darker mountains, becoming screened from view further away from the KOP.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment G would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 31 August 2012
District/ Field Office: Safford
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 14S	5. Location Sketch
2. Key Observation Point **G-02**	Range 24 E	32.198738216 x -109.883954029
3. VRM Class **Rep ROW crosses state & private lands**	Section 22	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat, western Willcox Playa is visible across foreground. Clearly defined mountainous forms extend across the middleground in the most distant portion of the view.	Rounded and oval forms of scrub brush are prominent among otherwise mostly widespread, low grassland.	Presence of structures in area southwest of playa is visible, but distinct forms are not discernable.
LINE	The line between the edge of the playa area and the base of mountains extends across the view, below the skyline of the mountains.	Edge between vegetated and non-vegetated area partially visible in immediate foreground.	Concentration of visible structures in middleground of view forms short line of human-built elements within wider, mostly natural, landscape.
COLOR	Light soils of playa floor contrast with dark appearance of mountains in middleground.	Mostly yellow grasslands, with dark green scrub vegetation scattered throughout foreground.	Presence of structures made visible by white color.
TEXTURE	Flat playa sits in contrast with undulating and angular mountain range across back of view.	Clumped texture of grassland in this portion of playa accentuated by patchy presence of scrub vegetation.	Texture of structures in view not discernable from this distance...recedes into a relatively smooth background.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	New transmission line would be over 4 miles away from this viewpoint and thus a barely detectible string of slight vertical forms, if visible at all. It would appear below the mountain skyline.
LINE	No change.	No change.	If visible, row of towers would be barely discernible. Conductors would not be detectible from this viewpoint.
COLOR	No change.	No change.	If visible, towers would appear light in the view and could contrast slightly against dark mountain backdrop.
TEXTURE	No change.	No change.	Overall texture would be soft and vague at most.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverse side)

3. Additional mitigating measures recommended X___Yes __ No (Explain on reverses side)

Evaluator's Names — Date
Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Transmission facilities would be barely discernible from this viewpoint, if visible at all. Thus, contrast would be weak at most.

Similar to P7-03

Distance. The KOP is 3.5 miles east of segment G. Segment G crosses the view from the KOP from north to south and crosses private land.

Angle of Observation. The KOP is at a horizontal viewing angle to segment G.

Length of Time the Project Is In View. Segment G would potentially be visible for extended periods from the Wilcox Wildlife Area.

Relative Size or Scale. Because of the distance to the structures from the KOP, the relative size of the structures would appear very small and there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are backlit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open. There are mountains in the background. Because the proposed structures and conductors cross the view horizontally, they would be visible against the darker mountains, appearing smaller the further away from the KOP.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be further reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape associated with vehicle travel on the I-10. In the short term, motion associated with construction equipment along segment G would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 31 August 2012
District/ Field Office: Safford
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 15S	5. Location Sketch
2. Key Observation Point **G-03**	Range 24E	32.112698976 x -109.919504566
3. VRM Class **Representative ROW crosses private land**	Section 20	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Slight descent in foreground between KOP and edge of playa is evident. Distant mountains visible in background.	Varied forms of vegetation (conical, rounded, solid/transparent), ranging from small to relatively large in size, visible as landscaped features within community in foreground.	Rectilinear home and flat sign for school. Roads are strong forms, relatively tall utility poles are prominent but appear w/in urbanized area.
LINE	Edges of playa distinguishable from this location, beyond the linear roads; distant mountain skyline evident.	Strong band of vegetation visible between populated area and the playa.	Utility lines cross the view in multiple directions.
COLOR	Harmonious layers of green, tan and darker mountain forms visible beyond immediate foreground.	Yellow grasses and green vegetation within urbanized area relate to similar colors in more distant landscape.	Light colored buildings, dark vertical poles, and vividly colored signage.
TEX-TURE	Land visible beyond developed area appears mostly finely textured from this distance.	Within developed area, vegetation appears somewhat uneven, but distant band is ordered within the landscape.	Aggregation of uneven structures within immediate foreground is in contrast with absence of structures beyond developed area.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	New, relatively large transmission tower would be visible in left portion of view.
LINE	No change.	No change.	Tower introduces vertical, horizontal and diagonal lines. Conductors would extend across view, appearing more substantial but lower than nearer utility line that also extends across view.
COLOR	No change.	No change.	Tower and lines would appear gray.
TEX-TURE	No change.	No change.	Tower and lines would appear smooth.

SECTION D. CONTRAST RATING __SHORT TERM _X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___Yes ___No _X_NA (Explain on reverse side)

3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)

Evaluator's Names: Josh Hohn
Date: October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Proposed transmission tower would result in moderate contrast to view; though relatively large, it would be partially obscured by intervening structures and vegetation within Cochise, and would also appear as one of a few utility pole structures in the view.

This KOP represents somewhat denser residential along the western edge of the Playa surrounded by agricultural lands.

Distance. The KOP is 0.2 mile west of segment G. Segment G crosses the view from the KOP from north to south and crosses private land.

Angle of Observation. The KOP is at a horizontal viewing angle to segment G.

Length of Time the Project Is In View. Segment G would potentially be visible for extended periods from the community of Cochise, although it would partially screened by existing structures in the fore ground.

Relative Size or Scale. The relative size of the structures would be slightly larger than the existing utility structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, and because of the distance to the structures, there would be moderate contrasts.

Season of Use. The open landscape and vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground includes paved roads, rectilinear buildings, signs, utility lines, and some taller vegetation. There are mountains in the distant background. Because the proposed structures and conductors cross the view horizontally, they would be visible against the sky and would contribute to the moderate visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be further reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape associated activities around the community of Cochise. In the short term, motion associated with construction equipment along segment G would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 23S Range 20W Section 27	5. Location Sketch 32.280745088 x -108.880628161
2. Key Observation Point **P5-01**		
3. VRM Class **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	With the exception of the raised railroad tracks, the view is primarily occupied by the level South Alkali Flat, which contrasts sharply with the form of the Peloncillo Mountains, visible beyond.	Sparse, rounded clumps.	A series of posts indicating a property line fence are the only structures visible beyond the railroad corridor rails atop the berm in the immediate foreground.
LINE	Raised railroad tracks and defined edge of alkali flat are the most prominent linear features in the view.	Irregular.	The fence and rails are linear structures, visible extending across the view.
COLOR	Salt flat color distinctively light; darker colors of distant mountains and railroad corridor appear in contrast.	Green vegetation prominently visible against salt flat background.	Fence posts and rails appear dark.
TEXTURE	Salt flat appears smooth, though a bit granular in the immediate foreground. Mountains visible appear to protrude roughly from flat surface. Raised railroad berm is coarse.	Patchy vegetation in foreground.	Rails appear smooth, particularly in contrast with the graveled berm upon which they sit. From this distance, the fence posts appear to punctuate the land in a uniform manner.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Vertical structures barely detectable across view.
LINE	No change.	No change.	Series of towers appear oriented as a straight line. Tower components would form vertical, diagonal, and horizontal lines.
COLOR	No change.	No change.	Discernible light color of towers slightly visible against darker backdrop.
TEXTURE	No change.	No change.	Slightly visible series of towers appears ordered.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_ Yes __No (Explain on reverse side)

3. Additional mitigating measures recommended _X_ Yes __ No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Proposed transmission line meets management objectives for VRM Class III (to partially retain the existing character of the landscape).

Distance. The KOP is 3.0 miles southeast of segment P5a. Segment P5a crosses BLM VRM Class III administered lands in addition to private land.

Angle of Observation. The KOP is at a horizontal viewing angle to segment P5a.

Length of Time the Project Is In View. Segment P5a would potentially be viewed for limited periods as viewers travel the I-10.

Relative Size or Scale. The relative size of the structures would appear smaller than the existing structures within the landscape. Because of the distance to the structures from the KOP, and the view of structures against a dark backdrop; there would be weak contrasts. The structures would appear smaller the further from the KOP they get.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the background. Because the proposed structures and conductors would be visible primarily against the ground and the mountains, there would be in weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic along the I-10. In the short term, motion associated with construction equipment along segment P5a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Safford Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 13S	5. Location Sketch
2. Key Observation Point **P5-02**	Range 31E	32.335819381 x -109.152579758
3. VRM Class **IV**	Section 2	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Rugged desert land appears between viewpoint and clearly defined mountains within the Coronado National Forest.	Prominent and angular/rounded scrub brush in immediate foreground. More amorphous in distant valley.	Community of San Simon appears in this view as a barely discernible distant patch of structures within the valley.
LINE	Slope in foreground obscures a portion of the valley edge. Mountain skyline is clearly defined; ridgelines within the mountains less so.	In immediate foreground, density of vegetation is such that lines are evident at edge of growth, in the few areas where soil is visible.	Collection of structures forms slight line across a portion of the view, indicating the alignment of the community along the I-10 corridor, which extends across this view.
COLOR	Pale earth tones evident in the immediate foreground contrast with darker hues of distant mountains.	Mostly dark to medium-dark green.	Some structures appear light colored against the mostly dark background.
TEXTURE	Combination of soil and rocks in the immediate foreground results in a somewhat clumped texture. More distant valley appears smooth from this distance, while mountains are sparse/jagged.	Patchy and coarse.	Faintly visible collection of structures appears ordered and concentrated in view from this distance.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Barely detectable series of vertical structures across middle of view, appearing in front of valley.
LINE	No change.	No change.	Barely detectable towers appear aligned in linear fashion; conductors not visible.
COLOR	No change.	No change.	Where discernible, towers appear light in color.
TEXTURE	No change.	No change.	Where discernible, towers appear ordered.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverse side)

3. Additional mitigating measures recommended X___Yes __ No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Proposed transmission line meets management objectives for VRM Class IV (to provide for activities that require major modification of the landscape).

View is located in a wash southwest of Peloncillo Mountains. Simulation is rendered 2.3 miles from proposed line, views of Chiracahua Mountains in the background DZ (beyond 20 miles south).

Distance. The KOP is 2.5 miles north of segment P5b. Segment P5b crosses BLM VRM Class III and IV administered lands in addition to private land.

Angle of Observation. The KOP is at a superior viewing angle to segment P5b.

Length of Time the Project Is In View. Segment P5b would potentially be viewed for limited period.

Relative Size or Scale. The relative size of the structures would appear small because of the distance to the structures from the KOP, and the view of structures against a dark backdrop; there would be weak contrasts. The structures would appear smaller the further from the KOP they get.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open slightly sloping downward. There are tall mountains in the background. Because the proposed structures and conductors would be visible primarily against the ground and the mountains, there would be in weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment P5b would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Safford Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 13S	5. Location Sketch 32.323456112 x -109.488100392
2. Key Observation Point **P6-01**	Range 28E	
3. VRM Class **N/A; Rep ROW visible passes through private lands**	Section 9	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat portion of San Simon Valley apparent in foreground. Portion of Dos Cabezas Mountains appear to rise abruptly from valley floor in middleground.	Within the community of Bowie vegetation is prominent and ranges from rounded to geometric. Agricultural lands beyond developed area appear defined.	Rectilinear buildings and linear/vertical features (roads, utility poles).
LINE	Defined edge between valley floor and mountains visible below clearly defined mountain skyline. Roads are strong linear features.	Vegetated areas w/in Bowie defined by roadways; in distant foreground, areas of different crop types are clearly demarcated.	Weak lines beyond linear appearance of collection of structures within and aligned along roadway.
COLOR	Vivid blues in middleground.	Dark green vegetation of varying types throughout the foreground.	Light colors in terms of buildings and roads; only few minor dark features.
TEXTURE	Multiple uses of land in foreground relates to patchy appearance of foothills in middleground.	Somewhat disordered trees in foreground yield to uniform appearance of agricultural lands.	Within evident rectilinear street grid in the area, structures appear only slightly scattered.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Transmission towers would be intermittently visible from this location, appearing in segments across far end of the valley floor. They would not extend above the mountain skyline.
LINE	No change.	No change.	While conductors would not likely be visible, multiple towers, aligned in a row, would likely be detectable.
COLOR	No change.	No change.	Light gray would contrast slightly with dark mountain backdrop.
TEXTURE	No change.	No change.	Where detectible, line would appear slightly striated against mountain backdrop.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___Yes ___No _X_ NA (Explain on reverse side)

3. Additional mitigating measures recommended _X_Yes ___No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Transmission towers will contrast weakly at most and where visible – only intermittent views of the project would be available from this location.

Located 6 miles from VRI/VRM Class II landscape, and 8 miles from Dos Cabezas. View is from residential community within town of Bowie.

Distance. The KOP is approximately 1.3 miles northeast of New Build segment P6b. Segment P6b crosses private land and crosses the view from the KOP northeast to southwest.

Angle of Observation. The KOP is at an even horizontal angle to segment P6b.

Length of Time the Project Is In View. Segment P6b would potentially be viewed for extended periods by viewers from the town of Bowie.

Relative Size or Scale. The relative size of the structures would be similar to the existing structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, and because of the distance to the structures, they would appear smaller, and there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground includes paved roads, rectilinear buildings, signs, small utility lines, and some taller vegetation. There are mountains in the background. Because the proposed structures and conductors cross the view horizontally, they would be partially screened by the existing structures and trees, and visible against the mountainous backdrop, which would contribute to the weak visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be further reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape associated activities around the community of Bowie. In the short term, motion associated with construction equipment along segment P6b would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Safford Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 13S	5. Location Sketch 32.288864654 x -109.473145739
2. Key Observation Point **P6-02**	Range 28E	
3. VRM Class **N/A; Rep ROW visible passes through private lands**	Section 22	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat foreground and middleground, with some rounded/jagged mountains visible along the horizon, including the western extent of the Peloncillo Mountains in right side of view.	Orchard in left portion of view appears rectangular given uniformity of trees. Single, non-orchard trees along western edge of road are tall features.	Road and utility line appear as intact features of the view.
LINE	Background edge of valley floor appears across view and below a skyline that is not very discernable due to distance from mountains.	Orchard along left side of view and the vineyards visible in the near horizon beyond the immediate foreground are strong bands.	Utility corridor aligned along roadway is a single strong linear component.
COLOR	Dark hues of distant mountains offset the lighter soils of the valley floor evident in immediate foreground.	Dark green crops are clearly distinguished from mostly yellow scrub land, which includes scattered green scrub vegetation.	Grays and browns are typical of road and utility structures/lines.
TEXTURE	Relatively smooth valley floor is prominent; rugged distant hills are evident.	Smooth and ordered in agricultural areas; coarse and patchy in unmanaged area in near foreground.	Smooth road and striated series of utility poles.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	New transmission line would appear prominently across view as a series of vertical elements, which would appear above the mountain skyline in the right edge of the view.
LINE	No change.	No change.	Would appear as a strong linear element across the view, perpendicular to roadway/utility corridor. Towers would add diagonal lines to landscape. Conductors would be visible, occupying substantial portion of sky above horizon.
COLOR	No change.	No change.	Light gray facilities, based on galvanized steel finish, would differ from other colors in view, with the possible exception of the roadway asphalt.
TEXTURE	No change.	No change.	Continuous, ordered extension across the middle of the view.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X		X		
	COLOR				X				X		X		
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___Yes ___No X NA (Explain on reverse side)

3. Additional mitigating measures recommended X ___Yes ___No (Explain on reverses side)

Evaluator's Names: Josh Hohn
Date: October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Moderate contrast based on proximity to representative ROW, which would result in multiple towers appearing above mountain skyline and add a strong linear component to a portion of the view where one does not currently exist.

View is from roadway that accesses Ft. Bowie.

Distance. The KOP is approximately 0.5 mile south of New Build segment P6b. Segment P6b crosses private land and crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment P6b.

Length of Time the Project Is In View. Segment P6b would potentially be viewed for limited periods by viewers along the road crossing at a perpendicular angle to the segment.

Relative Size or Scale. The relative size of the structures would be somewhat larger than the existing utility structures on the landscape. Because of the relative size of the structures when compared with the existing structures and the open landscape, and because of the distance to the structures, they would appear larger, and there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground includes paved roads, small utility lines, and some dense taller vegetation along the roadway. There are mountains in the distant background. Because the proposed structures and conductors cross the view horizontally, they would be partially screened by the existing trees, and visible against the sky, which would contribute to the moderate visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be further reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape associated vehicle travel. In the short term, motion associated with construction equipment along segment P6b would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 31 August 2012
District/ Field Office: Safford
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 13S	5. Location Sketch
2. Key Observation Point **P6-03**	Range 25E	32.317482913 x -109.73975448
3. VRM Class **N/A; Representative ROW would cross state lands in view**	Section 12	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Somewhat complex, multi-directional and concave land form in foreground. Rolling hills leading into relatively steep, jagged mountains visible along middleground and background.	Varied forms of vegetation in foreground (jagged, rounded, cylindrical) giving way to mostly flat scrub in far background.	No structures visible in view.
LINE	Topography in foreground appears diagonal, with jagged mountains as distant middleground skyline.	Evident transitional edge between larger vegetation in immediate foreground and more distant, uniform vegetation.	No structures visible in view.
COLOR	Light browns in foreground area, with reddish soils evident within bluish mountains in middleground.	The greens, grays and light browns of the scrub vegetation contrasts with the yellow grassland in the area.	No structures visible in view.
TEXTURE	Gradational and contrasting.	Coarse and patchy in immediate foreground, with medium, more uniform texture in distant foreground.	No structures visible in view.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Two transmission structures would be primary structures visible in this view, but would not become views primary features.
LINE	No change.	No change.	Where visible above the skyline, new conductors would introduce a new, partially detectible linear form.
COLOR	No change.	No change.	Metal structures would introduce element of gray to view.
TEXTURE	No change.	No change.	Transmission line would appear ordered across view.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X		X		
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___Yes ___No _X_ NA (Explain on reverse side)

3. Additional mitigating measures recommended X___Yes __No (Explain on reverse side)

Evaluator's Names Date
Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Proposed transmission line would result in moderate degree of contrast with regard to form and line.
View is oriented 0 looking north away from Dos Cabezas toward Pinaleño Mountains.

Distance. The KOP is approximately 0.4 mile south of New Build segment P6c along Old Bowie Road. Segment P6c crosses private land and crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment P6c.

Length of Time the Project Is In View. Segment P6c would potentially be viewed for extended periods by viewers traveling the road.

Relative Size or Scale. The relative size of the structures would be the largest structures visible on the landscape. Because of the relative size of the structures when compared with the open landscape, and because of the close proximity to the structures, there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground includes some low lying hills and desert vegetation. There are mountains in the background. Because the proposed structures and conductors cross the view horizontally, they would be visible partially against the mountainous backdrop, which would contribute to the moderate visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be further reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment P6c would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Safford Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 14S	5. Location Sketch
2. Key Observation Point **P7-01**	Range 25E	32.195330657 x -109.748980624
3. VRM Class **Representative ROW is on private land.**	Section 24	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat area within and near Willcox Playa occupies the foreground and middleground of the view. The rolling/rugged hills and mountain ranges west of Willcox Playa are visible in the background.	Scrub vegetation appears mostly rounded or asymmetrical across the landscape.	Visible structures in foreground are bold and defined. Additional utility poles visible beyond foreground are somewhat less prominent and defined.
LINE	Highway extending into the near horizon appears as a band perpendicular to the bold line in back of middleground between edge of playa and elevated areas.	In segments separated by band of roadway, edges between scrub vegetation and grasses are either weak or diffuse.	Existing transmission line appears across the foreground.
COLOR	Subtle earth tones (brownish-grayish) beneath vegetation in foreground/middleground. Browns and reds of elevated areas in background are subdued.	Mostly dark greens and browns of scrub vegetation contrast with tans and lighter/brighter greens of grasslands.	Grays and browns.
TEXTURE	Uniform foreground/middleground in playa area; gradational in background mountainous area.	Scattered and clumped scrub vegetation in foreground, in concert with grassland undergrowth, contributes to patchy, medium/coarse texture.	Built features are relatively smooth and directional.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	New transmission towers would be prominent vertical features in this view, appearing across the middle of the view (near the existing transmission corridor) and extending above the skyline.
LINE	No change.	No change.	Would reinforce smaller, existing linear feature (existing transmission line) visible across view.
COLOR	No change.	No change.	Due to galvanized steel finish, would appear lighter than existing transmission poles and stand out against somewhat darker backdrop.
TEXTURE	No change.	No change.	Continuous and ordered across the view.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X			X	
	COLOR				X				X		X		
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___Yes ___No _X_ NA (Explain on reverse side)

3. Additional mitigating measures recommended _X___Yes __No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Though prominently visible, the proposed transmission towers and conductors would represent a weak contrast with the existing view since they would be aligned with an existing transmission corridor.

This view is due west of Willcox Playa, Dos Cabezas Mountains are 180 degrees east from this point. View is 0.5 mile from line, proposed staging area would be in the immediate foreground.

Distance. The KOP is approximately 0.5 mile east of New Build segment P7 along 186. Segment P7 crosses private land and crosses the view from the KOP north to south.

Angle of Observation. The KOP is at an even horizontal angle to segment P7.

Length of Time the Project Is In View. Segment P7 would potentially be viewed for limited periods by viewers traveling the road and crossing the segment at a perpendicular angle.

Relative Size or Scale. The relative size of the structures would be somewhat larger than the existing transmission structures visible on the landscape. Because of the relative size of the structures when compared with the existing structures and with the open landscape, there would be moderate contrasts.

Season of Use. The open landscape and desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is flat and open with taller vegetation growing along the roadside. There are mountains in the background. Because the proposed structures and conductors cross the view horizontally, they would be visible partially against the sky and the mountainous backdrop, which would contribute to the moderate visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be further reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment P7 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Safford Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 15S	5. Location Sketch
2. Key Observation Point **P7-02**	Range 25E	32.14528065 x -109.759882039
3. VRM Class **Representative ROW crosses BLM VRM III**	Section 11	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	The flat playa occupies the foreground and most of the middleground, while the far middleground and background include the rolling/rugged hills and mountain ranges north of Willcox Playa.	Mostly flat grasslands in foreground, punctuated by scrub vegetation of varying shapes (rounded, triangular).	Visible fence line and existing transmission structure in foreground each appear as a series of aligned vertical structures.
LINE	Near and far edges of playa area are clearly discernable.	Bold edge/border between vegetation in foreground and beginning of the playa area in which vegetation is not visible.	Fence line and transmission line, both in foreground, are linear features in front of and within the near portion of the playa.
COLOR	Luminosity of playa is apparent in contrast with vegetated foreground and the subtle variation in the dark mountains in the background.	Yellowish grasslands contrast with dark and muted greens of vegetation in foreground.	Fence posts and transmission poles are discernable as dark vertical features, though not prominent.
TEXTURE	Smoothness of the playa influences apparent texture of the foreground and middleground and contrasts with the articulated outline of the mountains in the background.	Foreground characterized by finer texture of grassland, though it is interrupted by coarser scrub vegetation and unvegetated path.	Fence posts and transmission poles appear as subtle striations across landscape.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Vertical transmission structures visible across middle of view. Structures appear larger but similar in form to existing visible transmission poles.
LINE	No change.	No change.	Transmission structures appear collectively as a linear feature, and appear oriented in concert with existing transmission corridor.
COLOR	No change.	No change.	Structures appear dark in visible conditions, which contrasts with the sky where there is no mountain backdrop (for approximately 3 towers).
TEXTURE	No change.	No change.	Transmission structures appear orderly.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverse side)

3. Additional mitigating measures recommended _X_ Yes ___No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Proposed transmission line meets management objectives for VRM Class III (to partially retain the existing character of the landscape).

Approximately 2 miles from edge of Willcox Playa, 4 miles north of Butterfield Trail. Surrounded by agricultural fields. Facing NNW
Distance. The KOP is approximately 1.2 mile east of New Build segment P7 along 186. Segment P7 crosses BLM VRM III administered land and private land. Segment P7 crosses the view generally from the KOP north to south.

Angle of Observation. The KOP is at an even horizontal angle to segment P7.

Length of Time the Project Is In View. Segment P7 would potentially be viewed for limited periods by viewers traveling the road and crossing the segment at a perpendicular angle.

Relative Size or Scale. The relative size of the structures would be somewhat larger than the existing transmission structures visible on the landscape, but similar in form. Because of the relative size of the structures when compared with the existing structures and with the open landscape, there would be weak contrasts.

Season of Use. The open landscape and desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is flat and open with patches of taller vegetation. There are mountains in the background. Because the proposed structures and conductors cross the view horizontally, they would be visible partially against the sky and the mountainous backdrop, which would contribute to the weak visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be further reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment P7 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012
	District/ Field Office: Safford
	Resource Area:
	Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 14S	5. Location Sketch
2. Key Observation Point **P7-03**	Range 24E	32.198738216 x -109.883954029
3. VRM Class **Portion of representative ROW in view crosses BLM VRM III**	Section 22	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	The flat playa area occupies the foreground and the middleground. In the distant middleground and background, the outline of a series of rugged mountains ascending to the west is visible.	The flat grassland of the eastern playa floor is visible, with intermittent, mostly rounded, scrub vegetation.	Rectilinear outline of Apache Station Power Plant only discernable structure along playa horizon.
LINE	The edge between the playa floor and the mountains and the somewhat jagged outline of the mountain range are the most prominent land-based lines.	Visible edge between clear area and grasslands in immediate foreground; boundary between grasslands and main playa area is not discernable from here.	Straight lines indicating presence of Apache Station Power Plant somewhat discernable in view.
COLOR	Light-colored playa soils visible in immediate foreground.	Yellowish grassland and intermittent brush are predominant sources of vegetative colors.	Dark outline of Apache Station Power Plant is visible.
TEX-TURE	The smooth, flat playa floor in the foreground and middleground appears in ordered contrast with the mountains in the distant middleground and background.	Grassland in the foreground appears clumped but continuous, interrupted only by the sparse coarseness of scrub vegetation.	From this distance, texture of power plant not discernible; appears as a smooth outline.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Proposed alignment would be 9 miles away from this viewpoint and if visible at all, would likely appear as a barely discernible series of specs along the playa horizon.
LINE	No change.	No change.	If visible at all, barely discernible specs would appear in a row along portions of playa horizon.
COLOR	No change.	No change.	If visible at all, barely discernible specs would appear light in color based on galvanized steel finish.
TEX-TURE	No change.	No change.	Row of towers, if visible at all, would appear granular from this location.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? X Yes __No (Explain on reverse side)

3. Additional mitigating measures recommended X Yes __No (Explain on reverses side)

Evaluator's Names Date
Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

It is highly unlikely that the project would be visible from this distance. To the degree that it could be, any contrast resulting from the project would be weak.

1.4 miles from BLM Class II VRI/VRM on west side of Willcox Playa. KOP oriented 8 miles from line to the SE and 1 mile from agency route alternative.

Distance. The KOP is approximately 7.0 miles northwest of New Build segment P7. Segment P7 crosses BLM VRM III administered land and private land. Segment P7 crosses the view generally from the KOP northeast to southwest.

Angle of Observation. The KOP is at an even horizontal angle to segment P7.

Length of Time the Project Is In View. Because of the distance Segment P7 would potentially be viewed for limited periods.

Relative Size or Scale. The relative size of the structures would be small, and may not be visible at all depending on conditions.

Season of Use. The open landscape and desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast over time.

Spatial Relationships. The landscape in the fore ground is flat and open. There are mountains in the background. Because the proposed structures and conductors are so distant, they would not be very visible contributing to the weak visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be further reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment P7 would attract more attention to the project. During operation, the structures would be static and because of the distance may not be visible.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 31 August 2012
District/ Field Office: Las Cruces
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 28S	5. Location Sketch
2. Key Observation Point **S6-01**	Range 11W	31.822829161 x -107.995497078
3. VRM Class II	Section 32	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Undulations are visible in the terrain, with pronounced hills as backdrop.	Mostly rounded and triangular forms in the immediate foreground, reverting to less defined but widely dispersed ground cover in the area beyond.	A segment of a utility line stretches across the view; the poles are tall and slender.
LINE	A dirt road is in the immediate foreground. More prevalent lines are the tops of the undulations and hills/skyline.	No distinct lines associated with vegetation.	Utility poles appear in a line.
COLOR	Light tans, browns and reds in the foreground contrast with the darker hued hillsides visible in the back of this view.	A consistent shade of green is visible throughout the view; some vegetation without leaves appears as brown or grayish. Dried grasses appear tan.	Utility poles are wooden and appear in the view as light to medium brown.
TEXTURE	Slightly rolling hills with larger, skylined hills in the background give view a gradational texture; undulations in foreground appear as lower extent of more distant hills.	Coarse and generally uniform.	Ordered and continuous.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Strong vertical features (towers), connected by conductors, would be visible across the view, extending in concert with, but appearing beyond, the existing transmission corridor.
LINE	No change.	No change.	The linear aspect of the proposed project would be much more pronounced than the existing transmission ROW.
COLOR	No change.	No change.	Light gray color (based on galvanized steel finish) of proposed project would contrast slightly with mostly natural setting in view and with wooden poles of existing alignment.
TEXTURE	No change.	No change.	Would appear ordered and continuous, similar to existing row of towers.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X		X		
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? X Yes ___No (Explain on reverse side)

3. Additional mitigating measures recommended X ___Yes __ No (Explain on reverses side)

Evaluator's Names Date
Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Distance. The KOP is less than 0.1 mile north of New Build segment S6. Segment S6 parallels portions of NM 9. Segment S6 crosses BLM VRM Class II and private land in this area.

Angle of Observation. The KOP is at an even horizontal angle to segment S6.

Length of Time the Project Is In View. Segment S6 would potentially be viewed for extended periods from NM 9.

Relative Size or Scale. The size of the structures would be larger than existing distribution poles in the within the landscape. Because of the relative size of the structures when compared with the existing poles, and because of the close proximity to the structures, they would appear large, and there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the middle ground and background. The proposed structures and conductors would be primarily visible against the sky and partially visible against the mountains resulting in moderate contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic along NM 9. In the short term, motion associated with construction equipment along segment S6 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 28S	5. Location Sketch
2. Key Observation Point **S7-01**	Range 13W	31.864542815 x -108.171101986
3. VRM Class II	Section 16	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat valley floor, backdropped by mountains that increase in elevation in the right portion of the view.	With the exception of a few larger plants, most vegetation is low and either rounded or of a geometric type typical of ground cover.	Utility poles are tall and slender and extend along the right side of the highway. To the left of the highway is a rural residential / ranch complex consisting of varied structures.
LINE	The highway and parallel dirt road are noticeable lines in the land, as is the edge between valley and mountains and mountain skyline.	No line related to vegetation readily apparent.	Utility poles extend along the highway oriented in a linear fashion.
COLOR	Mostly light reds, browns and tans in the foreground area, in contrast with the distant mountains which appear dark.	Green scrub brush and tan grasslands.	Utility poles are wooden and brown. Structures associated with residence on the left side of the highway appear mostly dark in color.
TEX-TURE	The appearance of the roads as oriented emphasizes a directional valley landscape, framed by a continuous but increasingly angular mountain backdrop.	Coarse and rough.	Utility line is ordered and continuous. Residence and associated structures are difficult to discern, but are concentrated within the landscape.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Towers substantially larger than those in the existing view would be visible about 200 feet further away from the viewpoint, and would extend away from the KOP parallel to the line.
LINE	No change.	No change.	Existing transmission line would be reinforced by appearance of much larger series of towers and conductors appearing just beyond it from the viewpoint and extending in parallel. Towers would introduce diagonal lines to the landscape.
COLOR	No change.	No change.	Towers and conductors will appear light gray, based on galvanized steel finish.
TEX-TURE	No change.	No change.	Towers and conductors would appear smooth.

SECTION D. CONTRAST RATING __SHORT TERM _X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X		X		
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___ Yes _X_ No (Explain on reverse side)

3. Additional mitigating measures recommended _X_ Yes ___ No (Explain on reverses side)

Evaluator's Names — Date
Josh Hohn
October 12, 2012

SECTION D. (Continued)

Comments from item 2.

Based on proximity, size of towers will appear relatively large and conductors will occupy a relatively large portion of the view.

Distance. The KOP is less than 0.1 mile north of New Build segment S7. Segment S7 parallels portions of NM 9. Segment S7 crosses BLM VRM Class II and private land in this area.

Angle of Observation. The KOP is at an even horizontal angle to segment S7.

Length of Time the Project Is In View. Segment S7 would potentially be viewed for extended periods from NM 9.

Relative Size or Scale. The size of the structures would be larger than existing distribution poles in the within the landscape. Because of the relative size of the structures when compared with the existing poles, and because of the close proximity to the structures, they would appear large, and there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat. There are low mountains in the middle ground and background. The proposed structures and conductors would be primarily visible against the sky and partially visible against the mountains resulting in moderate contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape form vehicle traffic along NM 9. In the short term, motion associated with construction equipment along segment S7 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 27S Range 15W Section 36	5. Location Sketch 31.916425851 x -108.323756769
2. Key Observation Point **S7-02**		
3. VRM Class **private lands**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Visible land appears relatively flat.	Scrub brush and grasslands appear mostly rounded, while some of the short trees within residential property are more geometric.	Residence in immediate foreground appears mostly rectilinear. Water tower is rounded. Utility poles are tall and slender.
LINE	Roads in immediate foreground appear linear; distant horizon is noticeable.	Edge of groundcover grasses in foreground formed by edge of roads.	Utility lines stretch across view. Pitched roofs of residence and water tower appear angular.
COLOR	Light color of dirt roads is predominant color in view.	Vegetation ranges from dark to light green, with light brown and gray grasses and brush visible near ground level.	Reds and whites are primary colors of residences visible; water tower is dark brown and distinct in the view; utility poles are wooden and appear dark brown in the view.
TEXTURE	Gravel road and some evident variation in topography in beyond the foreground indicate a medium texture.	Vegetation visible throughout, adding an element of coarseness to the view.	Stucco walls of residence and sides of water tower appear smooth. Utility towers appear ordered and continuous, but multiple direction of lines adds element of scatteredness.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Single transmission tower is new vertically-oriented feature visible in view.
LINE	No change.	No change.	New conductors span across view.
COLOR	No change.	No change.	Both tower and conductors appear metallic in color and lighter than existing utility poles and lines.
TEXTURE	No change.	No change.	From this distance, texture of new features appears smooth.

SECTION D. CONTRAST RATING __SHORT TERM _X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___Yes ___No _X_NA (Explain on reverse side)

3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie 2/24/2015

SECTION D. (Continued)

Comments from item 2.

New features would add to presence of transmission facilities visible across view but would not result in substantial contrast with existing view.

Simulation shows view from Hachita oriented northward within a rural residential community.

Distance. The KOP is 0.4 mile south of New Build segment S7. Segment S7 parallels portions of NM 9. Segment S7 crosses private land in this area.

Angle of Observation. The KOP is at an even horizontal angle to segment S7.

Length of Time the Project Is In View. Segment S7 would potentially be viewed for extended periods from the community of Hachita.

Relative Size or Scale. The relative size of the structures would appear similar to the existing distribution poles, water tower, and residential structures within the landscape. Because of the relative size of the structures when compared with the existing structures, and because of the proximity to the structures, there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat with some rural development. The proposed structures and conductors would be primarily visible against the sky.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed

structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape form vehicle traffic and activities in Hachita. In the short term, motion associated with construction equipment along segment S7 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 27S	5. Location Sketch
2. Key Observation Point **S7-03**	Range 15W	31.925278214 x -108.326493727
3. VRM Class **private lands.**	Section 25	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat valley floor with hills, prominent peak and mountains visible in distance.	Varied geometric shapes in brush visible as individual plants. Collection of vegetation on left side of the road and in distance on right appears more amorphous and horizontal.	Detectible larger buildings appear rectilinear. Roadside signs are vertical features within highway corridor. Cylindrical water tower partially visible. Utility poles extend across view.
LINE	Highway extends from viewpoint into center of view; edge of valley apparent but not visible; intermittent skyline visible.	Vegetation is present on either side of the highway and as the road recedes into the horizon, the vegetation appears to form a nearly continuous concave shape relative to viewpoint.	Location of structures and utility poles oriented in linear manner along near horizon. Roadway signs oriented along highway corridor.
COLOR	Immediate foreground color mostly gray (road) and light brown (soils). Nearby peak appears lighter in color than distant mountain range.	Ranges from dark to light green, with mostly tan grasses visible in the immediate foreground and as undergrowth.	Some color from roadway signs apparent. Colors of buildings and light roofs visible in distance.
TEX-TURE	Relatively smooth valley floor and rolling foothills; distant mountains appear somewhat more varied.	Vegetation appears coarse, and is more dense, on left side of highway.	Structures oriented along roadway and horizon appear ordered.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	The proposed transmission line would cross the roadway approximately 200 feet from the KOP, adding to the view large vertical features that would become the view's dominant element.
LINE	No change.	No change.	The linear collection of towers and lines extending across the entire view would be a large linear feature appearing perpendicular to the linear road and appearing above the distant skyline.
COLOR	No change.	No change.	Gray colors of galvanized steel would be noticeable in views.
TEX-TURE	No change.	No change.	From this distance, towers and lines would appear ordered and continuous.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X			X		
	LINE				X				X		X		
	COLOR				X				X		X		
	TEXTURE				X				X		X		

2. Does project design meet visual resource management objectives? ___Yes ___No_X_ NA (Explain on reverse side)

3. Additional mitigating measures recommended X___Yes __ No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Towers and lines would appear substantial in size and would be view's largest feature. However, view already contains strong linear feature (roadway corridor) and other structures (buildings, poles, etc.). Contrast would be moderate.

View is over 0.5 mile north of Hachita oriented toward the town. 180 degrees north of the viewpoint is a large proposed staging area.

Distance. The KOP is less than 0.1 mile north of New Build segment S7. Segment S7 parallels portions of NM 9. Segment S7 crosses private land in this area.

Angle of Observation. The KOP is at an even horizontal angle to segment S7.

Length of Time the Project Is In View. Segment S7 would potentially be viewed for extended periods from the community of Hachita.

Relative Size or Scale. The relative size of the structures would appear larger than the existing distribution poles, water tower, and residential structures within the landscape. Because of the relative size of the structures when compared with the existing structures, and because of the proximity to the structures, there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time. Vegetation disturbance associated with the proposed staging area would result in moderate contrasts to vegetation over the course of restoration.

Spatial Relationships. The landscape in the fore ground is open and flat with some rural development. The proposed structures and conductors would be primarily visible against the sky and there would be a moderate contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape form vehicle traffic and activities around Hachita. In the short term, motion associated with construction equipment along segment S7 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 26S Range 15W Section 33	5. Location Sketch 31.9956008 x -108.380003192
2. Key Observation Point **S7-04**		
3. VRM Class **III/IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Generally flat valley, though some undulations are apparent. Distant mountains vary from rounded to angular and appear in aggregate as a relatively complex form.	Rounded forms where discernible in the foreground and near the residential clusters; mostly dense and amorphous in other parts of the view.	Residential clusters noticeable across middle of view, but individual structures are difficult to discern.
LINE	Beyond road in extending away from viewpoint, primary lines are within mountain range and the complex form results in mainly curvilinear lines.	The edge of the area covered in scrub brush is clearly delineated. Relatively dense vegetation is apparent beyond the valley floor, as well.	Two areas including structures appear aligned across the middle of the view.
COLOR	Mostly light brown and gray soils, with distant mountains appearing darker in the view.	Mostly dark green with light brown and gray branches intermittently visible.	Color of structures range from light to dark.
TEX-TURE	Relatively smooth valley floor, with gradational, almost fluid appearance of mountains providing contrast.	Coarse in foreground, and smooth in views of distant foothills. Vegetation appears scattered and/or clumped in valley floor beyond residences.	Alignment appears directional.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Series of relatively tall towers would extend across view, in front of structures visible in center of view. The towers would extend above the skyline, as would portions of the conductors.
LINE	No change.	No change.	Conductors would replace divisions between land areas and skyline as predominant linear form in view.
COLOR	No change.	No change.	Light gray towers and conductors, given galvanized steel finish.
TEX-TURE	No change.	No change.	Ordered and continuous.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X	X			
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverse side)

3. Additional mitigating measures recommended _X_ Yes ___No (Explain on reverses side)

Evaluator's Names Date
Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Proposed transmission line meets management objectives for VRM Class IV (to provide for activities that require major modification of the landscape).

View is located immediately adjacent to the CDNST and is 0.5 mile from the proponent's alternative.

Distance. The KOP is 0.5 mile west of New Build segment S7. Segment S7 crosses BLM Class III and IV in this area.

Angle of Observation. The KOP is at an even horizontal angle to segment S7.

Length of Time the Project Is In View. Segment S7 would potentially be viewed for limited periods from the KOP.

Relative Size or Scale. The relative size of the structures would appear larger than the existing fences and residential structures within the landscape. Because of the relative size of the structures when compared with the existing structures, and because of the proximity to the structures, there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat with some rural development. The proposed structures and conductors would be primarily visible against the sky and there would be a moderate contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape from vehicle traffic. In the short term, motion associated with construction equipment along segment S7 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012 District/ Field Office: Las Cruces Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 26S	5. Location Sketch
2. Key Observation Point **S7-05**	Range 16W	32.073294152 x -108.461734375
3. VRM Class **state & BLM (VRM IV) lands**	Section 3	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Three distinct areas are apparent – a minor bluff in the foreground overlooks a long valley, beyond which are a series of mountain peaks.	All detectable vegetation is located within foreground. Individual plants are mostly rounded. Dense collection of vegetation beyond immediate foreground is amorphous.	Short, squat, rounded water tank in left portion of view is only discernible structure.
LINE	Three main lines cut across the view: the edge of the minor bluff, the far edge of the valley floor, and the mountain skyline.	Discernible vegetation ends at the edge of the minor bluff. There is also a somewhat distinct line at the near edge of dense vegetation.	None apparent.
COLOR	Reddish soils in the foreground give way to tannish color in the valley floor. Distant mountains appear darker.	Varying shades of green, with some very light green and tan grasses.	Water tank appears light.
TEXTURE	With exception of rough outcropping in left of view, mostly gradational from elevated area in foreground, down into valley, then up to mountains.	Coarse, shifting from clumped to continuous in the foreground.	Water tank appears smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	New towers would be visible spaced across the view, approximately 2 miles away from viewpoint.
LINE	No change.	No change.	New linear component would be marked by collective visibility of towers; conductors barely detectible from this distance, if visible at all.
COLOR	No change.	No change.	Light gray color from galvanized steel would likely be faintly apparent against dark backdrop.
TEXTURE	No change.	No change.	Would appear ordered and continuous in this view.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? _X_ Yes ___No (Explain on reverse side)

3. Additional mitigating measures recommended X___Yes ___No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Proposed transmission line meets management objectives for VRM Class IV (to provide for activities that require major modification of the landscape).

View is located 1.5 miles from proponent's alternative, and is indicative of a slightly more vegetated landscape, however no sensitive viewers are located nearby.

Distance. The KOP is 1.25 mile west of New Build segment S7. Segment S7 crosses state land and BLM Class IV in this area.

Angle of Observation. The KOP is at a slightly elevated viewing angle to segment S7.

Length of Time the Project Is In View. Segment S7 would potentially be viewed for limited periods from the KOP.

Relative Size or Scale. The relative size of the structures would appear larger than the existing fences and residential structures within the landscape. Because of the relative size of the structures when compared with the existing structures, and because of the proximity to the structures, there would be weak contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat with some rural development. The proposed structures and conductors would be primarily visible against the sky and there would be a moderate contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment S7 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 31 August 2012
	District/ Field Office: Las Cruces
	Resource Area:
	Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 23W	5. Location Sketch
2. Key Observation Point **S8-01**	Range 16W	32.262930686 x -108.524559733
3. VRM Class **private land**	Section 31	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat, with only variation in terrain raised areas for freeway and rail corridors.	Only a few individual plants – some rounded, some vertically oriented – are noticeable in the areas adjacent to the freeway.	Utility poles stretching across view are clearly defined. Roadside signs are horizontal elements.
LINE	The I-10 corridor is the view's dominant linear feature. The raised railroad corridor is noticeable, running parallel to the freeway.	Vegetation in immediate foreground is limited by linear roadway. Horizon appears to include distant vegetation.	Three separate utility corridors (lines and poles) span the view.
COLOR	Slightly reddish soils subordinate to gray colors of the roadway.	Mostly variants of green (light to dark).	Utility poles are wooden and appear dark in this view. Nearest billboard faces away from the viewpoint and is dark. More distant billboards face viewpoint and appear lighter in color.
TEXTURE	Smooth and flat.	Soft grasses are contrasted by occasional coarse-looking brush.	Utility poles as a whole appear continuous, while billboards appear scattered.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	New transmission tower is dominant vertical form in view. Greater portion of view is occupied by structures / conductors.
LINE	No change.	No change.	New conductor lines appear consistent in orientation with existing linear features, but substantially raise profile of area, due to higher, larger number of lines.
COLOR	No change.	No change.	Tower and conductors appear gray in color.
TEXTURE	No change.	No change.	Tower and conductors appear smooth.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X		X		
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___Yes ___No _X_ NA (Explain on reverse side)

3. Additional mitigating measures recommended _X___Yes __No (Explain on reverses side)

Evaluator's Names Date

Josh Hohn
October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

N/A; KOP is on private land and representative ROW visible passes through private lands. The addition of a transmission tower of this scale and associated conductors would result in a moderate contrast in terms of form and line; however, the additional features would appear mostly aligned in horizontal space with existing transmission corridors.

Located along I-10 and simulation depicts proponent's alternative crossing the I-10 at a perpendicular angle.

Distance. The KOP is 0.25 mile west of New Build segment S8. Segment S8 crosses private land in this area. Segment S8 crosses a small portion of BLM VRM Class III lands 1.12 miles to the south of the KOP.

Angle of Observation. The KOP is at a horizontal viewing angle to segment S8.

Length of Time the Project Is In View. Segment S8 would potentially be viewed for limited periods from the KOP as travelers cross the segment along I-10.

Relative Size or Scale. The relative size of the structures would appear larger than the existing transmission structures within the landscape. Because of the relative size of the structures when compared with the existing structures, and because of the proximity to the structures, there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape is open and flat with some development along the I-10. The proposed structures and conductors would be primarily visible against the sky and there would be a moderate contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is motion within the landscape from vehicle traffic along the I-10. In the short term, motion associated with construction equipment along segment S8 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 31 August 2012
District/ Field Office: Las Cruces
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township 24S	5. Location Sketch
2. Key Observation Point **S8-02**	Range 16W	32.174949949 x -108.53694053
3. VRM Class **N/A; private lands**	Section 31	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat valley, backdropped by skyline of discrete peaks.	Roadside scrub is multidirectional, while agricultural land in the area beyond the road is flat and uniform.	Utility poles (vertically oriented) and a long agricultural watering machine (horizontally oriented) are the primary features visible beyond the roadside barbed wire fence.
LINE	The horizon is clearly defined in parts of the view.	There is a clear line between land in agricultural cultivation and that which is not.	The series of utility poles appears as a line across the view. The watering machine and property fence are also linear features.
COLOR	Reddish soils in foreground are widely unobservable throughout the rest of the view, which includes agricultural uses. Distant mountains appear relatively dark.	Vibrant green comes from the area currently in production. Greens, grays, purples and tans are found among the roadside vegetation.	All appear relatively dark.
TEX-TURE	Smooth agricultural valley; convex and pyramidal mountains in distance.	Patchy and coarse bushes in immediate foreground give way to smooth and continuous agricultural fields.	Utility lines and fence posts appear ordered within their respective spans.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change.	No change.	Transmission towers would appear as collection of vertical forms extending across view, angling away from KOP, parallel to existing, smaller, line and extending above skyline.
LINE	No change.	No change.	Conductors likely to be visible, occupying relatively large amount of skyline.
COLOR	No change.	No change.	Light gray color due to galvanized steel finish would contrast somewhat with generally vivid agricultural lands.
TEX-TURE	No change.	No change.	New transmission line would appear ordered and continuous from this viewpoint.

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X		X		
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X			X	

2. Does project design meet visual resource management objectives? ___Yes ___No _X_ NA (Explain on reverse side)

3. Additional mitigating measures recommended _X_ Yes ___No (Explain on reverses side)

Evaluator's Names: Josh Hohn
Date: October 12, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

New transmission towers would alter skyline across view, but would otherwise contrast only weakly with existing features. The ROW would be located within an existing transmission corridor, and would relate to linear features already present in the agricultural landscape (crop boundaries, etc.).

Located Muir Road, view is oriented to the south looking toward agricultural fields.
Distance. The KOP is 1.0 mile west of New Build segment S8. Segment S8 crosses private land in this area.

Angle of Observation. The KOP is at a horizontal viewing angle to segment S8.

Length of Time the Project Is In View. Segment S8 would potentially be viewed for limited periods from the KOP as travelers cross the segment along I-10..

Relative Size or Scale. The relative size of the structures would appear larger than the existing transmission structures within the landscape. Because of the relative size of the structures when compared with the existing structures, and because of the proximity to the structures, there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape is open, flat, and horizontal with some rural development. There are several smaller mountains in the distant background. The proposed structures and conductors would be primarily visible against the sky and there would be a moderate contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is motion within the landscape from vehicle traffic along Muir Road. In the short term, motion associated with construction equipment along segment S8 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP H-01 – N. Cascabel Rd. – Community of Pomerene

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 16S
Range 20E
Section 27

5. Location Sketch
32.016674821x-110.298128337

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat, alluvial valley trending southwest toward San Pedro River MG: Flat valley floor rising sharply to large, range of angular mountain forms spanning across entire view BG: Distant mountain form in center of view No water visible	FG: Multiple vegetative layers; low groundcover and few trees dotted along roadway; flat, low agricultural vegetation along valley floor; distinctive line of trees and shrubs along San Pedro River embankment MG: Swaths of vegetation on mountain forms BG: Indistinct	FG: Long transmission lines spanning entire view; curvilinear paved roadway; short, blocky signage; linear and circular irrigation forms MG: Barely visible blocky residential structure in center of view BG: None visible
LINE	FG: Horizontal, linear plane MG: Contrast of flat, valley floor to rise of mountain forms; continuous, undulating mountain forms with pyramidal peaks spanning across entire view BG: Rounded mountain form No water visible	FG: Directional vegetative layer trending along the roadway and river embankment MG: Indistinct vegetative break at transition between alluvial plane and base of mountain forms; patches of vegetation on mountain forms BG: Indistinct	FG: Two parallel linear transmission lines; horizontal and vertical transmission structures; curvilinear flat roadway; vertical signage; long, linear irrigation lines MG: Barely detectable residential structure BG: Not visible
COLOR	FG: Tans, browns, sandy beige MG: Browns, gray, tans BG: Gray No water visible	FG: Greens, yellows, browns MG: Greens, browns, grays BG: Dark shades of gray	FG: Browns, grays, yellows, blacks, whites MG: Whites BG: Not visible
TEXTURE	FG: Smooth valley floor MG: Smooth valley floor, coarse continuous mountain forms BG: Coarse distant mountain No water visible	FG: Medium to fine textured rounded shrubs and trees; smooth, fine, groundcover MG: Smooth, patchy BG: Smooth, fine; velvety appearance	FG: Coarse to medium transmission structures; smooth roadway; MG: Blocky medium textured residential structure BG: Not visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: two new monopole structures replace two H-frame structures
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: adding taller vertical elements; undulating horizontal lines visually similar to the existing line though of different span width
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; new galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: transmission poles contribute to additional coarse element to existing landscape

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X			X	
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended?
X ☐ Yes No (Explain on reverse side)

Evaluator's Names: Tom Priestley, MariaElena Conserva, and Angela Wolfe

Date: September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on private land.

Distance. The KOP is approximately 0.4 mile south of segment H along North Cascabel Road. Segment H crosses private land. Segment H crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment H.

Length of Time the Project Is In View. Segment H would potentially be viewed for limited periods by viewers traveling the road and crossing the segment at a perpendicular angle.

Relative Size or Scale. The relative size of the replacement structures would be similar to the existing transmission structures. Because of the relative size of the structures when compared with other existing structures and with the open landscape, there would be weak contrasts.

Season of Use. The open landscape and vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is flat and open with patches of taller vegetation. There are mountains in the background.

Because the proposed structures and conductors cross the view horizontally, they would be visible partially against the sky and the mountainous backdrop, which would contribute to the weak visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment H would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP H-02 - Rural residential north of Mescal

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 17S
Range 19E
Section 6

5. Location Sketch
31.989551053x-110.434864840

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Panoramic view, gentle rising hilly forms of valley floor MG: Steep mountain forms in center of view with rounded peaks BG: Distant undulating mountain forms spanning the center-left side of view No water visible	FG: Patchy, irregular rounded forms of low lying desert vegetation on valley floor; groundcover MG: Irregular, dense swaths of vegetation on mountain forms BG: Swaths of vegetation on distant mountain forms	FG: Linear fencing; paved roadway, two parallel linear transmission lines consisting of corridor; diagonal line of railroad track spanning across entire view MG: None visible BG: None visible
LINE	FG: Horizontal, subtle undulating plane of valley floor MG: Series of undulating mountain forms BG: Jagged, mountains forms with rounded peaks No water visible	FG: Uniform groundcover; patchy; clumps of shrubs MG: Fine vegetative line stippled along transition of valley floor and mountain forms; patches of vegetation on mountains BG: Patches of vegetation on distant mountains	FG: Horizontal and vertical transmission structures; linear lines of fencing; strong diagonal line of railroad MG: None visible BG: None visible
COLOR	FG: Tans, browns, sandy beige MG: Light brown, gray mountains BG: Brown, gray mountains No water visible	FG: Greens, yellows, light brown, tans, whites MG: Greens, yellows, light brown, dark shades of gray BG: Browns, dark shades of gray	FG: Grays, browns, blacks, whites MG: None visible BG: None visible
TEX-TURE	FG: Smooth MG: Valley floor contrasting with rise of jagged mountainous forms BG: Coarse, rough mountainous forms No water visible	FG: Patchy, clumped vegetative forms MG: Fine, patch-like; velvety appearance BG: Patch-like swaths on distant mountain forms; velvety appearance	FG: Coarse to medium transmission lines and fencing; smooth roadway; coarse railroad track MG: None visible BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: series of new proposed 230kV monopole structures replacing line of existing H-frame structures; skylined against backdrop of distant mountain forms
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: adding taller vertical elements than existing structures; undulating horizontal lines visually similar to the existing line spanning across entire view; emphasis of existing corridor
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; new galvanized steel gray tower structures; whitish appearance based on angle of the sun
TEX-TURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: transmission poles contribute to additional coarse element to existing landscape

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X			X	
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
X☐ Yes No (Explain on reverse side)

Evaluator's Names: Tom Priestley, MariaElena Conserva, and Angela Wolfe
Date: September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on private land.

Butterfield crossing in immediate foreground. 0.15 mile from AA. Very rural residential.

Distance. The KOP is approximately 0.2 mile south of segment H along North Mescal Road. Segment H crosses private land. Segment H crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment H.

Length of Time the Project Is In View. Segment H would potentially be viewed for limited periods by viewers traveling the road and crossing the segment at a perpendicular angle.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures, but similar in form to other existing structures. Because of the relative size of the structures when compared with other existing structures and with the open landscape, there would be weak contrasts.

Season of Use. The open landscape and vegetation would vary in color and texture across the seasons. The patches of taller desert vegetation would not vary much across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required

for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is rolling and includes patches of taller desert vegetation. There are mountains in the background. Because the proposed replacement structures and conductors cross the view horizontally, they would be visible partially against the sky and the mountainous backdrop, which would contribute to the weak visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment H would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: **KOP H-03** - Mescal rural residential – pasture land

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 17S
Range 18E
Section 13

5. Location Sketch
31.961825206x-110.451872358

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Gentle rising, undulating plane of valley floor MG: Steep mountain forms in right-center of view with pyramidal peaks BG: Distant undulating mountain forms spanning the right side of view No water visible	FG: Patchy, rounded forms of low lying desert vegetation on valley floor; few cacti; scattered groundcover MG: Irregular, scattered trees along skyline in left side of view; dense swaths of vegetation on mountain forms BG: Swaths of vegetation on mountain forms	FG: Linear fencing, tall, linear transmission structures, blocky rural residential structures; signage; paved roadway MG: Barely visible vertical transmission structures; barely visible blocky structure s along transition of valley floor to mountainous foothills in right side of view; paved roadway BG: None visible
LINE	FG: Horizontal, subtle undulating plane of valley floor MG: Discontinuous, undulating mountain forms BG: Jagged, mountains forms with rounded peaks No water visible	FG: Broken, patchy, vegetative layer MG: Discontinuous, horizontal vegetative line along skyline in left side of view; patches of vegetation on mountains BG: Patches of vegetation on distant mountains	FG: Horizontal and vertical transmission structures and fencing; blocky structures; weak diagonal line of roadway MG: Weak vertical transmission lines; barely visible blocky structures BG: None visible
COLOR	FG: Tans, browns, sandy beige, oranges MG: Brown, gray mountains BG: Brown, gray mountains No water visible	FG: Greens, yellows, light brown, tans MG: Greens, yellows, light brown, dark shades of gray BG: Light brown, dark shades of gray	FG: Grays, browns, blacks, whites MG: Blacks, browns, whites, grays BG: None visible
TEXTURE	FG: Smooth valley floor MG: Valley floor contrasting with rise of mountainous forms BG: Coarse, rough mountainous forms No water visible	FG: Patchy, clumped vegetative forms across valley floor MG: Fine, patch-like; velvety appearance BG: Patch-like swaths on mountain forms; velvety appearance	FG: Coarse to medium transmission lines and fencing; blocky structures MG: Fine transmission structures; blocky structures BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: new proposed monopole structures replace existing H-frame structures; skylined against backdrop of distant mountain forms
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: adding taller vertical elements than existing structures; undulating horizontal lines visually similar to the existing line though of different span width
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; new galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: transmission poles contribute to additional coarse element to existing landscape

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST		FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
ELEMENTS	Form				X				X			X	
	Line				X				X			X	
	Color				X				X			X	
	Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names — Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on private land.

Similar to KOP U2-04

Distance. The KOP is approximately 1.0 mile southeast of segment H along East Navajo Trail. Segment H crosses private land. Segment H crosses the view from the KOP north to south.

Angle of Observation. The KOP is at a slightly lower observational angle to segment H.

Length of Time the Project Is In View. Segment H would potentially be viewed for limited periods by viewers traveling the road.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures, but similar in form to other existing structures. Because of the relative size of the structures when compared with other existing structures and with the open landscape, there would be weak contrasts.

Season of Use. The open landscape and vegetation would vary in color and texture across the seasons. The patches of taller desert vegetation would not vary much across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is rolling and includes patches of taller vegetation. There are mountains in the background. Because the proposed replacement structures and conductors cross the view horizontally, they would be visible partially against the sky and the mountainous backdrop, which would contribute to the weak visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment H would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U1-01 - NW Coronado National Forest

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 16S
Range 23E
Section 28

5. Location Sketch
32.01636000000x-110.01371

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Panoramic view; flat horizontal plane gently trending north-northwest MG: Sweeping valley floor rises to undulating mountain forms spanning entire view BG: Distant undulating mountain forms in left side of view No water visible	FG: Uniform, low lying desert vegetation consisting of low shrubs and groundcover MG: Stippled low lying desert vegetation on mountain forms BG: Indistinct	FG: Two sets of parallel transmission lines spanning entire view; single transmission line in far FG; linear roadway in left side of view MG: Barely visible blocky residential structure obscured behind vegetation; curving dirt road along mountain form BG: None visible
LINE	FG: Horizontal, continuous line of valley floor MG: Horizontal, continuous line of valley floor rises to diagonal, jagged, mountains forms with pyramidal peaks BG: Jagged mountainous forms No water visible	FG: Single-story, horizontal vegetative layer on valley floor MG: Diagonal, swath-like patches on mountain forms BG: Indistinct	FG: Horizontal and vertical transmission structures; horizontal, linear roadway MG: Barely visible irregular horizontal line of residential structures; curving dirt road BG: None visible
COLOR	FG: Tans, browns, sandy beige MG: Tans, browns, sandy beige BG: Distant light brown, gray mountains No water visible	FG: Greens, yellows, light brown, tan MG: Greens, yellows, light brown, tan, dark shades of gray BG: Indistinct	FG: Browns, blacks, shade of gray MG: Browns, blacks, shade of gray, whites BG: None visible
TEXTURE	FG: Smooth valley floor MG: Valley floor contrasting with rise of course mountainous forms BG: Coarse, continuous mountainous forms No water visible	FG: Smooth, continuous vegetative plane blankets valley floor MG: Stippled vegetation rising up mountain form; patch-like swaths BG: Indistinct	FG: Coarse to medium transmission lines, granular, irregular dirt road MG: Fine residential structures and dirt road BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: bold, prominent, taller transmission structure replaces existing structure in landscape
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: prominent vertical structure; new conductor lines are more prominent and add new horizontal element above existing lines
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structure
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: transmission structure and conductors form coarse texture on landscape

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X		X		
Line				X				X		X		
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names: Tom Priestley, MariaElena Conserva, and Angela Wolfe
Date: September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.
On the edge of Coronado NF but facing N (away from Forest). No public sensitivity identified for this view orientation. Also, Coronado NF plan conformance indicates the scenic quality in this area would permit change to the aesthetic environment.

Distance. The KOP is approximately 0.2 mile south of segment U1a along the dirt road Lizard Lane. Segment U1a crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment U1a.

Length of Time the Project Is In View. Segment U1a would potentially be viewed for limited periods by viewers traveling the road and crossing the segment at a perpendicular angle.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures. Because of the relative size of the structures when compared with other existing structures and with the open landscape, there would be moderate contrasts.

Season of Use. The open landscape and low lying desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat and includes patches of taller desert vegetation. There are mountains in the background. Because the proposed replacement structures and conductors cross the view horizontally, they would be visible primarily against the sky, which would contribute to the moderate visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be further visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment U1a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U2-01 - Recreational Park in Benson

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 17S
Range 20E
Section 9

5. Location Sketch
31.97292483 6x-110.299218202

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat, recreational field trending northeast MG: Indistinct BG: Range of undulating mountain forms with pyramidal peaks and associated foothills No water visible	FG: Uniform, low lying groundcover; strip of shrubs and trees at the edge of recreational field MG: Vegetation in FG blocks MG view BG: Swaths of vegetation on mountain forms	FG: Long, horizontal transmission lines spanning across entire view; tall light poles; linear fencing; surrounding recreational field; blocky residential forms on left side of view; flat paved parking lot; tall, blocky billboard structures MG: None visible BG: None visible
LINE	FG: Horizontal, linear plane MG: Indistinct BG: Indistinct line from valley floor to rise of mountainous forms; undulating, continuous mountain forms with pyramidal peaks spanning entire view No water visible	FG: Two horizontal vegetative layers consisting of groundcover and shrubs and trees MG: Indistinct BG: Patches of vegetation on distant mountains	FG: Horizontal and vertical transmission structures; tall linear light poles; linear, horizontal fencing; blocky vertical signage MG: None visible BG: None visible
COLOR	FG: Tans, browns, sandy beige MG: Indistinct BG: Brown, gray mountains No water visible	FG: Greens, yellows, light brown, tan MG: Indistinct BG: Browns, dark shades of gray	FG: Gray, silver, browns, yellow, whites, black MG: None visible BG: None visible
TEXTURE	FG: Smooth valley floor MG: Indistinct BG: Coarse, continuous mountainous forms No water visible	FG: Smooth groundcover, medium to fine strip of vegetation MG: Indistinct BG: Patch-like swaths on mountain forms	FG: Coarse to medium continuous transmission lines, coarse light poles; blocky structures; smooth parking lot MG: None visible BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: existing structures replaced with new taller monopole structures; skylined above distant mountain forms
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: new 230kV lines visually similar to existing horizontal, undulating conductors yet with different span width; vertical height of new structures emphasizes vertical lines contrasting against skyline
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X		X		
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names: Tom Priestley, MariaElena Conserva, and Angela Wolfe
Date: September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.
0.5 mile from line; 3.5 miles from alternative. KOP located on western edge of residential area between Hwy 80 and I-10.

Distance. The KOP is approximately 0.5 mile south of segment U2 in Benson. Segment U1a crosses private land. Segment U2 crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment U2.

Length of Time the Project Is In View. Segment U2 would potentially be viewed for extended periods by viewers in the recreational park.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structure, but would be similar in form to the existing tall light structures of the field. Because of the relative size of the structures when compared with other existing structures, there would be moderate contrasts.

Season of Use. The open landscape and vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, some screening provided by vegetation surrounding

the park, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open and flat and includes a line of taller desert vegetation. There are mountains in the background. Because the proposed replacement structures and conductors cross the view horizontally, they would be visible primarily against the sky, which would contribute to the moderate visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be further visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment U2 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U2-02 - Future Benson residential development

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 17S
Range 19E
Section 12

5. Location Sketch
31.968105312x -110.356656752

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Unobstructed panoramic view; flat horizontal plane gently trending north-northeast MG: Sweeping valley floor rises to mountain foothills BG: Distinctive undulating mountain forms spanning the entire view No water visible	FG: Uniform, low lying desert vegetation blankets valley floor MG: Uniform, low lying desert vegetation BG: Swaths of vegetation on mountain forms	FG: Linear fencing; long, linear transmission line spanning across entire view MG: Barely visible vertical transmission structures; barely visible blocky structure s along valley floor in right side of view BG: None visible
LINE	FG: Horizontal, continuous line of valley floor MG: Horizontal, continuous line of valley floor rising to foothills BG: Jagged, mountains forms with conical peaks No water visible	FG: Single-story, horizontal vegetative layer blankets valley floor MG: Continuation horizontal line of low lying desert vegetation blanketing valley floor BG: Patches of vegetation on distant mountains	FG: Horizontal and vertical transmission structures and fencing MG: Weak vertical transmission lines; barely visible blocky structures BG: None visible
COLOR	FG: Tans, browns, sandy beige MG: Tans, browns BG: Brown, gray, sandy beige mountains No water visible	FG: Greens, yellows, light brown, whites MG: Greens, yellows, light brown, whites BG: Light brown, dark shades of gray	FG: Grays, browns, blacks MG: Blacks, browns, whites, BG: None visible
TEXTURE	FG: Smooth valley floor MG: Continuous, valley floor contrasting with rise of mountainous forms BG: Coarse, continuous mountainous forms No water visible	FG: Smooth, continuous vegetative plane blankets valley floor MG: Smooth, continuous vegetative plane blankets valley floor BG: Patch-like swaths on mountain forms	FG: Medium to fine transmission lines and fencing MG: Fine transmission structures; blocky structures BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: prominent, taller transmission structures replace existing line in largely undeveloped landscape
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: proposed 230kV transmission structures and conductors are more prominent than existing line, creating bolder vertical and horizontal elements in the landscape
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: proposed transmission structures and conductors form coarse texture on landscape compared to existing line

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

	FEATURES											
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS Form				X				X		X		
ELEMENTS Line				X				X		X		
ELEMENTS Color				X				X			X	
ELEMENTS Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐No (Explain on reverse side)

Evaluator's Names Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.

Dark Star Rd. recently paved with turn-offs indicating additional future roads/development. Currently 1 ranch, no other sensitive viewers, existing "H" frame in middleground.

Distance. The KOP is approximately 0.3 mile south of segment U2 along Dark Star Road. Segment U2 crosses private land. Segment U2 crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment U2.

Length of Time the Project Is In View. Segment U2 would potentially be viewed for limited periods by viewers traveling the road.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures. Because of the relative size of the structures when compared with other existing structures and with the open landscape, there would be moderate contrasts.

Season of Use. The open landscape and patchy desert vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, and the screening by existing vegetation between the KOP and segment, there would be no visible contrast.

Spatial Relationships. The landscape in the fore ground is open and flat and includes patches of taller desert vegetation. There are mountains in the background. The proposed replacement structures would be visible primarily against the mountainous backdrops, which would contribute to a weak visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be further visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment U2 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project	4. Location	5. Location Sketch
	Township 17S	31.964829750x-110.434545533
2. Key Observation Point: KOP U2-03 - N. Mescal Rd - rural residential	Range 19E	
3. VRM Class: Representative ROW would pass through non BLM land	Section 8	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat, horizontal valley floor MG: Expansive, flat, horizontal valley floor rises sharply to mountainous foothills BG: Series of distinctive undulating mountain forms spanning the entire BG view with pyramidal peaks No water visible	FG: Linear strip of vegetation paralleling roadway; dense trees and shrubs in right side of FG obscuring MG view; low lying desert vegetation dotting valley floor MG: Low lying vegetation dotting valley floor BG: Stippled and swaths of vegetation on mountain forms	FG: Prominent, paved linear roadway, roadway signage, linear transmission lines; blocky residential structures within the rural residential area of Mescal MG: Vertical transmission structures; blocky residential structures dotting valley floor BG: None visible
LINE	FG: Horizontal, continuous line of valley floor MG: Horizontal, continuous line of valley floor rising to sharply to rolling foothills BG: Steep, jagged, mountain forms with pyramidal peaks No water visible	FG: Linear vegetative strip of trees along roadway; irregular vegetative layer stippled across valley floor MG: Irregular vegetative layer stippled across valley floor BG: Patches of vegetation on distant mountains	FG: Linear, undulating roadway, perpendicular transmission lines; repeating horizontal and vertical transmission structures paralleling roadway; short vertical signage; clumps of residential development MG: Weak vertical transmission lines; clumps of residential development BG: None visible
COLOR	FG: Tans, browns, sandy beige MG: Tans, browns, sandy beige BG: Brown, gray, sandy beige mountains No water visible	FG: Dark greens, yellows, light brown, tans MG: Dark greens, yellows, light brown, tans BG: Dark greens, light brown, dark shades of gray	FG: Grays, browns, blacks, yellows MG: Blacks, browns, whites, BG: None visible
TEXTURE	FG: Smooth valley floor MG: Continuous, valley floor contrasting with sharp rise of mountainous forms BG: Coarse, continuous mountainous forms with pyramidal peaks No water visible	FG: Medium to fine MG: Fine, smooth BG: Smooth, patch-like swaths and stippled areas on mountain forms	FG: Coarse to medium transmission lines; smooth paved roadway MG: Fine transmission structures; blocky structures BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: bold new transmission structure creates strong to moderate vertical form; proposed 230 kV line adds new element to existing lines
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: new structures add contrasting perpendicular element to existing lines; conductor lines are relatively prominent since they cross the road
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structure
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: new transmission line makes landscape somewhat more coarse

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X	X			
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names Date
Mark Greenig, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.

Distance. The KOP is less than 0.1 mile south of segment U2 along North Mescal Road. Segment U2 crosses private land. Segment U2 crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment U2.

Length of Time the Project Is In View. Segment U2 would potentially be viewed for limited periods by viewers traveling the road and crossing the segment at a perpendicular angle.

Relative Size or Scale. The relative size of the replacement structures would be much taller than the existing transmission structures and substantially different form than the existing structures. Because of the relative size of the structures when compared with other existing structures and with the open landscape, there would be strong contrasts.

Season of Use. The open landscape and patchy vegetation would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required

for the proposed project and the screening by existing vegetation between the KOP and segment, there would be no visible contrast.

Spatial Relationships. The landscape in the fore ground is open and flat and includes patches of taller vegetation. There are mountains in the background. The proposed replacement structures would be visible primarily against the sky which would contribute to the strong visual contrast.

Atmospheric Conditions. Because of the proximity to the segment, atmospheric conditions are not expected to result in changes to the visibility or contrast of the replacement structures.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment U2 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

B-12.2459

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U2-04 - Mescal rural residential – pasture land

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 17S
Range 18E
Section 13

5. Location Sketch
31.961825206x-110.451872358

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Gentle rising, undulating plane of valley floor MG: Steep mountain forms in right-center of view with pyramidal peaks BG: Distant undulating mountain forms spanning the right side of view No water visible	FG: Patchy, rounded forms of low lying desert vegetation on valley floor; few cacti; scattered groundcover MG: Irregular, scattered trees along skyline in left side of view; dense swaths of vegetation on mountain forms BG: Swaths of vegetation on mountain forms	FG: Linear fencing, tall, linear transmission structures; blocky rural residential structures; signage; paved roadway MG: Barely visible vertical transmission structures; barely visible blocky structure s along transition of valley floor to mountainous foothills in right side of view; paved roadway BG: None visible
LINE	FG: Horizontal, subtle undulating plane of valley floor MG: Discontinuous, undulating mountain forms BG: Jagged, mountains forms with rounded peaks No water visible	FG: Broken, patchy, vegetative layer MG: Discontinuous, horizontal vegetative line along skyline in left side of view; patches of vegetation on mountains BG: Patches of vegetation on distant mountains	FG: Horizontal and vertical transmission structures and fencing; blocky structures; weak diagonal line of roadway MG: Weak vertical transmission lines; barely visible blocky structures BG: None visible
COLOR	FG: Tans, browns, sandy beige, oranges MG: Brown, gray mountains BG: Brown, gray mountains No water visible	FG: Greens, yellows, light brown, tans MG: Greens, yellows, light brown, dark shades of gray BG: Light brown, dark shades of gray	FG: Grays, browns, blacks, whites MG: Blacks, browns, whites, grays BG: None visible
TEXTURE	FG: Smooth valley floor MG: Valley floor contrasting with rise of mountainous forms BG: Coarse, rough mountainous forms No water visible	FG: Patchy, clumped vegetative forms across valley floor MG: Fine, patch-like; velvety appearance BG: Patch-like swaths on mountain forms; velvety appearance	FG: Coarse to medium transmission lines and fencing; blocky structures MG: Fine transmission structures; blocky structures BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: new proposed monopole structures replace existing H-frame structures; skylined against backdrop of distant mountain forms
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: adding taller vertical elements than existing structures; undulating horizontal lines visually similar to the existing line though of different span width
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; new galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: transmission poles contribute to additional coarse element to existing landscape

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X			X	
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names — Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.

Located on Navajo Trail Road. Low density residential homesteads with existing views of "H" frames. Similar to KOP H-03

Distance. The KOP is 0.2 mile south of segment U2 along Navajo Trail Road. Segment U2 crosses private land. Segment U2 crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment U2.

Length of Time the Project Is In View. Segment U2 would potentially be viewed for limited periods by viewers traveling the road and extended periods from residential homesteads in the area.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures, but similar in form to other existing structures. Because of the relative size of the structures when compared with other existing structures and with the open landscape, there would be weak contrasts.

Season of Use. The open landscape and vegetation would vary in color and texture across the seasons. The patches of taller desert vegetation would not vary much across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is rolling and includes patches of taller vegetation. There are mountains in the background. Because the proposed replacement structures and conductors cross the view horizontally, they would be visible partially against the sky and the mountainous backdrop, which would contribute to the weak visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment U2 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

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(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-03 Transmission Line Crossing at Hwy 83

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 16
Range 16
Section 35

5. Location Sketch
32.00103x-110.68832

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Panoramic view, subtle, rolling, directional, plane trending north-northwest MG: Continuation of valley floor, transition to sharp rise of undulating mountain forms and associated foothills BG: Jagged, continuous mountain forms with pyramidal peaks spanning background view No water visible	FG: Clumps of low lying vegetation MG: Dense swaths and patches of vegetation on mountain forms and foothills BG: Dense, dark patches on distant mountains	FG: Linear and diagonal roadways, blocky residential structures; long transmission lines spanning entire view; vertical communication towers, roadway signage; linear fencing MG: Blocky residential structures, linear transmission lines, curvilinear roadways, roadway signage, communication towers; no structures visible on mountain forms BG: None visible
LINE	FG: Continuous line of valley floor MG: Subtle rolling plane rising sharply to undulating mountain forms, diagonal BG: Undulating, continuous mountain forms with pyramidal peaks across skyline of background No water visible	FG: Single, irregular vegetative layer; linear line of vegetation paralleling roadway MG: Indistinct vegetative break at transition between valley floor and mountain forms; patchy swaths on mountains BG: Patch-like swaths	FG: Linear roadway, vertical and horizontal transmission structures, blocky residential forms MG: Blocky residential forms create a line of development across valley floor and mountain foothill; curvilinear roadway BG: None visible
COLOR	FG: Tans, browns, reds MG: Tans, browns BG: Tans, browns, No water visible	FG: Greens, whites, light brown, tan MG: Greens, light brown, tan BG: Dark gray	FG: Range of white to black hues MG: Whites, browns, blacks, greens BG: None visible
TEXTURE	FG: Smooth valley floor MG: Smooth valley floor, coarse, rough mountain forms BG: Coarse, rough mountain forms with pyramidal peaks No water visible	FG: Fine to medium, discontinuous; non-directional MG: Fine, patchy swaths BG: Fine, patchy swaths	FG: Fine smooth roadway, discontinuous blocky structures, medium to coarse transmission lines MG: Medium to fine line of development BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: proposed linear sequence of transmission poles taller than existing H-frame structures, undulating conductor lines
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: proposed 230kV line adds taller vertical elements; undulating horizontal lines span across entire landscape, distinctive over the roadway; visually similar to the existing line though of different span width
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; new galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: proposed 230kV transmission structures create medium to coarse repeating design that mirrors pattern of existing line

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS: Form				X				X			X	
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
X Yes ☐ No (Explain on reverse side)

Evaluator's Names: Tom Priestley, MariaElena Conserva, and Angela Wolfe

Date: September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.
Located along SR 83.

Distance. The KOP is 0.2 mile south of segment U3a along SR83. Segment U3a crosses private land. Segment U3a crosses the view from the KOP east to west.

Angle of Observation. The KOP is at an even horizontal angle to segment U3a.

Length of Time the Project Is In View. Segment U3a would potentially be viewed for limited periods by viewers traveling the road.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures, but similar in form to other existing structures. Because of the relative size of the structures when compared with other existing structures and with the open landscape, there would be weak contrasts.

Season of Use. The open landscape and vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is rolling and includes patches of taller vegetation. There are mountains in the background. The proposed replacement structures and conductors cross the view horizontally; they would be visible partially against the sky and the mountainous backdrop, which would contribute to the weak visual contrast.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there would be reduced visibility of the proposed structures and reduced visual contrasts at times.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment U3a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-04- Sonoita Ranch Residential

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 16S
Range 16E
Section 27

5. Location Sketch
32.005748050 x -110.696156339

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat horizontal plane gently trending northwest MG: Not visible BG: Not visible No water visible	FG: Low lying sparse vegetative layer consisting of few short shrubs and groundcover MG: Not visible BG: Not visible	FG: Single transmission line in center view; one paved and several unpaved flat driveways transecting view; several single-story building forms and associated vehicles within the rural residential development of Sonoita Ranch; MG: None visible BG: None visible
LINE	FG: Horizontal, continuous line on valley floor MG: Not visible BG: Not visible No water visible	FG: Single irregular horizontal vegetative layer MG: Not visible BG: Not visible	FG: Diagonal driveways; long, linear parallel transmission lines, blocky residential forms MG: None visible BG: None visible
COLOR	FG: Tans, browns MG: Indistinct BG: Indistinct No water visible	FG: Greens, yellows, light brown, tan MG: Not visible BG: Not visible	FG: Soft white to tan road, dark brown transmission lines; tans and browns residential structures MG: None visible BG: None visible
TEX-TURE	FG: Smooth valley floor MG: Indistinct BG: Indistinct No water visible	FG: Fine to medium, discontinuous; non-directional MG: Not visible BG: Not visible	FG: Fine smooth driveways, discontinuous blocky structures, medium to coarse transmission lines MG: None visible BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: linear sequence of transmission structures similar in form as those of the existing line but taller; bold linear conductor lines skylined above residences MG and BG: no change
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: prominent vertical structures; linear sequence of transmission poles MG and BG: no change
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structures MG and BG: no change
TEX-TURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: new 230kV transmission structures increase coarse texture than existing line against flat horizontal plane MG and BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

	FEATURES											
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS Form				X				X		X		
ELEMENTS Line				X				X		X		
ELEMENTS Color				X				X			X	
ELEMENTS Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names — Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Proposed upgrades are located on non BLM land.

Distance. The KOP is 0.01 mile north of segment U3a from South Sonoita Ranch Circle. Segment U3a crosses private land. Segment U3a crosses the view from the KOP generally east to west.

Angle of Observation. The KOP is at a slightly lower observational angle to segment U3a.

Length of Time the Project Is In View. Segment U3a would potentially be viewed for extended periods from residences at the KOP.

Relative Size or Scale. The relative size of the replacement structures would be somewhat taller than the existing transmission structures. Because of the relative size of the structures when compared with other existing structures and with the open landscape, there would be moderate contrasts.

Season of Use. The sparse landscaped vegetation in the residential area would not vary dramatically across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast over time.

Spatial Relationships. The landscape in the fore ground is a single family residential area. The proposed replacement structures and conductors are in the immediate fore ground; they would be visible entirely against the sky, which would contribute to the moderate visual contrast.

Atmospheric Conditions. Because of the proximity of the KOP, changes in atmospheric conditions are not expected to result in changes to visual contrast, however, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment U3a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-05 - SW corner of Tucson Raceway Park

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 16S
Range 15E
Section 14

5. Location Sketch
32.034240949x -110.790942490

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat horizontal plane gently trending southeast MG: Continuation of horizontal plane BG: Series of parallel undulating mountain forms with pyramidal peaks spanning entire view No water visible	FG: Uniform, low lying vegetative layer consisting of short shrubs, trees, and groundcover MG: Continuation of uniform vegetative layer across valley floor BG: Dense swaths of vegetation on mountain forms and foothills	FG: Three parallel transmission lines spanning entire view; one paved roadway in center of view; roadway signage; blocky residential structures MG: Strip of blocky residential structures BG: Patch of blocky residential structures on lower mountain foothills on right side of view
LINE	FG: Horizontal, continuous line on valley floor MG: Flat, continuous horizontal plane BG: Jagged, parallel, undulating mountain forms spanning across entire view No water visible	FG: Single, continuous horizontal vegetative layer spanning across valley floor MG: Singular, uniform vegetative layer blankets valley floor BG: Patch-like swaths	FG: Long, vertical and horizontal parallel transmission structures sky lined against mountain forms, discontinuous line of blocky residential forms, curvilinear roadway MG: Barely visible strip of blocky residential structures in far MG BG: Barely visible blocky residential structures
COLOR	FG: Tans, browns MG: Indistinct BG: Browns, gray No water visible	FG: Greens, yellows, tans MG: Greens, yellows, tans BG: Dark patches of gray	FG: Range of black to white hues MG: Whites, browns, tans BG: Browns, tans
TEXTURE	FG: Uniform, smooth valley floor MG: Smooth valley floor BG: Jagged mountain forms contrasting from smooth valley floor No water visible	FG: Fine to medium, uniform MG: Fine, uniform BG: Fine, patchy swaths	FG: Fine smooth roadway; medium to coarse transmission lines; fine to medium residential structures MG: Fine residential structures BG: Fine residential structures

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: linear sequence of monopole transmission structures similar in form as existing line of H-frame structures but taller; bolder linear conductors
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: taller vertical structures added to landscape; horizontal lines visually similar to existing linear sequence of transmission lines; additional conductors add to existing corridor
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST		FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
ELEMENTS	Form				X				X			X	
	Line				X				X			X	
	Color				X				X			X	
	Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names — Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.

Fairgrounds are 0.8 mile from E. Dawn Road, parking lot and raceways are located closest to the line (lowest sensitivity viewers are represented from this viewpoint)

Distance. The KOP is 0.06 mile north of segment U3a from South Harrison Road and Dawn Road at the Tucson Speedway. Segment U3a crosses private land. Segment U3a crosses the view from the KOP generally east to west.

Angle of Observation. The KOP is at a horizontal viewing angle to segment U3a.

Length of Time the Project Is In View. Segment U3a would potentially be viewed for limited periods by viewers traveling the road.

Relative Size or Scale. The relative size of the replacement structures would be somewhat taller than the existing transmission structures. Because of the relative size of the structures when compared with other remaining existing structures and with the open landscape, there would be weak contrasts.

Season of Use. The sparse vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast over time.

Spatial Relationships. The landscape in the fore ground is flat and open with some taller vegetation along the roadways. The paved road curves away from the view in the immediate foreground. There are mountains in the background. The proposed replacement structures and conductors would be visible against the sky, but would be similar to the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the KOP, changes in atmospheric conditions are not expected to result in changes to visual contrast, however, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment U3a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

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B-12.2467

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project	4. Location	5. Location Sketch
2. Key Observation Point: KOP U3-06 – E Old Vail Hwy /S Broken Cactus Way Residential	Township 15S Range 14E Section 32	32.075773248x-110.937005121
3. VRM Class: Representative ROW would pass through non BLM land		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat horizontal plane MG: Not visible BG: Steep mountain form rising from flat valley floor in center-left side of view No water visible	FG: Low lying vegetative layer consisting of shrubs and trees MG: Uniform vegetative layer extending into MG BG: Swaths of vegetation on mountain forms	FG: Several transmission lines extending from FG into MG; one unpaved roadway in center of view; single-story blocky forms and associated vehicles within rural residential development; blocky transformer; linear fencing; signage MG: Long, linear transmission lines; un paved roadway BG: None visible
LINE	FG: Horizontal, continuous line on valley floor MG: Not visible BG: Continuous, undulating mountain forms No water visible	FG: Single, uniform horizontal vegetative layer MG: Single, uniform horizontal vegetative layer BG: Patches of vegetation on distant mountains	FG: Long, linear transmission lines, blocky residential forms; linear roadway MG: Several linear transmission lines; long, linear roadway BG: None visible
COLOR	FG: Tans, browns MG: Indistinct BG: Brown, gray mountains No water visible	FG: Greens, yellows, light brown, tan MG: Greens, browns BG: Browns, dark shades of gray	FG: Tans, browns, orange, greens, gray, blacks MG: Browns, black, gray BG: None visible
TEX-TURE	FG: Smooth valley floor MG: Indistinct BG: Course mountain forms No water visible	FG: Round, wispy, medium textured vegetative forms MG: Not visible BG: Not visible	FG: Fine smooth roadway; discontinuous blocky structures, medium to coarse transmission lines MG: Fine transmission structures barely visible in distant MG view BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: new sequence of poles, taller than those of existing transmission line MG: new sequence of poles creates thin vertical forms
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: new transmission poles and lines visually similar to the existing line though taller and more prominent MG: new transmission poles converge in distance, creating singular fine vertical linear form
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG and MG: metallic conductors; galvanized steel gray tower structures with whitish appearance due to angle of sun
TEX-TURE	FG, MG, BG: no change	FG, MG, BG: no change	FG and MG: new transmission poles create more streamline view, decreasing clutter and coarse texture compared to existing transmission line against landscape

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS	Form				X				X			X	
	Line				X				X			X	
	Color				X				X			X	
	Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.
Potential EJ community to the south.

Distance. The KOP is less than 0.01 mile south of segment U3a from Old Vail Road. Segment U3a crosses private land. Segment U3a crosses the view from the KOP generally east to west.

Angle of Observation. The KOP is at a slightly lower observational angle to segment U3a.

Length of Time the Project Is In View. Segment U3a would potentially be viewed for extended periods from residences at the KOP.

Relative Size or Scale. The relative size of the replacement structures would be similar but somewhat taller than the existing transmission structures. Because of the relative size of the structures when compared with other existing structures and with the open landscape, there would be weak contrasts.

Season of Use. The vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast over time.

Spatial Relationships. The landscape in the fore ground is wide gravel surface road lined with vegetation and utility structures. There are metal fences and low rectangular residences. The proposed replacement structures and conductors are in the fore ground. There are mountains in the background. The proposed replacement structures and conductors would be visible against the sky, but would be similar to the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the KOP, changes in atmospheric conditions are not expected to result in changes to visual contrast, however, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment U3a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-07 -San Xavier

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 15S
Range 13E
Section 22

5. Location Sketch
32.106658x-111.0082

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat alluvial valley MG: Flat alluvial valley; foothills rising sharply BG: Rounded mountains No water visible	FG: Two distinct vegetative layers consisting of a smooth, uniform, low lying groundcover and continuous line of trees and shrubs spanning the entire view MG: Uniform vegetative layer blankets the valley; dense swaths and patches of vegetative forms on foothills BG: Dense, dark patches on distant mountains	FG: Flat, paved surface-level parking, parking signage, bollards; hardscape landscaping elements; rustic picnic area; waste bins MG: Long transmission line in FG/MG transition BG: None visible
LINE	FG: Flat, horizontal, continuous plane MG: Flat, horizontal plane; continuous mountain formations with pyramidal peaks BG: Soft undulating mountain formations with pyramidal peaks No water visible	FG: Horizontal, simple, continuous, swaths and patches on outcrop MG: Indistinct vegetative break at transition between alluvial plane and base of mountain forms BG: Patch-like swaths	FG: Level parking lot; vertical signage; blocky repeating hardscape elements create distinct linear line; rugged picnic structure; curvilinear walkway; diagonal planter; blocky waste bins MG: Long, continuous, repeating linear transmission lines BG: None visible
COLOR	FG: Tan and brown MG: Brown and gray foothills BG: Brown and gray mountains No water visible	FG: Greens, light brown, tan MG: Greens, blues, gray BG: Blues, gray	FG: Range of white to black hues MG: Brown and black transmission structures BG: None visible
TEX-TURE	FG: Smooth, continuous valley floor MG: Indistinct valley floor transitioning to smooth velvety foothills BG: Coarse, continuous, mountain peaks No water visible	FG: Fine, soft wispy trees and groundcover MG: Fine and uniform BG: Fine and discontinuous	FG: Smooth parking area; granular, dotted, ordered hardscape; coarse signage, coarse picnic area MG: Medium to fine transmission structures BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	MG: fine linear sequence of monopole transmission structures similar in form as existing line but taller; linear conductors slightly more visible against backdrop of distant mountain forms
LINE	FG, MG, BG: no change	FG, MG, BG: no change	MG: taller vertical structures added to landscape, above tree line; horizontal lines visually similar to existing linear sequence of transmission lines creating weak contrast to existing line
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	MG: metallic conductors; galvanized steel gray tower structures
TEX-TURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X			X	
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names — Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

Distance. The KOP is 2.0 miles west of segment U3a from Mission San Xavier Del Bac. Segment U3a crosses private land. Segment U3a crosses the view from the KOP generally east to west.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3a.

Length of Time the Project Is In View. Segment U3a would potentially be viewed for extended periods from the Mission.

Relative Size or Scale. The relative size of the replacement structures would be similar but somewhat taller than the existing transmission structures. Because of the relative size of the structures when compared with other existing structures and with the open landscape, and the distance to the upgrade structures there would be weak contrasts.

Season of Use. The vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open park like setting with a wide parking lot interspersed with trees and small signs. There are mountains in the background. The proposed replacement structures and conductors would be visible against the darker backdrop of the mountains, and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3a would attract more attention to the project. During operation, the structures would be static.

Proposed upgrades are located on private land.

1.5 miles from line. Line is not visible from this location.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-07a –San Xavier (*new to the Final EIS)

3. VRM Class:
Representative ROW would pass through non BLM land

4. Location
Township 15S
Range 13E
Section 22

5. Location Sketch
32.106658x-111.0082

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat alluvial valley MG: Flat alluvial valley; foothills rising sharply BG: Rounded mountains No water visible	FG: Two distinct vegetative layers consisting of a smooth, uniform, low lying groundcover and continuous line of trees and shrubs spanning the entire view MG: Uniform vegetative layer blankets the valley; dense swaths and patches of vegetative forms on foothills BG: Dense, dark patches on distant mountains	FG: Flat, paved surface-level parking, parking signage, bollards; hardscape landscaping elements; rustic picnic area; waste bins MG: Long transmission line in FG/MG transition BG: None visible
LINE	FG: Flat, horizontal, continuous plane MG: Flat, horizontal plane; continuous mountain formations with pyramidal peaks BG: Soft undulating mountain formations with pyramidal peaks No water visible	FG: Horizontal, simple, continuous, swaths and patches on outcrop MG: Indistinct vegetative break at transition between alluvial plane and base of mountain forms BG: Patch-like swaths	FG: Level parking lot; vertical signage; blocky repeating hardscape elements create distinct linear line; rugged picnic structure; curvilinear walkway; diagonal planter; blocky waste bins MG: Long, continuous, repeating linear transmission lines BG: None visible
COLOR	FG: Tan and brown MG: Brown and gray foothills BG: Brown and gray mountains No water visible	FG: Greens, light brown, tan MG: Greens, blues, gray BG: Blues, gray	FG: Range of white to black hues MG: Brown and black transmission structures BG: None visible
TEXTURE	FG: Smooth, continuous valley floor MG: Indistinct valley floor transitioning to smooth velvety foothills BG: Coarse , continuous, mountain peaks No water visible	FG: Fine, soft wispy trees and groundcover MG: Fine and uniform BG: Fine and discontinuous	FG: Smooth parking area; granular, dotted, ordered hardscape; coarse signage, coarse picnic area MG: Medium to fine transmission structures BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	MG: fine linear sequence of monopole transmission structures similar in form as existing line but taller; linear conductors slightly more visible against backdrop of distant mountain forms
LINE	FG, MG, BG: no change	FG, MG, BG: no change	MG: taller vertical structures added to landscape, above tree line ; horizontal lines visually similar to existing linear sequence of transmission lines creating weak contrast to existing line
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	MG: metallic conductors; galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

	FEATURES											
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS Form				X				X			X	
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names — Date
Pamela Cecere; Steve Leslie; Colin Agner

October 27, 2014
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on private land.

Vantage is located on the east side of the San Xavier Mission Church oriented northeast toward proposed alternative. Due to vegetative and human-made obstruction and distance, the proposed upgrade line is barely discernable.

SIMULATED

Distance. The KOP is 2.0 miles west of segment U3a from Mission San Xavier Del Bac. Segment U3a crosses private land. Segment U3a crosses the view from the KOP generally east to west.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3a.

Length of Time the Project Is In View. Segment U3a would potentially be viewed for extended periods from the Mission.

Relative Size or Scale. The relative size of the replacement structures would be similar but somewhat taller than the existing transmission structures. Because of the relative size of the structures when compared with other existing structures and with the open landscape, and the distance to the upgrade structures there would be weak contrasts.

Season of Use. The vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast over time.

Spatial Relationships. The landscape in the fore ground is open park like setting with a wide parking lot interspersed with trees and small signs. There are mountains in the background. The proposed replacement structures and conductors would be visible against the darker backdrop of the mountains, and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-08 – Santa Cruz River Bikeway East River Trail

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 15S
Range 13E
Section 2

5. Location Sketch
32.152231386x-110.991211112

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Descending low lying floodplain with alluvial embankments MG: Low lying alluvial valley rising to prominent plateau formations in center-left view BG: Distant angular mountains in center and right side of view Water visible in FG	FG: Irregular, multi-layered vegetative layer along riverbed and embankment consisting of simple low lying patchy shrubs and trees MG: Medium dense strip of trees transitioning from the FG/MG; swaths of vegetation on mountain forms BG: Swaths of vegetation on mountain forms	FG: Bold transmission structures; signage; trail fencing; roadway infrastructure; blocky warehouse structures in right side of view; light poles MG: Several transmission lines, residential and commercial buildings across valley floor; barely visible residential and communication structures along ridgeline; roadway cut into the side of plateau formation BG: None visible
LINE	FG: Horizontal line of riverbed; water creates curvilinear pattern MG: Flat, horizontal valley; undulating hill forms rise to plateau formations BG: Distant discontinuous mountain formations with pyramidal peaks Water visible in FG	FG: Vegetative layer in floodplain creates curvilinear pattern; soft strip of low lying vegetation along embankment in the right side of the view MG: Horizontal vegetative line at FG/MG transition; swath BG: None	FG: Perpendicular transmission lines; linear and vertical structures, hard blocky commercial structures; vertical structures MG: Horizontal and vertical structures, irregular line of development; diagonal roadway BG: None visible
COLOR	FG: Sandy beige, tan MG: Indistinct valley floor; shades of brown on plateau formations BG: Brown and gray mountains Water visible in FG	FG: Greens, yellows, tan MG: Greens, browns BG: Browns, gray	FG: Range of white to black hues MG: Browns, blacks, white BG: None visible
TEXTURE	FG: Sandy gradational riverbed and associated embankment; glossy smooth water MG: Smooth, continuous valley floor; coarse to medium plateau formations BG: Coarse, discontinuous mountain peaks Water visible in FG	FG: Smooth, fine to medium MG: Smooth, fine, stippled BG: Indistinct	FG: Coarse transmission and warehouse structures MG: Medium to fine transmission lines; scattered structures BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: prominent new transmission pole structures creates weak vertical forms along river embankment; replaces existing monopole and lattice structures
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: new structures add weak vertical contrast to existing; skylined above distant mountain forms; new 230kV lines emphasize L-shaped turn
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structure; whitish appearance depending on angle of the sun
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: proposed transmission structures add additional coarse texture to landscape

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X			X	
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
X Yes ☐ No (Explain on reverse side)

Evaluator's Names Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.

View is representative of bike users along Santa Cruz Bikeway.

Distance. The KOP is within 0.01 mile of segment U3b from the Santa Cruz River Bikeway. Segment U3b crosses private land. Segment U3b crosses the view from the KOP generally north to south.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3b.

Length of Time the Project Is In View. Segment U3b would potentially be viewed for extended periods from the bikeway.

Relative Size or Scale. The relative size of the replacement structures would be similar but somewhat taller than the existing transmission structures. The replacement structures would be similar in form to the existing structures. Because of the relative size of the structures when compared with other existing structures there would be weak contrasts.

Season of Use. The vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast over time.

Spatial Relationships. The landscape in the fore ground includes the Santa Cruz River Channel interspersed with trees and small signs. There are mountains in the background. The proposed replacement structures and conductors would be visible against the sky and against the darker backdrop of the mountains, and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3b would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project	4. Location	5. Location Sketch
	Township 15S	32.155422678 x -110.998305101
2. Key Observation Point: KOP U3-09- S. Newcastle Ct. – Residential development	Range 13E	
3. VRM Class: Representative ROW would pass through non BLM land	Section 3	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat horizontal Santa Cruz valley MG: Pyramidal mountainous peaks in left and right extents of view BG: Not visible No water visible	FG: Strip of tall trees on valley floor MG: None visible BG: Swaths of vegetation on distant mountains	FG: Bold tall transmission lines; blocky residential structures; linear paved roadway; blocky roadway signage; hardscape elements includes blocky sound wall, planters, and rocky groundcover MG: Not visible BG: Not visible
LINE	FG: Flat, horizontal MG: Jagged, rugged pyramidal peaks BG: Not visible No water visible	FG: Single vegetative layer; vertical clump of palm trees in left side of view MG: Indistinct BG: Patches of vegetation on distant mountains	FG: Vertical and horizontal structures; irregular blocky forms; linear horizontal sound wall spanning entire view MG: Not visible BG: Not visible
COLOR	FG: Indistinct MG: Browns, tans BG: Not visible No water visible	FG: Greens and yellow hues MG: Indistinct BG: Browns, dark shades of gray	FG: Tans, range of white to black hues MG: Not visible BG: Not visible
TEXTURE	FG: Indistinct MG: Coarse rocky mountainous peaks BG: Not visible No water visible	FG: Rounded, medium textured vegetative forms MG: None visible BG: Fine, sparse	FG: Coarse transmission structures; medium blocky structures; granular, uniform hardscape elements MG: Indistinct BG: Indistinct

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: bold new transmission structures replace H-frame structure and clump of three vertical forms in center of view; proposed 230 kV linear form adds prominent vertical and horizontal elements above vegetative layer
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: proposed sequence of prominent transmission poles taller than existing line; conductor lines are undulating horizontal lines; skylined above vegetative layer
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structure
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

	FEATURES											
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS Form				X				X		X		
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐No (Explain on reverse side)

Evaluator's Names Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on private land.

Distance. The KOP is within 0.01 mile of segment U3c from a residential area. Segment U3c crosses private land. Segment U3c crosses the view from the KOP generally east to west.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3c.

Length of Time the Project Is In View. Segment U3c would potentially be viewed for extended periods from the residential area.

Relative Size or Scale. The relative size of the replacement structures would be similar but somewhat taller than the existing transmission structures. Because of the relative size of the structures when compared with other existing structure, and the close proximity to the upgrade structures there would be moderate contrasts.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. This area is a developed residential area and there would be no natural vegetation recovery.

Spatial Relationships. The landscape in the residential with low block walls and rectangular structures. The proposed replacement structures and conductors would be visible against the sky and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in

contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3c would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-10 – Kennedy Park Fiesta Area – Outdoor Amphitheatre

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 14S
Range 13E
Section 28

5. Location Sketch
32.179196406x-111.013208314

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Simple, ascending smooth hilly forms; regional gradient trending northeast MG: Not visible BG: Not visible No water visible	FG: Two distinct vegetative layers consisting of medium-sized trees and low lying shrubs and groundcover; distinctive saguaros along hillside and ridgeline MG: Not visible BG: Not visible	FG: Blocky amphitheatre structures and associated hardscape; linear fencing; vertical light poles; singular transmission line; curving dirt road in center of view MG: None visible BG: None visible
LINE	FG: Continuous, undulating hilly forms MG: Not visible BG: Not visible No water visible	FG: Two distinctive horizontal vegetative layers transitioning at base of hilly forms; irregular vertical lines from scattered saguaros MG: Indistinct BG: Indistinct	FG: Vertical and horizontal transmission lines; linear, repetitious fencing; curvilinear roadway; vertical light poles MG: Not visible BG: Not visible
COLOR	FG: Browns, tans MG: Indistinct BG: Indistinct No water visible	FG: Greens, yellows MG: Indistinct BG: Indistinct	FG: Range of white to black hues MG: Not visible BG: Not visible
TEXTURE	FG: Smooth, continuous hilly formations MG: Indistinct BG: Indistinct No water visible	FG: Soft to medium; coarse saguaros; transparent low density vegetation on hillside MG: Indistinct BG: Indistinct	FG: Medium textured transmission structures; smooth roadway; blocky, uniform hardscape structures MG: Not visible BG: Not visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: three H-frame perpendicular structures have been replaced with three taller monopole structures; taller pole structures are skylined above hill form compared to existing structures
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: taller transmission structures create weak degree of contrast compared to existing; long, horizontal, linear lines created by conductors visually similar to existing lines
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; new galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X			X	
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
X Yes ☐ No (Explain on reverse side)

Evaluator's Names: Mark Greenig, MariaElena Conserva, and Angela Wolfe
Date: September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.
Good representation of Kennedy Park.

Distance. The KOP is within 0.01 mile of segment U3d from Kennedy Park. Segment U3d crosses private land. Segment U3d crosses the view from the KOP generally north to south.

Angle of Observation. The KOP is at an inferior observational angle to segment U3d.

Length of Time the Project Is In View. Segment U3d would be viewed for extended periods from the park.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. This area in the immediate fore ground is a developed park and there would be no natural vegetation recovery. Outside the park, restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required, there would be no visible contrast.

Spatial Relationships. The landscape in the park is open with low grass fields, rectangular structures and trees interspersed throughout the area. The proposed replacement structures and conductors would be visible against the sky and the hills just beyond the park and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3d would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

SIMULATED

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-11 – Explorers Trail – Tucson Mountain Park

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 14S
Range 13E
Section 28

5. Location Sketch
32.180589907x-111.016308756

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Gravely trail; gentle descending plane trending to the east MG: Expansive, flat, horizontal valley plane BG: Panoramic, elongated pyramidal mountain forms with conical peaks No water visible	FG: Single low lying vegetative layer consisting of short rounded shrubs and trees MG: Fine low vegetation on valley floor BG: Swaths of low vegetative forms on mountain forms	FG: Meandering trails; flat paved roadway; blocky trail signage; linear fencing; linear and vertical transmission lines MG: Distinguishable development of South Tucson BG: Continuation of development of South Tucson; visible industrial structures located in center of far MG/BG view
LINE	FG: Smooth descending horizontal plane MG: Flat valley floor creates horizontal surface BG: Distinguishable transition from horizontal valley floor to rising mountain forms in far MG/BG; continuous, undulating hilly forms No water visible	FG: Uniform, single –story layer MG: Indistinct vegetative break at transition between alluvial plane and base of mountain forms BG: Patch-like swaths on distant mountains	FG: Vertical and horizontal transmission lines; curvilinear trails; flat paved roadway MG: Continuous horizontal line of development BG: Continuous horizontal line of development
COLOR	FG: Beige, tans, brown MG: Indistinct BG: Black and brown hues No water visible	FG: Yellow-greens, whites, orange MG: Greens BG: Browns, dark shades of gray	FG: Beige, browns, black, charcoal, white MG: Whites, tan, grays BG: Range of white to black hues
TEXTURE	FG: Coarse to medium, granular MG: Smooth valley flood BG: Coarse mountains No water visible	FG: Clumped, soft to medium MG: Fine, sparse BG: Fine and discontinuous	FG: Granular trail, medium textured transmission structures; smooth roadway; MG: Medium to fine buildings BG: Smooth, fine structures; blocky industrial structures along base of mountain forms

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: H-frame structure replaced with single monopole structure; skylined above distant mountain forms; prominent new conductors
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: Moderate to weak degree of contrast created by additional horizontal, linear conductors; vertical height of structures contrasts against skyline
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: Moderate to weak degree of contrast depending on time of day and angle of sun
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X		X		
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended?
X Yes ☐ No (Explain on reverse side)

Evaluator's Names Date
Mark Greenig, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.

KOP is 0.11 mile from line.

Distance. The KOP is 0.1 mile west of segment U3d from the Explorer Trail. Segment U3d crosses private land. Segment U3d crosses the view from the KOP generally north to south.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3d.

Length of Time the Project Is In View. Segment U3d would be viewed for extended periods from the trail.

Relative Size or Scale. The relative size of the replacement structures would be substantially taller than the existing transmission structures as well as other visible structures within the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. This area in the immediate fore ground is a developed park and there would be no natural vegetation recovery. Outside the park, restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required, there would be no visible contrast.

Spatial Relationships. The landscape at the trail is open with taller native vegetation throughout. The development of Tucson is visible in the middle ground and there are distant mountains in the background. The proposed replacement structures and conductors would be visible against the sky resulting in moderate contrasts.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3d would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

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BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012
District: Southern Arizona
Resource Area: Tucson
Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-12 - Sentinel Peak Observation Area

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 14S
Range 13E
Section 15

5. Location Sketch
32.20896041 4x-110.997062706

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Elevated panoramic view, large downward sloping mountain hillside transitioning to alluvial valley floor MG: Valley floor rising to multiple pyramidal mountain formations BG: Large, undulating, jagged distant mountain ridgeline across center of view No water visible	FG: Smooth, uniform, low lying vegetative layer blanketing southern facing mountain slope, distinctive saguaros MG: Uniform low vegetation on valley floor; fine, gradational low lying vegetation on mountain forms BG: Swaths of vegetative forms on distant mountains	FG: Meandering trails; flat paved roadway; long transmission lines; blocky commercial structures at base of mountain form in center of view; domed blocky structure at peak of mountain form in right side of view MG: Distinctive linear paved roadway continuing into far MG; distinguishable blocky development in left side of view; blocky structures cushioned between mountain forms BG: None visible
LINE	FG: Smooth diagonal downward trending plane to flat horizontal valley floor MG: Flat valley floor rising sharply to multiple pyramidal mountain formations BG: Undulating, continuous mountain formations with pyramidal peaks No water visible	FG: Simple, continuous low lying vegetative layer; vertical saguaros MG: Directional, horizontal, gradational transition between valley floor and mountain forms BG: Patch-like swaths on distant mountains	FG: Vertical and horizontal transmission lines; curvilinear trails; continuous linear roadway MG: Broken horizontal line of development BG: None visible
COLOR	FG: Tans, browns MG: Tans, browns BG: Black and brown distant mountains No water visible	FG: Greens, light brown, tan MG: Dark green, light brown, tan BG: Browns, dark shades of gray	FG: Beige, whites, browns MG: Beige, whites, browns BG: None visible
TEXTURE	FG: Smooth, continuous valley floor, clumped outcrop; Coarse, directional mountain, sloping to the south MG: Smooth valley floor; coarse, random pyramidal forms BG: Coarse, continuous, mountain peaks No water visible	FG: Smooth, continuous, directional vegetative plane; coarse saguaros MG: Stippled low lying vegetation on mountain forms BG: Fine and discontinuous	FG: Medium to fine textured transmission structures; fine, granular trails MG: Smooth roadway; medium to fine blocky buildings BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: fine linear sequence of 230kV transmission structures similar in form as existing line but taller; linear conductors slightly more visible along valley floor though creating weak contrast to existing line
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: adds additional element to existing corridor; barely distinguishable taller vertical structures added to landscape, horizontal lines visually similar to existing linear sequence of transmission lines creating weak contrast
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: weak degree of contrast compared to existing line
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS: Form				X				X			X	
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names: Tom Priestley, MariaElena Conserva, and Angela Wolfe
Date: September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.

Sentinel Peak,

Distance. The KOP is within 1.1 miles of segment U3d from Sentinel Peak. Segment U3d crosses private land. Segment U3d crosses the view from the KOP generally north to south.

Angle of Observation. The KOP is at a superior observational angle to segment U3d.

Length of Time the Project Is In View. Segment U3d would be viewed for extended periods from Sentinel Peak.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required, there would be no visible contrast.

Spatial Relationships. The landscape in the park is open with gentle slopes and jagged mountains in the background, rectangular structures and trees are interspersed outside the park area. The proposed replacement structures and conductors would be visible against the ground and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3d would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-13 –Tumamoc Hill Rd

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 14S
Range 13E
Section 10

5. Location Sketch
32.225561140x -111.001020954

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Diagonal plane; northern facing slope of Tumamoc hill MG: Indistinct BG: Distant, undulating mountain forms with rounded peaks in center – right side of view No water visible	FG: Uniform, low lying vegetative cover; distinctive saguaros and cacti MG: Not visible BG: Dense, dark patches on distant mountains	FG: Cluttered linear fencing; several linear, parallel transmission lines MG: None visible BG: Barely visible dirt road and residential structures on mountainous forms
LINE	FG: Diagonal, continuous plane MG: Indistinct BG: Soft undulating mountain formations with pyramidal peaks No water visible	FG: Uniform, continuous vegetative cover; distinctive vertical saguaros MG: Not visible BG: Patch-like swaths, stippled on distant mountain formations	FG: Horizontal and vertical transmission structures; horizontal lines of fencing MG: None visible BG: Meandering dirt road; simple residential structures
COLOR	FG: Tan and brown hillside MG: Indistinct BG: Brown and gray mountains No water visible	FG: Greens, yellows, tans MG: Indistinct BG: Dark greens, gray	FG: Brown and black transmission structures MG: None visible BG: Tans, browns
TEXTURE	FG: Smooth, continuous MG: Indistinct BG: Coarse, undulating, mountainous forms No water visible	FG: Fine to medium textures MG: Indistinct BG: Fine, stippled	FG: Medium to fine transmission structures MG: None visible BG: Soft dirt road; blocky structures

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: One H-frame and three-pole structure grouping are removed and replaced with single monopole structure; taller pole structure is skylined above hills
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: Additional conductors emphasize diagonal lines creating moderate to weak degree of contrast compared to existing lines
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: Five dark colored vertical structures replaced with two lighter colored elements creating less contrast
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: transmission structures add small degree of texture to existing pattern against smooth slope

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

	FEATURES											
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS Form				X				X		X		
ELEMENTS Line				X				X			X	
ELEMENTS Color				X				X			X	
ELEMENTS Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
X Yes ☐ No (Explain on reverse side)

Evaluator's Names Date
Mark Greenig, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.
KOP shows historic fence.

Distance. The KOP is within 0.01 mile of segment U3g from Tumamoc Hill Road. Segment U3g crosses private land. Segment U3g crosses the view from the KOP generally north to south.

Angle of Observation. The KOP is at a superior observational angle to segment U3g.

Length of Time the Project Is In View. Segment U3g would be viewed for extended periods from the park.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures and would contribute to the moderate contrast.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required, there would be no visible contrast.

Spatial Relationships. The landscape in the park is open with rolling hills, dense desert vegetation, and jagged mountains in the background. There are numerous utility structures scattered throughout the scenery. The proposed replacement structures and conductors would be visible against the sky and would be similar to the existing sequence of linear structures, but because of their greater size would contribute to the moderate contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3g would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-15 – Santa Cruz riverbed crossing from trail near Juhan Park

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 13S
Range 13E
Section 34

5. Location Sketch
32.256317323x-111.003154915

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Prominent dry riverbed and associated alluvial wash; sloped embankment MG: Not visible BG: Undulating mountain forms with conical peaks No water visible; dry riverbed	FG: Uniform low lying vegetative clumps on riverbed; rounded low lying vegetative layer consisting of shrubs and trees along top of embankment MG: Indistinct BG: Indistinct	FG: Linear transmission lines; tall light poles, stop lights and associated signage; blocky warehouse and residential structures; domed and cylindrical structures; fencing; sound wall MG: None visible BG: None visible
LINE	FG: Flat horizontal riverbed; distinctive horizontal, continuous sedimentary layers along sloped embankment MG: Not visible BG: Undulating, continuous mountain formations with conical peaks along horizon of view No water visible; dry riverbed	FG: Patchy, stippled MG: Indistinct BG: Indistinct	FG: Linear and vertical structures, blocky, irregular building line; linear fencing MG: None visible BG: None visible
COLOR	FG: Tans, muddy browns, beige MG: Not visible BG: Brown and gray mountains No water visible; dry riverbed	FG: Greens, yellows, browns MG: Indistinct BG: Indistinct	FG: Range of black to white hues MG: None visible BG: None visible
TEXTURE	FG: Smooth, continuous riverbed; uniform sedimentary alluvial layers MG: Not visible BG: Coarse, continuous, mountains with jagged peaks No water visible; dry riverbed	FG: Sparse, fine, wispy, soft clumps along riverbed and embankment MG: Indistinct BG: Indistinct	FG: Medium to fine transmission lines; medium textured, blocky structures MG: None visible BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: skylined, tall transmission structure replaces smaller existing H-framed structures; conductors visually similar to existing lines, but taller and different span width
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: adds additional element to existing corridor creating moderate to weak level of contrast; 230kV transmission structure adds additional form to several existing vertical lines
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structures; weak degree of contrast compared to existing lines within view
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: proposed transmission structures and conductors slightly increase coarse pattern against sedimentary layers of wash

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X			X	
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐No (Explain on reverse side)

Evaluator's Names Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.

KOP shows multiple T line congestion and represents an area of low public sensitivity (very few receptors)

Distance. The KOP is 0.1 mile south of segment U3i from the Loop Trail. Segment U3i crosses private land. Segment U3i crosses the view from the KOP generally east to west.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3i.

Length of Time the Project Is In View. Segment U3i would be viewed for extended periods from the trail.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures and comparable to other existing structures in the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required, there would be no visible contrast.

Spatial Relationships. The landscape in the foreground is the flat steep dirt channel of the river. On top of the channel there are numerous utility structures, poles, fences, and buildings scattered throughout the scenery. The proposed replacement structures and conductors would be visible against the sky and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3i would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-16 - Silverbell Public Golf Course

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 13 S
Range 13E
Section 28

5. Location Sketch
32.274089865x -111.025120095

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Subtle, sloped, smooth golf course transitions to flat valley floor, trending to the northeast MG: Flat alluvial valley floor BG: Distant rounded mountains with pyramidal peaks in center-left side of view No water visible	FG: Two distinct vegetative layers consisting of a smooth, uniform, low lying manicured lawn transitioning to a dense continuous line of trees MG: Dense, uniform vegetative layer blankets the valley floor BG: Velvety patches of vegetative on mountain forms	FG: Tall, vertical transmission structures; parking lot; tall, vertical poles and barely visible netting associated with driving range; blocky irrigation elements; vertical course markers; fencing MG: Vertical transmission lines; blocky residential structures BG: None visible
LINE	FG: Subtle curve; flat, horizontal, continuous plane MG: Flat, horizontal plane BG: Discontinuous mountain formations with pyramidal peaks No water visible	FG: Horizontal, uniform, continuous plane, distinct vegetative break along edge of course MG: Horizontal, continuous BG: Patch-like swaths	FG: Level parking lot; vertical and horizontal transmission structures; long transmission lines; repetitious vertical poles of driving range; irregular blocky irrigation elements MG: Barely visible transmission lines; subtle discontinuous line of residential development BG: None visible
COLOR	FG: Indistinct MG: Indistinct BG: Brown and gray mountains distant mountainous forms No water visible	FG: Light green, yellows, tans MG: Greens, yellows BG: Blues, gray	FG: Range of white to black hues MG: Brown and gray transmission structures; whites, tans residential structures BG: None visible
TEXTURE	FG: Smooth, continuous MG: Indistinct valley floor transitioning to jagged mountains BG: Coarse, discontinuous, mountain peaks No water visible	FG: Fine, soft cover; fine, rounded wispy trees MG: Fine and uniform BG: Fine and discontinuous	FG: Coarse to medium transmission structures; granular parking lot, MG: Medium to fine transmission structures BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: visible H-frame structures replaced with taller 230kV structures; new conductors create weak degree of contrast
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: long, undulating, linear transmission lines visually similar to existing lines; additional conductors add to existing linear lines within corridor
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS: Form				X				X			X	
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names — Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.

KOP from Silverbell Golf Course links facing west

Distance. The KOP is less than 0.1 mile east of segment U3i from Silverbell Golf Course. Segment U3i crosses private land. Segment U3i crosses the view from the KOP generally north to south.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3i.

Length of Time the Project Is In View. Segment U3i would be viewed for extended periods from the course.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures but comparable to other existing structures in the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing vegetation screening and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast.

Spatial Relationships. The landscape in the foreground is the flat steep dirt channel of the river. On top of the channel there are numerous utility structures, poles, fences, and buildings scattered throughout the scenery. The proposed replacement structures and conductors would be visible against the sky and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP. These changes would be minimal because of the proximity to the upgrade structures.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3i would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

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BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-17 – Silverbell Lake - Christopher Columbus Park

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 13S
Range 13E
Section 20

5. Location Sketch
32.281336721x-111.032775781

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat, small lake; subtle, sloped, smooth mounds on golf course MG: Flat alluvial valley floor rising gently to mountain foothills in far MG BG: Distant rounded mountains with pyramidal peaks in center-right side of view Water visible in immediate FG view	FG: Patch-like clumps of vegetation; rounded trees; smooth manicured groundcover MG: Linear horizontal strip of vegetation on valley floor BG: Velvety patches of vegetative on mountain forms	FG: Tall, vertical transmission structures contrasting over flat lake form; flat paved parking lots; blocky signage; short, blocky bollards; drainage element; construction equipment; cylindrical trash bin MG: Vertical and horizontal transmission structures; vertical light poles; blocky patches of development BG: None visible
LINE	FG: Water creates linear horizontal plane; transition to soft hilly mounds MG: Flat plane gently ascending to mountain foothills BG: Discontinuous mountain formations with pyramidal peaks Water visible in immediate FG view	FG: Horizontal, distinctive vegetative break along edge of lake MG: Horizontal, discontinuous BG: Patch-like swaths	FG: Level parking lots; vertical and horizontal repetitious transmission elements; vertical signage MG: Barely visible transmission lines and light poles; subtle discontinuous lines of development BG: None visible
COLOR	FG: Indistinct MG: Indistinct BG: Brown and gray distant mountainous forms Water visible in immediate FG view	FG: Light green, yellows, tans MG: Greens, yellows, browns BG: Blues, gray	FG: Range of white to black hues MG: Browns, gray BG: None visible
TEXTURE	FG: Glossy, smooth, rippled MG: Smooth valley floor BG: Coarse, discontinuous, mountain peaks Water visible in immediate FG view	FG: Fine, soft cover; fine, rounded wispy trees MG: Fine and discontinuous BG: Fine and discontinuous	FG: Coarse to medium transmission structures; smooth parking lot MG: Medium to fine transmission structures and light poles; fine, discontinuous patches of development BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: single visible H-frame structure replaced with two monopole structures; new conductors create weak degree of contrast
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: new long, linear transmission lines visually similar to existing lines; additional conductors add to existing corridor
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS: Form				X				X			X	
Line				X				X			X	
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A

(Explain on reverse side)

3. Additional mitigating measures recommended?
X Yes ☐ No (Explain on reverse side)

Evaluator's Names — Date
Mark Greenig, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on private land.

KOP from Christopher Columbus park.

Distance. The KOP is 0.1 mile east of segment U3i from Christopher Columbus Park. Segment U3i crosses private land. Segment U3i crosses the view from the KOP generally north to south.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3i.

Length of Time the Project Is In View. Segment U3i would be viewed for extended periods from the course.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures but comparable to other existing structures in the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing vegetation screening and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast.

Spatial Relationships. The landscape in the foreground is a flat lake with a park setting beyond that has small hills and clumps of the trees scattered throughout. There are mountains in the distant background. The proposed replacement structures and conductors would be visible against the sky and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP. These changes would be minimal because of the proximity to the upgrade structures.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3i would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project	4. Location	5. Location Sketch
2. Key Observation Point: KOP U3-18 – Rural residential along Cruz River	Township 13S	32.331625 x-111.082353
3. VRM Class: Representative ROW would pass through non BLM land	Range 12E	
	Section 2	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Ascending, low lying floodplain with regional gradient trending northeast toward the Cruz River; rounded hillside on right side of view MG: Not visible BG: Not visible No water visible	FG: Dense multi-layered vegetative layer along roadway consisting of simple low lying shrubs and trees transitioning to medium dense vegetative layer with clump of saguaros along top of hillside MG: Not visible BG: Not visible	FG: Blocky residential forms within the rural residential area of Casas Arroyo; several parallel transmission lines spanning the entire view; long gently ascending roadway in center of view, roadway signage; tall communication tower MG: None visible BG: None visible
LINE	FG: Gentle ascending alluvial plane MG: Not visible BG: Not visible No water visible	FG: Directional vegetative layer trending along the roadway; irregular vertical lines from saguaros MG: Indistinct BG: Indistinct	FG: Linear, parallel transmission lines; long linear flat roadway; vertical signage and tower MG: Not visible BG: Not visible
COLOR	FG: Browns, tans MG: Indistinct BG: Indistinct No water visible	FG: Greens, yellows, browns, white MG: Indistinct BG: Indistinct	FG: Range of white to black hues MG: Not visible BG: Not visible
TEXTURE	FG: Smooth, directional MG: Indistinct BG: Indistinct No water visible	FG: Medium to fine textured rounded shrubs and trees; coarse saguaros MG: Indistinct BG: Indistinct	FG: Coarse to medium transmission structures; smooth roadway; blocky medium textured residential structure MG: Not visible BG: Not visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: H-frame structures replaced with new 230-kV structures; new sequence of poles taller than those of existing transmission line
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: new transmission poles and lines visually similar to the existing line though taller and more prominent; skylined; additional conductors add to existing corridor
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: new transmission poles slightly increases clutter and coarse texture compared to existing transmission line against landscape

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS: Form				X				X		X		
Line				X				X		X		
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names — Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.

Few/no rural residences along this road. Residences are located to the southwest.

Distance. The KOP is less than 0.1 mile north and east of segment U3i from Silverbell Road. Segment U3i crosses private land. Segment U3i crosses the view from the KOP generally northwest to southeast.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3i.

Length of Time the Project Is In View. Segment U3i would be viewed for limited periods from the road.

Relative Size or Scale. The relative size of the replacement structures would be much taller than the existing transmission structures.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing vegetation screening and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast.

Spatial Relationships. The landscape in the gently rolling terrain and a two lane paved road with wide clear shoulders. There is taller desert vegetation on both sides fo the roads. Existing utility structures cross the view in multiple directions. The proposed structures that would be visible are larger, with greater conductor spans that would be visible against the sky and would create moderate contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP. These changes would be minimal because of the proximity to the upgrade structures.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3i would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

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Form 8400 - 4
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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-19 - W. Picture Rocks Rd – Saguaro Nat'l Park Entrance

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 13S
Range 12E
Section 4

5. Location Sketch
32.325583x -111.123428

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Panoramic view; northeastern facing descending mountainous slope; rocky outcrop in left side of view MG: Flat valley floor BG: Sharp rise to prominent jagged, angular mountains No water visible	FG: Smooth, uniform, amorphous, low lying vegetative layer blanketing northeastern facing slope, distinctive saguaros MG: Linear lines of vegetation on valley floor BG: Swaths of vegetative forms on distant mountains	FG: Bold paved roadway; blocky roadway signage; residential development trending from FG to MG MG: Linear strip of development encompassing northern Tucson area on valley floor; transmission lines barely visible along valley floor BG: Uniform, horizontal line of development at base of mountain forms
LINE	FG: Continuous, decline MG: Flat, horizontal plane BG: Distinguishable transition of valley floor to rise of mountainous forms; undulating, continuous mountain formations with jagged pyramidal peaks No water visible	FG: Uniform, single-layer; continuous low lying vegetative layer; vertical, scattered saguaros MG: Horizontal, gradational transition indistinct between valley floor and mountain forms BG: Patch-like swaths on distant mountains	FG: Meandering roadway; vertical and horizontal structures MG: Uniform, horizontal line of development BG: Distinguishable horizontal line of development at base of mountains forms in far MG/BG transition
COLOR	FG: Tans, browns MG: Indistinct BG: Brown and gray mountains No water visible	FG: Greens, yellows, white; light brown, tan MG: Greens, yellows BG: Browns, dark shades of gray	FG: Range of white to black hues MG: Soft whites, tans BG: Soft whites, tans
TEXTURE	FG: Coarse to medium rocky slope; clumped outcrop MG: Smooth, uniform, continuous valley floor BG: Coarse, continuous, mountain peaks No water visible	FG: Smooth, continuous, directional vegetative plane; coarse saguaros MG: Fine, smooth BG: Fine, discontinuous	FG: Smooth, medium to fine MG: Medium to fine, continuous BG: Fine, smooth line of development

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	MG: proposed structures barely visible on valley floor along existing corridor; new 230kV line creates weak contrast against existing landscape
LINE	FG, MG, BG: no change	FG, MG, BG: no change	MG: proposed new transmission poles and lines visually similar to existing line though taller; horizontal line blends into existing line of development creating weak degree of contrast
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X			X	
Line				X				X			X	
Color				X				X				X
Texture				X				X				X

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.

Represents Saguaro NP, approximately 2 miles from line.

Distance. The KOP is 2.0 miles west of segment U3i from West Picture Rocks Road. Segment U3i crosses private land. Segment U3i crosses the view from the KOP generally northwest to southeast.

Angle of Observation. The KOP is at a superior observational angle to segment U3i.

Length of Time the Project Is In View. Segment U3i would be viewed for limited periods from the road.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures but because of the distance, would be barely visible.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing vegetation screening and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast.

Spatial Relationships. The landscape in the foreground slopes down into the patchwork of shapes and colors associated with residential and other development of Tucson. There are large mountains in the background. The proposed replacement structures and conductors would be barely visible amidst the other existing developments.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP. These changes would be minimal because of the proximity to the upgrade structures.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3i would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

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DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-20 – Wade Rd - Residential

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 12S
Range 12E
Section 27

5. Location Sketch
32.354480433x-111.113992844

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat horizontal valley floor MG: Not visible BG: Distant mountain form with pyramidal peak in right side of view No water visible	FG: Simple, uniform, linear vegetative layer consisting of trees and shrubs across entire view MG: None visible BG: Swaths of vegetation on mountain forms	FG: Bold, tall transmission lines; vertical light poles; blocky structures; flat, linear paved roadway; linear fencing; transformer; utility signage MG: Not visible BG: Not visible
LINE	FG: Flat, horizontal MG: Not visible BG: Rugged mountain No water visible	FG: Horizontal, broken line of vegetation MG: Indistinct BG: Patches of vegetation on distant mountains	FG: Several intersecting transmission lines; vertical transmission and light pole structures; irregular blocky forms MG: Not visible BG: Not visible
COLOR	FG: Beige, tans MG: Not visible BG: Brown and gray mountains No water visible	FG: Greens, yellow, white hues MG: Indistinct BG: Browns, dark shades of gray	FG: Range of white to black hues MG: Not visible BG: Not visible
TEXTURE	FG: Granular MG: Indistinct BG: Coarse mountainous peak No water visible	FG: Rounded, medium to fine textured vegetative forms MG: None visible BG: Fine, velvety	FG: Coarse to medium transmission lines; medium blocky structures; smooth roadway MG: Indistinct BG: Indistinct

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: series of proposed 230 kV structures replaces existing H-frame structures; taller, prominent structures emphasize strong to moderate contrast compared to existing; undulating conductors have different span width
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: proposed sequence of prominent transmission poles taller than existing line; strong to moderate contrast of proposed conductors to existing lines; increase in vertical separation between existing line emphasizes perpendicular intersection
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structure
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS: Form				X				X		X		
ELEMENTS: Line				X				X		X		
ELEMENTS: Color				X				X			X	
ELEMENTS: Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names — Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on private land.

Distance. The KOP is less than 0.1 mile south of segment U3i from Wade Road. Segment U3i crosses private land. Segment U3i crosses the view from the KOP generally northwest to southeast.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3i.

Length of Time the Project Is In View. Segment U3i would be viewed for extended periods from the residential area.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures. Because of the relative size of the structures when compared with other existing structure, and the close proximity to the upgrade structures there would be moderate contrasts.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. This area is a developed residential area and there would be no natural vegetation recovery.

Spatial Relationships. The landscape in the fore ground is wide road lined with vegetation, gravel, and utility structures. There are metal fences and low rectangular block structures. The proposed replacement structures and conductors are in the fore ground. The proposed replacement structures are larger, with greater conductor spans that would be visible against the sky and would create new moderate contrasts with the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3i would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-21 – N Silverbell Rd SE of Rattlesnake Ridge

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 12S
Range 12E
Section 20

5. Location Sketch
32.372017564x -111.137464636

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat horizontal valley floor MG: Not visible BG: Distant rounded mountain form with pyramidal peak in center-left side of view No water visible	FG: Simple, linear vegetative layer consisting of rounded trees and shrubs MG: Continuous linear pattern extending from FG to MG BG: Swaths of vegetation on mountain forms	FG: Tall transmission lines; bulky vertical light poles; signage; blocky residential structures; linear sound wall; flat, paved parking lot MG: Not visible BG: Not visible
LINE	FG: Flat, horizontal plane MG: Not visible BG: Undulating mountain forms No water visible	FG: Continuous strip of vegetation along right-of-way; vegetation creates horizontal line MG: Strip of vegetation continuing into the MG view BG: Patches of vegetation on distant mountains	FG: Several repeating parallel vertical and horizontal transmission structure elements; horizontal, linear sound wall; flat, horizontal parking lot; vertical light pole s MG: Vertical and horizontal transmission elements converge from the FG to MG center of view BG: Not visible
COLOR	FG: Beige, tans, browns MG: Not visible BG: Gray mountains No water visible	FG: Greens, yellow, tans, white hues MG: Dark greens, yellows BG: Browns, dark shades of gray	FG: Brown, white, black, red, tans, black MG: Not visible BG: Not visible
TEXTURE	FG: Smooth, granular valley floor MG: Indistinct BG: Coarse mountainous peak No water visible	FG: Strip, rounded, medium to fine textured vegetative forms; fine groundcover MG: Fine BG: Fine, velvety	FG: Coarse to medium transmission lines; medium blocky structures; smooth parking lot MG: Fine transmission structures BG: Indistinct

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: series of proposed 230 kV structures replaces existing H-frame structures; taller, prominent structures emphasize strong to moderate contrast compared to existing; undulating conductors have different span width
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: proposed new transmission poles and lines visually similar to existing line though taller; series of vertical forms converge into fine singular vertical line; additional conductors add to existing corridor; emphasize s strong parallel lines
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structure; moderate
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

	FEATURES											
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS Form				X				X		X		
ELEMENTS Line				X				X		X		
ELEMENTS Color				X				X			X	
ELEMENTS Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
X Yes ☐ No (Explain on reverse side)

Evaluator's Names Date
Tom Priestley, MariaElena Conserva, and Angela Wolfe

September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on private land.
View from parking lot.

Distance. The KOP is less than 0.1 mile south of segment U3i from a mixed commercial and residential area along North Silverbell Road. Segment U3i crosses private land. Segment U3i crosses the view from the KOP generally northwest to southeast.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3i.

Length of Time the Project Is In View. Segment U3i would be viewed for extended periods from the commercial and residential area.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures. Because of the relative size of the structures when compared with other existing structure, and the close proximity to the upgrade structures there would be moderate contrasts.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. This area is a developed residential area and there would be no natural vegetation recovery.

Spatial Relationships. The landscape in the fore ground is wide paved parking lot and open corridor interspersed with trees and utility structures. The corridor is lined with block walls rectangular residences. The corridor extends away from the view. The proposed replacement structures and

conductors are in the fore ground. The proposed replacement structures are larger, with greater conductor spans that would be visible against the sky and would create new moderate contrasts with the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3i would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

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VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-22 – W Twin Peaks Rd

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 12S
Range 12E
Section 20

5. Location Sketch
32.377665252 x -111.146635527

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Ascending blocky hilly forms MG: Not visible BG: Not visible No water visible	FG: Medium density multi-layered vegetative layer along roadway transitions to sparse vegetation along hillsides and ridgeline; low-lying desert shrubs; scattered geometric saguaros MG: Not visible BG: Not visible	FG: Two transmission lines, flat road, utility, roadway and residential signage MG: None visible BG: None visible
LINE	FG: Discontinuous ridgeline, gradational, rugged, irregular layers on hilly forms MG: Not visible BG: Not visible No water visible	FG: Two distinctive horizontal vegetative layers; trending to the east; irregular vertical lines from scattered saguaros MG: Indistinct BG: Indistinct	FG: Linear, parallel transmission lines; curvilinear roadway MG: Not visible BG: Not visible
COLOR	FG: Browns, tans MG: Indistinct BG: Indistinct No water visible	FG: Greens, yellows, white MG: Indistinct BG: Indistinct	FG: Brown, gray transmission line structures; gray, white, yellow roadway; range of white to black signage hues MG: Not visible BG: Not visible
TEXTURE	FG: Coarse, rough, blocky hilly formations MG: Indistinct BG: Indistinct No water visible	FG: Soft to medium textured shrubs; coarse saguaros; transparent low density vegetation on hillsides MG: Indistinct BG: Indistinct	FG: Medium textured transmission structures; smooth roadway; bold signage MG: Not visible BG: Not visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: bold, prominent, skylined, tall transmission structure replaces several smaller existing transmission structures
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: prominent vertical structure skylined above ridgeline; new conductor lines are more prominent than existing emphasizing bolder linear lines above mountain forms
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structure
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: transmission structure and conductors create coarse pattern against mountain forms

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X		X		
Line				X				X		X		
Color				X				X			X	
Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names: Tom Priestley, MariaElena Conserva, and Angela Wolfe
Date: September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.
Simulation point represents a very specific point of interest.

Distance. The KOP is less than 0.1 mile north of segment U3i from West Twin Peaks Road. Segment U3i crosses private land. Segment U3i crosses the view from the KOP generally east to west.

Angle of Observation. The KOP is at a inferior observational angle to segment U3i.

Length of Time the Project Is In View. Segment U3i would be viewed for extended periods as it parallels West Twin Peaks Road.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures. Because of the relative size of the structures when compared with other existing structures, and the close proximity to the upgrade structures there would be moderate contrasts.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast over time.

Spatial Relationships. The landscape in the fore ground is two lane paved road lined with desert vegetation and utility structures curving away from the KOP. There are sloping steep rocky hills extending up from each side of the road. The proposed replacement structures and conductors are in the fore ground. The proposed replacement structures are larger, with greater conductor spans that would be visible against the sky and would create new moderate contrasts with the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3i would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-23 – Silverbell Rd Historic Auto Route

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 11S
Range 10E
Section 16

5. Location Sketch
32.46699x-111.33266

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat alluvial plane trending west toward low lying wash MG: Flat alluvial wash along left side of view transitioning to lower mountain forms BG: Range of weathered rounded mountains spanning left side of view No water visible	FG: Single vegetative layer along roadway consisting of simple low lying shrubs and trees MG: Smooth, uniform, low carpet-like vegetative cover along wash; swaths of vegetation on lower mountain forms BG: Swaths of low vegetative forms on mountain forms	FG: Long transmission line along the right side of view; blocky residential forms and associated vehicle within rural residential area; vertical transmission structures; bold curvilinear roadway in center of view, several roadway signage; distinctive historical auto route marker and pennant MG: Transmission lines BG: None visible
LINE	FG: Gentle descending alluvial plane MG: Horizontal line on riverbed BG: Mountains create flowing continuous line with several peaks No water visible	FG: Directional vegetative layer trending along the roadway MG: Level carpet-like vegetative layer; indistinct vegetative break at transition between alluvial plane and base of mountain forms BG: Indistinct	FG: Linear, parallel transmission lines; long curvilinear flat roadway; vertical signage; blocky residential structure MG: Barely detectable linear transmission line BG: Not visible
COLOR	FG: Sandy beige, tans, light browns MG: Light to dark brown BG: Brown and black mountains No water visible	FG: Greens, yellows, browns MG: Greens, browns BG: Dark shades of gray	FG: Range of white to black hues MG: Brown transmission structures BG: Not visible
TEXTURE	FG: Smooth, sandy MG: Smooth, flat alluvial wash; medium textured mountain forms BG: Medium to coarse continuous forms, trending to the southeast No water visible	FG: Medium to fine textured rounded shrubs and trees MG: Smooth, dense carpet-like vegetative layer BG: Smooth, fine	FG: Coarse to medium transmission structures; smooth roadway; blocky medium textured residential structure MG: Medium to fine transmission structures BG: Not visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG: linear sequence of monopole transmission structures similar in form as those of the existing line of H-frame structures but taller; bolder linear conductors
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG: prominent vertical structures; horizontal lines visually similar to existing linear sequence of transmission lines
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG: metallic conductors; galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG: new 230kV transmission structures increase coarse texture than existing line against flat horizontal plane

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS: Form				X				X		X		
ELEMENTS: Line				X				X			X	
ELEMENTS: Color				X				X			X	
ELEMENTS: Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names: Tom Priestley, MariaElena Conserva, and Angela Wolfe
Date: September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on non BLM land.

Silverbell Rd simulation

Distance. The KOP is less than 0.1 mile south of segment U3k from Silverbell Road. Segment U3k crosses private land. Segment U3k crosses the view from the KOP generally northwest to southeast.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3k.

Length of Time the Project Is In View. Segment U3k would be viewed for limited periods as it diverges from Silverbell Road.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures. Because of the relative size of the structures when compared with other existing structures, and the close proximity to the upgrade structures there would be moderate contrasts.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast over time.

Spatial Relationships. The landscape in the fore ground is two lane paved road lined with desert vegetation and utility structures curving away from the KOP. There are mountains in the background. The proposed replacement structures and conductors are in the fore ground. The proposed replacement structures are larger, with greater conductor spans that would be visible against the sky and would create new moderate contrasts.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast in the fore ground. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3k would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400 - 4
(September 1985)
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: September 6, 2012

District: Southern Arizona

Resource Area: Tucson

Activity (program): Lands- Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name: Southline Transmission Project

2. Key Observation Point: KOP U3-24 –Red Rock Residential

3. VRM Class: Representative ROW would pass through non BLM land

4. Location
Township 10S
Range 10E
Section 8

5. Location Sketch
32.565428533x-111.337781768

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Flat alluvial valley transected by cut development pattern as part of the Red Rock planned residential community MG: Subtle transition from valley floor to low plateau of mounded dirt spanning the entire view BG: Distant jagged, angular mountains No water visible	FG: Mostly barren land stripped of vegetation with smooth low lying groundcover scattered, strip of low shrub vegetation at base of mounded forms MG: Strip of vegetation peaking behind plateau of mounded forms BG: Indistinct	FG: Flat linear paved roadways and associated curbs, vertical roadway signage, short blocky transformers MG: Transmission lines; dirt roadway cut through mound of dirt in center of view BG: None visible
LINE	FG: Horizontal, continuous MG: Continuous horizontal line of mounded dirt BG: Undulating, continuous mountain formations with several pyramidal peaks on left side of view; barely visible distant undulating mountain formations on right side of view No water visible	FG: Patches, horizontal strip of shrubs paralleling mounded forms MG: Level, irregular, soft horizontal vegetative line BG: None	FG: Flat, horizontal paved roadways; simple, blocky transformers MG: Subtle parallel horizontal and vertical transmission lines spanning the entire view BG: None visible
COLOR	FG: Tan, brown, reds MG: Tan, brown, reds BG: Gray mountains No water visible	FG: Greens, brown, tan, MG: Greens BG: Indistinct	FG: Range of white to black hues MG: Browns, blacks BG: None visible
TEXTURE	FG: Smooth, continuous valley floor broken by cut development formation trending to the west-northwest MG: Gradational, smooth BG: Coarse, continuous, mountain peaks No water visible	FG: Smooth patches, medium dense, directional shrub vegetation MG: Smooth, soft, fine BG: Indistinct	FG: Smooth roadway, blocky transformers MG: Fine transmission lines BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	MG: series of new 230kV monopole structures replaces existing H-frame structures creating weak contrast to existing landscape; skylined against backdrop of distant mountain forms
LINE	FG, MG, BG: no change	FG, MG, BG: no change	MG: adding taller vertical elements than existing structures; undulating horizontal lines visually similar to the existing line though of different span width; emphasize s strong parallel lines of existing corridor
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	MG: barely visible metallic conductors; new galvanized steel gray tower structures
TEXTURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS	Form				X				X			X	
	Line				X				X			X	
	Color				X				X			X	
	Texture				X				X			X	

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No X N/A (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names: Mark Greenig, MariaElena Conserva, and Angela Wolfe
Date: September 6, 2012
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.
Proposed upgrades are located on private land.
KOPs show new residential area.

Distance. The KOP is 1.8 miles north of segment U3k from Red Rock Residential area. Segment U3k crosses private land. Segment U3k crosses the view from the KOP generally east to west.

Angle of Observation. The KOP is at an horizontal observational angle to segment U3k.

Length of Time the Project Is In View. Segment U3k would be viewed for extended periods from the residential area.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures. Because of the relative size of the structures when compared with other existing structures, and the close proximity to the upgrade structures there would be moderate contrasts.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be no visible contrast over time.

Spatial Relationships. The landscape in the fore ground is paved road and open graded landscape with sparse patches of desert vegetation and utility structures. There are mountains in the distant background. The proposed replacement structures and conductors are in the fore ground. The proposed replacement structures are larger, with greater conductor spans that would be visible against the sky and would create new contrasts with the existing sequence of linear structures. This contrast would be weaker because of the distance to the upgrade structures.

Atmospheric Conditions. Changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3k would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point AN-03	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Meandering channel and flat park area in the foreground. Large jagged mountain range in the background.	Low lying shrubs and grasses interspersed with taller trees. Very patchy and irregular.	Flat paved trail with a square blocky metal fence along the edge. Vertical steel monopole and lattice transmission structures within the channel and opposite the channel. Additional steel transmission structures visible to the north and south.
LINE	River channel curving line going to north to south. Irregular mountain range. Broad flat area of the park.	Shrubs and trees form irregular and patchy lines.	Paved trail in the immediate foreground with metal blocky fence are strong horizontal, straight lines. The transmission structures and several transmission lines are visible going north to south, and east to west creating right angles that that are visible against the against the midday sky.
COLOR	Flat, light grey and tans in the immediate foreground. Mountains are darker reddish browns.	Grasses along trail and throughout are tan and brown. Shrubs and trees are a several shades of green and brown.	Asphalt trail is light faded grey and white; fence is a flat reddish color. Transmission structures are grey steel. The transmission lines are dart to reflective from different angles in the midday sun.
TEX-TURE	The textures of the soils rocky gravels are medium to coarse grained. Because of the distance, the rocky outcrops of the surrounding hills and mountains in the middle ground and background are smooth.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured.	The paved and concrete trail appears very smooth. The transmission structures are very fine and uniform. The transmission lines are very smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Transmission structures would follow an existing single pole steel transmission line parallel to the Santa Cruz river channel.
LINE	No change	No change	Installing a new line under alternative TH3 would result in additional vertical and horizontal structures.
COLOR	**There would be lighter soils exposed in the foreground where areas are cleared for installation of new structures.**	No change	**Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.**
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X				X	
	LINE				X				X			X	
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere — 5/10/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

The actions do not occur on BLM managed lands. However, the South line Transmission project repeats the basic elements of form, line, color, and texture of the existing conditions within the area. The project is located in the immediate foreground of the KOP which is the Santa Cruz River Trail (east side of river), just east of South Callee Santa Cruz (Recreational Trail, Historic Corridor, near Alternative Auto Route). Views along agency alternative TH3 Option A in both directions. Views to the south of the planned upgrade of existing transmission line, which crosses the river at this point. Other transmission line located along the river trail along the opposite shore of the river channel. At this distance and form this viewing angle, new transmission structures and lines associated with the agency alternative TH3 would be clearly visible against the sky. They would be visible from the trail, and for the length of the alternative along the paved trail. Because there are currently steel monopole and lattice transmission structures and lines that the project would parallel, the apparent contrast with the surrounding landscape is weak.

Distance. The KOP is within 0.01 mile of segment TH3b which crosses private land in this area.

Angle of Observation. The KOP is at a horizontal observational angle to segment TH3b

Length of Time the Project Is In View. Segment TH3b would potentially remain in view for extended periods as viewers travel along Santa Cruz River Trail parallel to the segment.

Relative Size or Scale. The relative size of the replacement structures would be similar but somewhat taller than the existing transmission structures. The replacement structures would be similar in form to the existing structures. Because of the relative size of the structures when compared with other existing structures there would be weak contrasts.

Season of Use. The vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the Santa Cruz River Channel interspersed with trees and small signs. There are mountains in the background. The proposed replacement structures and conductors would be visible against the sky and against the darker backdrop of the mountains, and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment E would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/10/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **AN-04**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat open park area with recreational lake. Jagged mountain range in the distant background.	Low lying shrubs and grasses interspersed with taller trees. Very patchy and irregular. Dense trees in some areas of the parks landscaping.	Flat paved road and parking areas. Vertical steel lattice transmission structures and wooden H-frame structures in the foreground. Square picnic shade structures
LINE	Broad flat area of the park and recreation lake. Irregular mountain range in the distant background.	Shrubs and trees form irregular and patchy lines.	Paved road is a strong horizontal line. The transmission structures are strong vertical lines and several transmission lines intersecting with structures create right angles that that are visible against the midday sky. Park picnic shade structures and tables are boxy.
COLOR	Flat, light grey and tans in the immediate foreground. Mountains are darker reddish browns.	Grasses are tan and brown. Shrubs and trees are a several shades of green and brown.	Asphalt is light faded grey. Transmission structures are grey steel and brown wooden H-frames. The transmission lines are dark to reflective from different angles in the midday sun.
TEX-TURE	The textures of the soils rocky gravels are medium grained. Because of the distance, the rocky outcrops of the distant mountains are smooth.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured.	The paved road and picnic structures appear very smooth. The transmission structures are very fine and uniform. The transmission lines are very smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Replacement transmission structures would follow an existing steel lattice transmission line that follows the Santa Cruz river channel.
LINE	No change	No change	Installing the upgrade would result in an additional strong vertical line in the foreground.
COLOR	There would be lighter soils exposed in the foreground where areas are cleared for installation of new structures.	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X_LONG TERM

1. DEGREE OF CONTRAST	FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS: FORM				X			X				X	
LINE				X				X		X		
COLOR			X					X			X	
TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere — 5/10/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. However, the Southline Transmission project upgrade repeats the basic elements of form, line, color, and texture of the existing conditions within the area. The project is located in the immediate foreground of the KOP which is the Trailhead at Christopher Columbus Park, near Historic Turquisin Camp (Recreational Trail, near Historic Corridor, near Alternate Auto Tour Route) and recreational lake. This KOP has views of proposed upgrade in both directions. Other transmission lines are located along the river trail along the opposite shore of the river channel. At this distance and from this viewing angle, replacement transmission structures and lines associated with the proposed upgrade would be clearly visible against the sky. The proposed upgrade would also be visible from the trail as it goes through the park in both directions. Because there are currently wooden H-frame structures that would be replaced and steel lattice transmission structures and lines that the project would parallel, the apparent contrast with the surrounding landscape is weak.

Distance. The KOP is 0.1 mile west of segment U3i from Christopher Columbus Park. Segment U3i crosses private land. Segment U3g crosses the view from the KOP generally north to south.

Angle of Observation. The KOP is at a horizontal observational angle to segment U3i.

Length of Time the Project Is In View. Segment U3i would be viewed for extended periods from the course.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures and other existing structures in the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing vegetation screening and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast.

Spatial Relationships. The landscape in the foreground is a flat lake with a park setting beyond that has small hills and clumps of the trees scattered throughout. There are mountains in the distant background. The proposed replacement structures and conductors would be visible against the sky and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP. These changes would be minimal because of the proximity to the upgrade structures.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3i would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: Thursday, May 9, 2013
District/ Field Office:
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **TH1-S1**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Rolling terrain below Tumamoc Hill and Sentinel Peak to the East, and other low lying mountains to the west.	Low lying clumpy grass along the roadsides in the immediate foreground. Low to medium rounded shrubs interspersed with spiky perennial grasses, and taller angular trees are visible just past the road.	Flat paved road, simple vertical wooden H-frame transmission structure pst road. Additional wooden H-frame visible to the south.
LINE	Low flat horizon line straight ahead of the alluvial fan coming off the rounded Tumamoc Hill. Rounded but irregular peaks lie to the west.	Shrubs and trees form an irregular line visible below the transmission line. There is a straight line of vegetation that follows parallel to the road and transmission lines.	Paved road in the immediate foreground with metal guard rail on far side of road are strong horizontal, straight lines. The transmission structure and several transmission lines are visible going north to south, and east to west creating right angles that clearly stand out against the midday sky.
COLOR	Flat, light grey and tans in the immediate foreground. Fans, hills, and mountains are darker tans, browns, reds,	Grasses along shoulder are tan and brown. Shrubs and trees are a several shades of green and brown.	Asphalt road is dark grey, guard rails are a flat metallic color. Transmission structures are a dark wooden brown. The transmission lines are dart to reflective from different angles in the midday sun.
TEX-TURE	The textures of the soils are smooth and fine grained. Because of the distance, the rocky outcrops of the surrounding hills and mountains in the middle ground and background are smooth.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured. Vegetation extending into the background appears smoother the texture.	The paved road appears very smooth. The transmission structures are very fine and uniform. The transmission lines are very smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Prominent, taller transmission structures would follow an existing single pole transmission line parallel to road.
LINE	No change	No change	Installing a new line under alternative TH1a and TH2a would result in a bolder, more prominent vertical structure.
COLOR	No change	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM XLONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X				X	
	LINE				X				X			X	
	COLOR				X				X				X
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __Yes ___No (Explain on reverse side) Not applicable.

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere — 5/9/2013
Revised by Steve Leslie, 2/24/2015

Comments from item 2.

The actions do not occur on BLM managed lands. However, the Southline Transmission project repeats the basic elements of form, line, color, and texture of the existing conditions within the area. The project is located in the immediate foreground of the KOP. At this distance, two to three of the new transmission structures and lines associated with the agency alternatives would be clearly visible against the sky. Because there are currently transmission structures and lines that the project would parallel, the apparent contrast with the surrounding landscape is weak.

Distance. The KOP is within 0.1 mile of Segment TH1a.

Angle of Observation. The KOP is at a horizontal observational angle to segment

Length of Time the Project Is In View. From this intersection, the project would be in view while traffic waits to turn in addition to as they travel up and down West Starr Pass Blvd for approximately 0.5 mile. Viewers along West Star Pass Blvd traveling at 45 mph would view the project for no more than several minutes.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures and other existing structures in the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground is wide road lined with vegetation, metal guardrails, gravel, and utility structures perpendicular to the view. There are distant mountains in the background. The proposed replacement structures and conductors are in the fore ground. The proposed replacement structures are larger, with greater conductor spans that would be visible against the sky and would create new moderate contrasts with the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH1a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: Thursday, May 9, 2013
District/ Field Office:
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**
2. Key Observation Point **TH1-S2**
3. VRM Class **NA**
4. Location Township____ Range____ Section____
5. Location Sketch See Map

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Tumamoc Hill is a prominent, domed landform.	Low lying clumpy grass along the roadsides in the immediate foreground. Low to medium rounded shrubs interspersed with spiky perennial grasses, and taller angular trees are visible just past the road.	Flat paved road and sidewalk, simple vertical traffic light poles, wooden monopole transmission structure
LINE	Tumamoc Hill rounded and irregular flowing down into a more undulating alluvial fan. Irregular peaks visible to the east west.	Shrubs and trees form an irregular line visible below the transmission line.	Paved road and sidewalk in the immediate foreground are strong horizontal, straight lines. The traffic light structure, transmission structure, and several transmission lines are visible going east to west creating right angles that clearly stand out against the midday sky.
COLOR	Flat, light grey and tans in the immediate foreground. Darker tans, browns, reds further away.	Grasses along shoulder are tan, brown, and green. Shrubs and trees are a several shades of green and brown. Vegetation on Tumamoc Hill is beige and brown, darker green vegetation towards the base of the hill.	Asphalt road is dark grey, sidewalk is a flat white concrete. Transmission structures are a dark wooden brown. The transmission lines are dart to reflective from different angles in the midday sun. The traffic light poles are galvanized metallic.
TEXTURE	The textures of the soils are smooth and fine grained. The rocky outcrops of the Tumamoc Hill are coarser, and those mountains and hills in the distance become smoother.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured. Vegetation extending into the background appears smoother the texture.	The paved road appears very smooth. The transmission structures and traffic light poles are very fine and uniform. The transmission lines are very smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Prominent, taller transmission structures would follow an existing single pole transmission line parallel to road.
LINE	No change	No change	Installing a new line under alternative TH1a would result in a bolder, more prominent vertical structure.
COLOR	No change	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEXTURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X				X	
	LINE				X				X			X	
	COLOR				X				X				X
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes __No (Explain on reverse side)
NA

3. Additional mitigating measures recommended
_X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie — 5/9/2013
Pam Cecere
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. However, the Southline Transmission project repeats the basic elements of form, line, color, and texture of the existing conditions within the area. The project is located in the immediate foreground of the KOP. At this distance, two of the new transmission structures and lines associated with the agency alternatives would be clearly visible against the sky. Because there are currently transmission structures and lines that the project would parallel, the apparent contrast with the surrounding landscape is weak.

Distance. The KOP is approximately 0.5 mile east of segment TH1a.

Angle of Observation. The KOP is at a slightly superior observational angle to segment TH1a.

Length of Time the Project Is In View. From this intersection, the project would be in view while traffic waits to turn in addition to as they travel up and down West Starr Pass Blvd for approximately 0.5 mile. Viewers along West Star Pass Blvd traveling at 45 mph would view the project for no more than several minutes.

Relative Size or Scale. The relative size of the replacement structures would be similar to the existing transmission structures and other existing structures in the foreground of the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground is wide road lined with vegetation, sidewalk, traffic light, gravel, and utility structures perpendicular to the view. Tumamoc Hill is just beyond the road. The proposed replacement structures and conductors are in to the west in the fore

ground. The proposed replacement structures are larger, with greater conductor spans that would be visible against the sky and would create new contrasts with the existing sequence of linear structures, because of the other intervening structures these contrasts would be weak.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH1a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **TH1-S3**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Tumamoc Hill is a prominent, domed landform. There is rolling terrain below Tumamoc Hill and the more rugged Sentinel Peak further east.	Low lying clumpy grass along the mixed with low to medium rounded shrubs and taller angular treed.	Flat paved road and dirt road, simple vertical wooden monopole transmission structures.
LINE	Tumamoc Hill rounded and irregular flowing down into a more undulating alluvial fan. Irregular rugged peaks of Sentinel Peak visible further past Tumamoc.	Shrubs and trees form an irregular line. There is a sharp edge where the vegetation stops at the roadside.	Paved road in the immediate foreground is a strong horizontal, straight line. The transmission structures are visible going north to south, and east to west against the backdrop of the landscape.
COLOR	Flat, light grey and tans in the immediate foreground. Fans, hills, and mountains are darker tans, browns, reds,	Grasses along shoulder are tan and brown. Shrubs and trees are a several shades of green and brown. Cactus in the foreground are a very pale green.	Asphalt road is dark grey. Transmission structures are a dark wooden brown.
TEX-TURE	The textures of the soils are smooth and fine grained. Because of the distance, the rocky outcrops of the surrounding hills and mountains in the middle ground and background are medium grained.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured. Vegetation extending into the background appears smoother the texture.	The paved road appears very smooth. The transmission structures are very fine and uniform.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Prominent, taller transmission structures would follow an existing single pole transmission line parallel to road.
LINE	No change	No change	Installing a new line under alternative TH1a would result in a bolder, more prominent vertical structure.
COLOR	No change	No change	Steel tower structures, metallic wires would result in lighter, more reflective structures.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X				X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __Yes __No (Explain on reverse side)
NA

3. Additional mitigating measures recommended __X_Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie — 5/9/2013
Pam Cecere
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. However, the Southline Transmission project repeats the basic elements of form, line, color, and texture of the existing conditions within the area. The project is located in the foreground of the KOP ¼ mile further east along West Starr Pass Blvd. At this distance, the new transmission structures and lines associated with agency alternative TH1a would be visible with Tumamoc Hill as the backdrop. Because there are currently transmission structures and lines that the project would parallel, the apparent contrast with the surrounding landscape is weak.

From West Starr Pass Blvd, the project would be in view while traffic travels east for approximately one mile. Viewers along West Star Pass Blvd traveling at 45 mph would view the project for several minutes.
Distance. The KOP is approximately 0.3 mile west of segment TH1a.

Angle of Observation. The KOP is at a slightly superior observational angle to segment TH1a.

Length of Time the Project Is In View. From West Starr Pass Blvd, the project would be in view while traffic travels east for approximately one mile. Viewers along West Star Pass Blvd traveling at 45 mph would view the project for several minutes.

Relative Size or Scale. The relative size of the structures would be similar to the existing transmission structures and other existing structures in the foreground of the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground is wide road lined with vegetation, gravel, and utility structures. Tumamoc Hill stands out in the middle ground. The proposed structures and conductors are to the east in the fore ground. The proposed replacement structures are larger, with greater conductor spans that would be visible against the darker backdrop of Tumamoc Hill and would create weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH1a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **TH1-S4**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Tumamoc Hill is a prominent, domed landform. With more rolling terrain below Tumamoc Hill	Low lying clumpy grass along the mixed with low to medium rounded shrubs and taller angular treed.	Flat paved road, simple vertical wooden monopole transmission structures and horizontal transmission lines.
LINE	Tumamoc Hill is rounded and irregular flowing down into a more undulating alluvial fan.	Shrubs and trees form a jagged, irregular line. There is a sharp edge where the vegetation stops at the roadside. Cactus are strong vertical lines interspersed with shrubs and trees.	Paved road in the immediate foreground is a strong horizontal, straight line. The transmission structure and several transmission lines are visible going north to south and clearly stand out against the midday sky. A barbed wire fence is made up of right angles along the edge of the road.
COLOR	Flat, light grey and tans in the immediate foreground. Fans, hills, and mountains are darker tans, browns, reds,	Grasses along shoulder are tan and brown. Shrubs and trees are a several shades of green and brown. Cactus is a very pale green to dark green.	Asphalt road is dark grey. Transmission structures are a dark wooden brown. Transmission lines are dark against the sky.
TEX-TURE	The textures of the soils are smooth and fine grained. Because of the distance, the rocky outcrops of the surrounding hills and mountains in the middle ground and background are medium grained.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured. Vegetation extending into the background appears smoother the texture.	The paved road appears very smooth. The transmission structures are very fine and uniform.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Prominent, taller transmission structures would follow an existing single pole transmission line parallel to road.
LINE	No change	No change	Installing a new line under alternative TH1a would result in a bolder, more prominent vertical structure.
COLOR	There would be lighter soils exposed in the foreground where areas are cleared for installation of new structures.	No change	Steel tower structures, metallic wires would result in lighter, more reflective structures.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM _X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X			X		
	LINE				X				X		X		
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)

NA

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie — 5/9/2013
Pam Cecere
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. However, the Southline Transmission project repeats the basic elements of form, line, color, and texture of the existing structures within the area. The project is located in the immediate foreground of the KOP along South Greasewood Road near the Andy Tolson Elementary School. At this distance, the new transmission structures and lines associated with agency alternative TH1a would be visible with Tumamoc Hill and the open sky as the backdrop.

Distance. The KOP is within 0.01 mile of segment TH1a.

Angle of Observation. The KOP is at a horizontal observational angle to segment TH1a.

Length of Time the Project Is In View. From the school, the project would be in clear view from the school and school parking lots for extended periods. Viewers traveling along South Greasewood Road traveling at 45 mph would view the project for 2 miles for approximately several minutes in both directions.

Relative Size or Scale. The relative size of the structures would be larger than the existing transmission structures and other existing structures in the foreground of the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Vegetation conditions in areas of disturbance are also expected to change over several years as restoration takes place. Because of the distance from the KOP, and the small scale of vegetation disturbance required for the proposed project, there would be limited, weak visible contrast over time.

Spatial Relationships. The landscape in the fore ground is wide road lined with vegetation, gravel, and utility structures. Tumamoc Hill stands out in the middle ground. The proposed structures and conductors are to the east in the fore ground. The proposed replacement structures are larger, with greater conductor spans that would be visible against the sky and the darker backdrop of Tumamoc Hill and would create moderate contrasts.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH1a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 5/9/2013
District/ Field Office:
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **TH1-S5**	Range	
3. VRM Class **NA**	Section	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Tumamoc Hill is a prominent, domed landform. With more rolling terrain below Tumamoc Hill	Low lying grass mixed with low to medium rounded shrubs and taller angular trees and cactus. Landscaping in front of residences in the foreground.	Flat paved road, driveways. Boxy, square single story homes. Simple vertical wooden monopole transmission structures and horizontal transmission lines.
LINE	Tumamoc Hill is rounded and irregular flowing down into a more undulating alluvial fan.	Shrubs and trees form a jagged, irregular line.	Paved road in the immediate foreground is a strong curving line. The homes are very geometrical. The transmission structures are vertical lines against the surrounding landscape.
COLOR	The immediate foreground is paved with residential development. Fans, hills, and mountains are darker tans, browns, reds,	Shrubs and trees associated with landscaping is bright green. Vegetation on Tumamoc Hill is beige and brown, with darker green vegetation towards the base of the hill.	Asphalt road is dark grey. Homes are red bricks and white roofs. Transmission structures are a dark wooden brown and the lines appear light and reflective.
TEX-TURE	The textures of the soils are in the foreground are not visible. Because of the distance, the rocky outcrops of the surrounding hills and mountains in the middle ground and background are medium grained.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured. Vegetation extending into the background appears smoother the texture.	The paved road appears very smooth. The homes and landscaping are more medium grained. The transmission structures are very fine and uniform.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change	Prominent, taller transmission structures would follow an existing single pole transmission line parallel to road.
LINE	No change	No change	Installing a new line under alternative TH1a would result in a bolder, more prominent vertical structure.
COLOR	No change	No change	Steel tower structures, metallic wires would result in lighter, more reflective structures.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie — 5/9/2013
Pam Cecere
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. However, the Southline Transmission project repeats the basic elements of form, line, color, and texture of the existing conditions within the area. The project is located in the foreground of the KOP in residential neighborhood on West Calle Tonala just west of South Greasewood Road. At this distance, the new transmission structures and lines associated with agency alternative TH1a would be visible with Tumamoc Hill as the backdrop. Much of the view of the project would be screened by the residential structures and landscaping.

Distance. The KOP is within 0.2 mile of segment TH1a.

Angle of Observation. The KOP is at a slightly superior observational angle to segment TH1a.

Length of Time the Project Is In View. From the residential area, portions of the upgrade would be in view for extended periods.

Relative Size or Scale. The relative size of the structures would be larger than the existing transmission structures and other existing structures in the foreground of the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground is residential development. Tumamoc Hill stands out in the middle ground. The proposed replacement structures and conductors are to the east in the fore ground but would be mostly screened by existing homes and vegetation. The proposed structures that would be visible are larger, with greater conductor spans that would be visible against the darker backdrop of Tumamoc Hill and would create weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH1a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 5/9/2013
District/ Field Office:
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **TH1-S6**	Range	
3. VRM Class **NA**	Section	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Tumamoc Hill is a prominent, domed landform. With flat to rolling terrain below Tumamoc Hill in the foreground	Low lying grass mixed with taller thin branched and cactus. Grasses and shrubs in the middle ground appear low and flat interspersed with taller cactus.	Flat paved road, driveways. Simple vertical wooden monopole transmission structures and horizontal transmission lines.
LINE	Tumamoc Hill is rounded and irregular flowing down into a more undulating alluvial fan.	Shrubs in the foreground form a jagged, irregular line. Vegetation further away is flat interspersed with vertical cactus	Paved road in the immediate foreground is a strong straight line. The transmission structures are vertical lines against the surrounding landscape and the transmission lines are strong angular lines against the sky.
COLOR	Fans, hills, and mountains are tans, grays, browns, reds,	Shrubs in the foreground are greens, grays, and yellows. The vegetation on Tumamoc Hill is beige and brown, with darker green vegetation towards the base of the hill.	Asphalt road is dark grey. Transmission structures are a dark wooden brown and the lines appear dark against the midday sky.
TEX-TURE	The textures of the soils are in the foreground are medium grained. Because of the distance, the rocky outcrops of Tumamoc Hill are medium grained.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured. Vegetation extending into the background appears smoother the texture.	The paved road appears very smooth. The transmission structures are very fine and uniform.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Prominent, taller transmission structures would follow an existing single pole transmission line parallel to road.
LINE	No change	No change	Installing a new line under alternative TH1a would result in a bolder, more prominent vertical structure.
COLOR	There would be lighter soils exposed in the foreground where areas are cleared for installation of new structures.	No change	Steel tower structures, metallic wires would result in lighter, more reflective structures.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X			X		
	LINE				X				X			X	
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie — 5/9/2013
Pam Cecere
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. However, the Southline Transmission project repeats the basic elements of form, line, color, and texture of the existing conditions within the area. The project is located in the foreground of the KOP which is by apartments at the junction of South Greasewood Road and West Broadway Blvd. The view from the KOP is looking east towards Study Area and Tumamoc Hill. At this distance, the new transmission structures and lines associated with agency alternative TH1a would be visible with the open sky and Tumamoc Hill as the backdrop.

Distance. The KOP is within 0.2 mile of segment TH1a.

Angle of Observation. The KOP is at a slightly superior observational angle to segment TH1a.

Length of Time the Project Is In View. From the residential area, portions of the upgrade would be in view for extended periods.

Relative Size or Scale. The relative size of the structures would be larger than the existing transmission structures and other existing structures in the foreground of the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the paved road and the open landscape around Tumamoc Hill. Tumamoc Hill stands out in the middle ground and there are distant mountains. The proposed replacement structures and conductors are to the east in the fore ground but would be mostly screened by existing homes and vegetation. The proposed structures that would be visible are larger, with greater conductor spans that would be visible against the sky and the darker backdrop of the mountains and Tumamoc Hill and would create moderate contrasts.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH1a would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013
	District/ Field Office:
	Resource Area:
	Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **TH1-S7**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat to rolling terrain.	Low lying grass mixed with taller thin branched shrubs and vertical cactus. Grasses and shrubs appear low and rounded interspersed with taller cactus.	Flat gravel pull off and paved road. Simple vertical wooden monopole transmission structures and horizontal transmission lines.
LINE	Flat straight line above KOP.	Shrubs in the foreground form a jagged, irregular line. Vegetation further away is flat interspersed with vertical cactus	Paved road in is a strong straight line. The transmission structures are vertical lines against the surrounding landscape and the transmission lines are horizontal lines against the sky.
COLOR	The immediate foreground sand and gravels are grey extending into light tan and beige.	Shrubs and grasses are browns, greens, grays, and yellows.	Asphalt road is dark grey. Transmission structures are a dark wooden brown and the lines appear dark against the midday sky.
TEX-TURE	The textures of the soils and rocks are medium grained.	Tree, shrubs, and grasses appear dense and coarse textured.	The paved road appears very smooth. The transmission structures are very fine and uniform.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Prominent, taller transmission structures would follow an existing single pole transmission line parallel to road.
LINE	No change	No change	Installing a new line under alternative TH1b would result in a bolder, more prominent vertical structure.
COLOR	There would be lighter soils exposed in the foreground where areas are cleared for installation of new structures.	No change	Steel tower structures, metallic wires would result in lighter, more reflective structures.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X			X		
	LINE				X				X		X		
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended
__X_Yes __No (Explain on reverses side)

Evaluator's Names Date
Steve Leslie 5/9/2013
Pam Cecere
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. The project is located in the foreground of the KOP which is at the junction of South Greasewood Road and West Speedway Blvd. The view from the KOP is looking east and south towards Study Area and would capture views of people driving through the intersection in addition to those visiting the small park/picnic area west of South Greasewood Road (the project is not visible from the park itself). At this distance, the new transmission structures and lines associated with agency alternative TH1b would be visible with the open sky as the backdrop. Because there are currently transmission structures and lines that the project would parallel, the apparent contrast with the surrounding landscape is weak.

Distance. The KOP is within 0.07 mile of segment TH1b.

Angle of Observation. The KOP is at a horizontal observational angle to segment TH1b.

Length of Time the Project Is In View. From the road and the park, portions of the upgrade would be in view for extended periods

Relative Size or Scale. The relative size of the structures would be larger than the existing transmission structures and other existing structures in the foreground of the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the paved road and the open landscape with low desert vegetation. There are distant mountains in the background. The proposed structures and conductors are to the east in the fore ground. The proposed structures that would be visible are larger, with greater conductor spans that would be visible against the sky and the darker backdrop of the mountains and would create moderate contrasts.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH1b would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township_____	5. Location Sketch See map
2. Key Observation Point **TH1-S8**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Tumamoc Hill is a prominent, domed landform. With flat to rolling terrain below Tumamoc Hill in the foreground	Low lying grass mixed with rounded shrubs and vertical cactus. Grasses and shrubs in the middle ground appear low and flat interspersed with taller cactus.	Flat paved road, and gravel road and shoulder. Simple vertical wooden monopole transmission structures and horizontal transmission lines. Boxy buildings of the residential developments to the south and east. Irregular boxy skyline of Tucson visible to the east.
LINE	Tumamoc Hill is rounded and irregular flowing down into a flat alluvial fan.	Shrubs in the foreground form a jagged, irregular line. Vegetation further away is flat.	Paved road in the immediate foreground is a strong straight line. The transmission structures are vertical lines against the midday sky and surrounding landscape and the transmission lines are strong angular lines against the sky. Residential development is square and boxy.
COLOR	Fan, hills, and mountains are tans, grays, browns, reds,	Shrubs in the foreground are greens, grays, and yellows. The vegetation on Tumamoc Hill is beige and brown, with darker green vegetation towards the base of the hill.	Asphalt road is dark grey. Transmission structures are a dark wooden brown and the lines appear dark against the midday sky. The gravel roads and shoulders are grey. House roofs are white and reflective. Tucson skyline darker grays.
TEXTURE	The textures of the soils are in the foreground are medium grained. Because of the distance, the rocky outcrops of Tumamoc Hill are medium grained.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured. Vegetation extending into the background appears smoother the texture.	The paved road appears very smooth. The gravel roads and shoulders are medium grained texture. The transmission structures are very fine and uniform. Buildings are smooth, fine textured.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Prominent, taller transmission structures would follow an existing single pole transmission line parallel to road.
LINE	No change	No change	Installing a new line under alternative TH1a would result in a bolder, more prominent vertical structure.
COLOR	There would be lighter soils exposed in the foreground where areas are cleared for installation of new structures.	No change	Steel tower structures, metallic wires would result in lighter, more reflective structures.
TEXTURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X			X		
	LINE				X				X		X		
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie — 5/9/2013
Pam Cecere
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. The project is located in the foreground of the KOP which is by the Casa De Colinas apartments on West Speedway Blvd. The view from the KOP is looking south towards Study Area and Tumamoc Hill and east and west further along Agency Alternative TH1b. At this distance, the new transmission structures and lines associated with agency alternative TH1b would be visible with the open sky and Tumamoc Hill as the backdrop.

Distance. The KOP is within 0.04 mile of segment TH1b.

Angle of Observation. The KOP is at a horizontal observational angle to segment TH1b.

Length of Time the Project Is In View. From the apartment complex, portions of the upgrade would be in view for extended periods

Relative Size or Scale. The relative size of the structures would be larger than the existing transmission structures and other existing structures in the foreground of the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the paved road and the open landscape with low desert vegetation. Tumamoc Hill and distant mountains are visible in the background. The proposed structures and conductors are to the south and the east in the fore ground. The proposed structures that would be visible are larger, with greater conductor spans that would be visible against the sky and the darker backdrop of the mountains and would create moderate contrasts.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH1b would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **TH1-S9**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Tumamoc Hill is a prominent, flat topped landform to the south, with flat terrain surrounding the hill	Patchy low lying grass mixed with rounded shrubs and trees. Grasses and shrubs in the middle ground appear low and flat.	Flat paved road, and gravel road and shoulder. Simple vertical steel monopole and wooden H-frame transmission structures and horizontal transmission lines. Vertical light poles interspersed with transmission structures. Boxy buildings of the commercial development to the west and south.
LINE	Tumamoc Hill is flat topped with sloping irregular flowing down into the surrounding flat lands.	Shrubs in the foreground form a jagged, irregular line. Vegetation further away is flat.	Paved road in the immediate foreground is a strong straight line. The transmission structures are vertical lines against the midday sky and surrounding landscape and the transmission lines are strong angular lines against the sky. Commercial buildings to the west are single storied, square and boxy.
COLOR	Surrounding lands are tans, grays, browns, reds,	Shrubs in the foreground are greens, grays, and yellows. The vegetation on Tumamoc Hill is beige and brown, with darker green vegetation towards the base of the hill.	Asphalt road is dark grey. Transmission structures are a dark wooden brown and the lines appear dark against the midday sky. The gravel roads and shoulders are grey. Buildings are tan, beige, and red.
TEX-TURE	The textures of the soils are in the foreground are medium grained. Because of the distance, the rocky outcrops of Tumamoc Hill are fine grained.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured. Vegetation extending into the background appears smoother the texture.	The paved road appears very smooth. The gravel roads and shoulders are medium grained texture. The transmission structures are very fine and uniform. Buildings are smooth, fine textured.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change	Prominent, taller transmission structures would follow an existing single pole transmission line parallel to road.
LINE	No change	No change	Installing a new line under alternative TH1a would result in a bolder, more prominent vertical structure.
COLOR	There would be lighter soils exposed in the foreground where areas are cleared for installation of new structures.	No change	Steel tower structures, metallic wires would result in lighter, more reflective structures.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X		X		
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended __X_Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie — 5/9/2013
Pam Ceccre
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. The proposed upgrade and Agency Alternative TH1c are located in the foreground of the KOP which is by the El Rio Golf Course along North El Rio Drive. The view from the KOP is looking west toward Agency Alternative TH1c, and along the proposed upgrade. At this distance, the new transmission structures and lines associated with the proposed upgrade and agency alternative TH1c would be visible with the open sky as the backdrop. Because there are currently commercial development, tall light pole, and existing transmission structures and lines that the agency alternative TH1c would intersect with, the apparent contrast with the surrounding landscape is weak.

Distance. The KOP is within 0.06 mile of segment TH1c.

Angle of Observation. The KOP is at a horizontal observational angle to segment TH1c.

Length of Time the Project Is In View. From the El Rio Golf Course, portions of the upgrade would be in view for extended periods

Relative Size or Scale. The relative size of the structures would be larger than the existing transmission structures and other existing structures in the foreground of the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes utility structures paved road, open lots, and commercial development. The proposed structures and conductors are to the west in the fore ground. The proposed structures that would be visible are larger than existing structures in the landscape and would be visible against the sky creating moderate contrasts.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH1c would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See Map
2. Key Observation Point **TH3-R1**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Meandering channel and flat park area in the foreground. Large jagged mountain range in the background.	Low lying shrubs and grasses interspersed with taller trees. Very patchy and irregular.	Flat paved trail with a square blocky metal fence along the edge. Strong vertical steel monopole transmission structures within the channel and opposite the channel. Additional steel transmission structures visible to the north and south.
LINE	River channel curving line going to north to south. Irregular mountain range. Broad flat area of the park.	Shrubs and trees form irregular and patchy lines.	Paved trail in the immediate foreground with metal blocky fence are strong horizontal, straight lines. The transmission structures and several transmission lines are visible going north to south, and east to west creating right angles that clearly stand out against the midday sky.
COLOR	Flat, light grey and tans in the immediate foreground. Mountains are darker tans, browns, and black,	Grasses along trail and throughout the park are tan and brown. Shrubs and trees are a several shades of green and brown.	Asphalt trail is light faded grey; fence is a flat reddish color. Transmission structures are grey steel. The transmission lines are dart to reflective from different angles in the midday sun.
TEX-TURE	The textures of the soils are medium to coarse grained. Because of the distance, the rocky outcrops of the surrounding hills and mountains in the middle ground and background are smooth.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured. Vegetation on the mountains in the background appears smoother the texture.	The paved trail appears very smooth. The transmission structures are very fine and uniform. The transmission lines are very smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Transmission structures would follow an existing single pole steel transmission line parallel to the Santa Cruz river channel.
LINE	No change	No change	Installing a new line under alternative TH3 would result in additional vertical and horizontal structures.
COLOR	There would be lighter soils exposed in the foreground where areas are cleared for installation of new structures.	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X				X	
	LINE				X				X			X	
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere — 5/9/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. The project is located in the immediate foreground of the KOP which is the Santa Cruz River Park along "The Loop" including a paved trail, picnic area, play-ground and disc golf course. Views from the KOP are directly along agency alternative TH-3b in both directions. At this distance and form this viewing angle, new transmission structures and lines associated with the agency alternative TH-3 would be clearly visible against the sky. They would be visible from the park itself, and for the length of the alternative along the paved trail.

Distance. The KOP is within 0.01 mile of segment TH3b which crosses private land in this area.

Angle of Observation. The KOP is at a horizontal observational angle to segment TH3b

Length of Time the Project Is In View. Segment TH3b would potentially remain in view for extended periods as viewers travel along Santa Cruz River Trail parallel to the segment.

Relative Size or Scale. The relative size of the structures would be similar to the existing transmission structures. The replacement structures would be similar in form to the existing structures. Because of the relative size of the structures when compared with other existing structures there would be weak contrasts.

Season of Use. The vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the Santa Cruz River Channel interspersed with trees and small signs. There are mountains in the background. The proposed structures and conductors would be visible against the sky and against the darker backdrop of the mountains, and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH3b would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **TH3-R2**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat lands along river channel.	Low lying shrubs and grasses interspersed with taller trees along the river channel. Very patchy and irregular.	Flat paved concrete patio at trail access with tall brick arch structure the trail passes through. Several steel transmission structures including monopole and lattice structures are visible along the river channel as well tall vertical light posts.
LINE	Broad flat area along channel.	Shrubs and trees form irregular and patchy lines. Trees are tall and branched.	Paved trail in the immediate foreground with blocky arched brick façade. The transmission structures and several transmission lines are visible going north to south, and east to west creating strong angles that clearly stand out against the midday sky.
COLOR	Flat, light grey and tans.	Grasses around the access point and along trail are tan and brown. Shrubs and trees are a several shades of green and brown.	Concrete apron at access is white; bricks of the arch entranceway to the trail are red. Transmission structures are grey steel. The transmission lines are dark to reflective from different angles in the midday sun.
TEX-TURE	The textures of the soils are medium grained.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured.	The paved trail appears very smooth. The gateway is coarse textured. The transmission structures are very fine and uniform. The transmission lines are very smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change	Transmission structures would follow an existing transmission line including steel monopole and lattice structure parallel to the Santa Cruz river channel.
LINE	No change	No change	Installing a new line under alternative TH3 would result in additional vertical and horizontal structures.
COLOR	No change	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X				X
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended __X_Yes __No (Explain on reverses side)

Evaluator's Names Date
Steve Leslie, Pam Cecere 5/9/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. The project is located in the immediate foreground of the KOP which is an access point to the Santa Cruz River Trail at West Saint Mary's Road and North Riverside Road with views of agency alternative TH-3b. At this distance and from this viewing angle, up to one new transmission structure and the lines associated with the agency alternative TH-3 would be visible against the sky. Some of the view is screened by the brick trailhead structure, trees, and other development. Additional structures would be visible as viewers traveled along the trail from the access point in both directions. Because there are currently both steel monopole transmission structures and large lattice structures as well as horizontal and lines that the project would parallel, the apparent contrast with the surrounding landscape is weak to none.

Distance. The KOP is within 0.1 mile of segment TH3b which crosses private land in this area.

Angle of Observation. The KOP is at a horizontal observational angle to segment TH3b

Length of Time the Project Is In View. The would be limited views from the KOP, however, Segment TH3b would potentially remain in view for extended periods as viewers travel along Santa Cruz River Trail parallel to the segment.

Relative Size or Scale. The relative size of the structures would be similar to the existing transmission structures. The structures would be similar in form to some of the existing structures. Because of the relative size of the structures when compared with other existing structures there would be weak contrasts.

Season of Use. The area is developed and there would be no native vegetation recovery visible..

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the Santa Cruz River Trailhead, paved roads, commercial development, and numerous utility structures and conductors interspersed with trees and small signs. The proposed structures and conductors would be visible against the sky, and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH3b would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **TH3-R3**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat lands along river channel. No other visible topography or geography.	Park surrounded by mixed landscaping including tall trees, shrubs, palm trees.	Park entrance is made up of paved drive and parking area lined with low brick walls. Park is surrounded with tall stucco walls, iron fencing, and a paved walkway and includes several sculptures. Steel transmission structures including monopole and lattice structures are visible from within the park, the parking lot, and along the river channel as well tall vertical light posts.
LINE	Broad flat area.	Shrubs and trees form irregular and patchy lines. Trees are tall and branched.	Block walls, angular appearance of walls and fencing. Sculpture is all white. The transmission lattice structures, monopoles, and several transmission lines create strong angles that clearly stand out against the midday sky.
COLOR	Flat, light grey and tans of gravel along roadways and around park.	Shrubs and trees are a several shades of green and brown.	Red park walkway, tan stucco walls, black iron fencing, and white sculptures; bricks surrounding the paved parking lot are red. Transmission structures are grey steel and corten steel. The transmission lines are dark to reflective from different angles in the midday sun.
TEX-TURE	The textures of the soils are medium grained.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured.	The park development is smooth to medium textured. The stucco and brick work are coarse textured. The transmission structures are very fine and uniform. The transmission lines are very smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change	Transmission structures would follow an existing transmission line including steel monopole and lattice structure parallel to the Santa Cruz river channel.
LINE	No change	No change	Installing a new line under alternative TH3 would result in additional vertical and horizontal structures.
COLOR	No change	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM _X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM												
	LINE												
	COLOR												
	TEXTURE												

2. Does project design meet visual resource management objectives? __Yes ___No
(Explain on reverse side)
NA

3. Additional mitigating measures recommended
_X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere — 5/9/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. However, the Southline Transmission project repeats the basic elements of form, line, color, and texture of the existing conditions within the area. The project is located in the immediate foreground of the KOP which is the Garden of Gethsemane park along the Santa Cruz River trail with narrow views of Agency Alternative TH-3b. At this distance and from this viewing angle, up to one new transmission structure and the lines associated with the agency alternative TH-3 may be visible against the sky. Some of the view is screened by the park structures, surrounding development, and taller vegetation that is part of the park landscaping. Additional structures would be visible as viewers traveled along the trail in both directions of the private park. Because there are currently both corten steel monopole transmission structures and large lattice structures that are seen from the park and the trail outside the park, the apparent contrast with the surrounding landscape is weak to none.

Distance. The KOP is within 0.1 mile of segment TH3b which crosses private land in this area.

Angle of Observation. The KOP is at a horizontal observational angle to segment TH3b

Length of Time the Project Is In View. The would be limited views from the KOP, however, Segment TH3b would potentially remain in view for extended periods as viewers travel along Santa Cruz River Trail parallel to the segment.

Relative Size or Scale. The relative size of the structures would be similar to the existing transmission structures. The structures would be similar in form to some of the existing structures. Because of the relative size of the structures when compared with other existing structures there would be weak contrasts.

Season of Use. The area is developed and there would be no native vegetation recovery visible.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit. Because there are limited views of the segment from this KOP, these variations are not expected to change the apparent contrasts.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the structures associated with the park, paved roads, commercial development, and numerous utility structures and conductors interspersed with taller trees and small signs. The proposed structures and conductors would be partially screened from view by all the existing development and in places visible against the sky similar to the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along the segment would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 5/9/2013
District/ Field Office:
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **TH3-R4**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat lands along river channel. Low rugged peaks visible to the south west.	Low lying shrubs and grasses interspersed with taller trees along the river channel and the path of the trail. Very patchy and irregular.	Flat paved concrete patio at trail access with tall brick arch structure the trail passes through. Several steel transmission structures including monopole and lattice structures are visible along the river channel as well tall vertical light posts.
LINE	Broad flat area along the curving, meandering line of the channel. Rolling and irregular peaks f to the south and southwest.	Shrubs and trees form irregular and patchy lines along the meandering wash. Trees along trail are tall and branched along the trail.	Paved trail in the immediate foreground is a curving line with a strong edge. Several types of transmission structures (monopole, h-frame, and lattice) and several transmission lines are visible going north to south following the channel and creating strong angles that clearly stand out against the sky.
COLOR	Flat, light grey, tans, and reds. Mountains in the background are dark browns and blacks.	Grasses along trail are tan and brown. Shrubs and trees are a several shades of green and brown.	Paved trail is a flat grey. The Transmission structures are grey steel and light brown wooden monopole. The transmission lines are dark to reflective from different angles in the midday sun.
TEX-TURE	The textures of the soils are medium grained. The mountains appear smooth at this distance and under the late day sun light.	Tree, shrubs, and grasses appear dense and coarse textured.	The paved trail appears very smooth. The transmission structures are very fine and uniform. The transmission lines are very smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Transmission structures would follow an existing transmission line including steel monopole and lattice structure parallel to the Santa Cruz river channel.
LINE	No change	No change	Installing a new line under alternative TH3 would result in additional vertical and horizontal structures.
COLOR	There would be lighter soils exposed in the foreground where areas are cleared for installation of new structures.	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X					X
	LINE				X				X			X	
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names Date
Steve Leslie, Pam Cecere 5/9/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

The actions do not occur on BLM managed lands. The project is located in the immediate foreground of the KOP which is the Santa Cruz River Bikeway with views of Agency Alternative TH-33 Option C in both directions. At this distance and from this viewing angle, new transmission structures and the lines associated with the agency alternative TH-3 Option Cwould be visible against the sky. Additional structures would be visible as viewers traveled along the trail from the access point in both directions.

Distance. The KOP is within 0.1 mile of segment TH3 Option C which crosses private land in this area.

Angle of Observation. The KOP is at a horizontal observational angle to segment TH3 Option C

Length of Time the Project Is In View. The would be limited views from the KOP, however, Segment TH3 Option C would potentially remain in view for extended periods as viewers travel along Santa Cruz River Trail parallel to the segment.

Relative Size or Scale. The relative size of the structures would be similar to the existing transmission structures. The replacement structures would be similar in form to some of the existing structures. Because of the relative size of the structures when compared with other existing structures there would be weak contrasts.

Season of Use. The vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the Santa Cruz River Channel interspersed with trees and small signs. There are mountains in the background. The proposed structures and conductors would be visible against the sky and against the darker backdrop of the mountains, and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH3 Option C would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township_____	5. Location Sketch See map
2. Key Observation Point **TH1-01**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat lands within developed residential/ranching area.	Flat low, lying grasses, to high profile trees.	Flat agricultural and ranch lands with human made structures associated with agriculture. Existing transmission line is visible in the middleground.
LINE	Evident line along flat ground and vegetation.	Trees form backdrop of flat ranching lands.	Immediate foreground is flat, with irregular skyline from treetops.
COLOR	Flat browns, and earth tones	Trees and large vegetation is vibrant green	Agricultural lands are browns and tans, structures are steel grays to dark browns.
TEX-TURE	Texture of the ground is fine grained.	Tree, shrubs, and grasses appear dense and coarse textured.	Agricultural lands are very smooth. The transmission structures are very fine and uniform. The transmission lines are very smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change.	Transmission structures would follow existing transmission line which is a wood "H" frame structure. The upgraded line would be a steel monopole, creating a form similar, but less visually intrusive than the existing structure.
LINE	No change	No change	Installing a new upgrade line would result in additional vertical and horizontal structures.
COLOR	No change.	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X					X
	LINE				X				X			X	
	COLOR				X				X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __Yes __No (Explain on reverse side)
NA

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere — 5/9/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

The actions do not occur on BLM managed lands. From this point and viewing angle, the new upgraded structure transmission structures and the lines associated with the agency alternative TH-1 Option would be visible against the sky. Additional structures would be visible as viewers traveled along the trail from the access point in both directions. Because there are currently both steel monopole transmission structures and large lattice structures as well as horizontal and lines that the project would parallel, the apparent contrast with the surrounding landscape is weak to none.

Distance. The KOP is within 0.07 mile of segment TH1 Option.

Angle of Observation. The KOP is at a horizontal observational angle to segment TH1 Option.

Length of Time the Project Is In View. From the road portions of the upgrade would be in view for extended periods

Relative Size or Scale. The relative size of the structures would be larger than the existing transmission structures and other existing structures in the foreground of the landscape.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the paved road and the open landscape with low desert vegetation. There are distant mountains in the background. The proposed structures and conductors are to the east in the fore ground. The proposed structures that would be visible are larger, with greater conductor spans that would be visible against the sky and the darker backdrop of the mountains and would create moderate contrasts.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH1 Option would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **TH1-02**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat lands along river channel. Low rugged peaks visible to the south west.	Low lying shrubs and grasses interspersed with taller trees along the river channel and the path of the trail. Very patchy and irregular.	Flat paved concrete patio at trail access with tall brick arch structure the trail passes through. Several steel transmission structures including monopole and lattice structures are visible along the river channel as well tall vertical light posts.
LINE	Broad flat area along the curving, meandering line of the channel. Rolling and irregular peaks f to the south and southwest.	Shrubs and trees form irregular and patchy lines along the meandering wash. Trees along trail are tall and branched along the trail.	Paved trail in the immediate foreground is a curving line with a strong edge. Several types of transmission structures (monopole, h-frame, and lattice) and several transmission lines are visible going north to south following the channel and creating strong angles that clearly stand out against the sky.
COLOR	Flat, light grey, tans, and reds. Mountains in the background are dark browns and blacks.	Grasses along trail are tan and brown. Shrubs and trees are a several shades of green and brown.	Paved trail is a flat grey. The Transmission structures are grey steel and light brown wooden monopole. The transmission lines are dark to reflective from different angles in the midday sun.
TEX-TURE	The textures of the soils are medium grained. The mountains appear smooth at this distance and under the late day sun light.	Tree, shrubs, and grasses appear dense and coarse textured.	The paved trail appears very smooth. The transmission structures are very fine and uniform. The transmission lines are very smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Transmission structures would follow an existing transmission line including steel monopole and lattice structure parallel to the Santa Cruz river channel.
LINE	No change	No change	Installing a new line under alternative TH3 would result in additional vertical and horizontal structures.
COLOR	There would be lighter soils exposed in the foreground where areas are cleared for installation of new structures.	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X					X
	LINE				X				X			X	
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere — 5/9/2013
Revised by Steve Leslie, 2015

SECTION D. (Continued)

The actions do not occur on BLM managed lands. However, the Southline Transmission project repeats the basic elements of form, line, color, and texture of the existing conditions within the area. The project is located in the immediate foreground of the KOP which is the Santa Cruz River Bikeway with views of Agency Alternative TH-3b in both directions. At this distance and from this viewing angle, new transmission structures and the lines associated with the agency alternative TH-3 would be visible against the sky. Additional structures would be visible as viewers traveled along the trail from the access point in both directions. Because there are currently both steel monopole transmission structures and large lattice structures as well as horizontal and lines that the project would parallel, the apparent contrast with the surrounding landscape is weak to none.

Distance. The KOP is within 0.1 mile of segment TH3 Option C which crosses private land in this area.

Angle of Observation. The KOP is at a horizontal observational angle to segment TH3 Option C

Length of Time the Project Is In View. The would be limited views from the KOP, however, Segment TH3 Option C would potentially remain in view for extended periods as viewers travel along Santa Cruz River Trail parallel to the segment.

Relative Size or Scale. The relative size of the structures would be similar to the existing transmission structures. The replacement structures would be similar in form to some of the existing structures. Because of the relative size of the structures when compared with other existing structures there would be weak contrasts.

Season of Use. The vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the Santa Cruz River Channel interspersed with trees and small signs. There are mountains in the background. The proposed structures and conductors would be visible against the sky and against the darker backdrop of the mountains, and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH3 Option C would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **AN-12**	Range	
3. VRM Class **NA**	Section	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat lands along the dirt road. Medium to high profile rugged peaks visible in the background.	Medium to high profile shrubs, cactus, and grasses interspersed with taller trees	Unpaved access road. Existing transmission line in the background distance zone.
LINE	Flat, bare road in the immediate foreground, jagged lines created by mountains and coarse vegetation.	Shrubs and trees form irregular and but dense and coarse lines along the meandering unpaved road.	Unpaved road in the immediate foreground is a curving line with a strong edge. Existing transmission structures (monopole, h-frame) are, in part, visible against the skyline.
COLOR	Dominated by greens and browns. Mountains in the background are dark browns and blacks.	Vegetation along the unpaved road/trail ranges from vibrant to dark greens. Exposed soil is bare of vegetation and light tan and brown.	Unpaved road is light tan and brown. Existing transmission structures are browns and non-reflective grays.
TEX-TURE	The texture of the bare road is smooth to fine grained and the vegetation is coarse and jagged. The mountains that form the horizon line are also jagged and rough.	The exposed soil is light tans and browns and vegetation ranges from vibrant green to dull greens and browns. The backdrop mountains are dull grays.	The unpaved road is smooth and reveals tire tracks in multiple directions. The existing transmission lines are both lateral and horizontal thin lines noticeable in the distance.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change	Transmission structures would follow an existing transmission line including steel monopole within the background distance zone.
LINE	No change	No change	Installing a new line would result in additional vertical and horizontal structures. The line caused by the addition of the structure would be shrouded by vegetation.
COLOR	No change	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X					X
	LINE				X				X			X	
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No
(Explain on reverse side)
NA

3. Additional mitigating measures recommended
_X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere — 5/9/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

The actions do not occur on BLM managed lands. The project is located in the background distance zone of the KOP which is directly adjacent to the Anza Trail at the northern end of the project. From this distance and from this viewing angle, new transmission structures and the lines associated with the agency alternative would only partially be visible against the sky. Vegetative and topographic obstruction would not allow direct unadulterated views of the transmission line.

Distance. The KOP is located approximately 1.0 mile east of U3k.

Angle of Observation. The KOP is at a horizontal observational angle to segment

Length of Time the Project Is In View. From the road portions of the upgrade would be in view for extended periods

Relative Size or Scale. The relative size of the upgraded structures would be somewhat larger than the existing transmission structures and other existing structures in the foreground of the landscape.

Season of Use. There would be changes to the color and texture of the vegetation in the foreground across the seasons. When vegetation is sparser, more of the upgrade line structures would be visible.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the dirt road and the open landscape with low desert vegetation. There are distant jagged mountains in the background. The proposed structures and conductors are to the west in the fore ground. The upgrade is partially screened from The proposed structures that would be visible are larger, with greater conductor spans that would be visible primarily against the darker backdrop of the mountains resulting in weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment E would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 5/9/2013
District/ Field Office:
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **MA-02**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat lands with low to high profile rugged mountains in the backdrop.	Low lying shrubs and grasses interspersed with homogenous, flat agricultural fields.	Flat paved, roadway and shoulders dominate the foreground, with agricultural fields in the middleground, and the presence of several transmission line structures (monopole lines).
LINE	Broad, flat panoramic views with jagged mountain backdrop.	Grasses and agricultural land forms a flat, linear groundscape.	Paved roads and existing monopole structures form both horizontal and vertical lines within the landscape.
COLOR	Flat, light grey, tans, and greens. Mountains in the background are dark browns and blacks.	Grasses and agricultural lands are vibrant to dull greens, exposed dirt is browns and grays.	Paved road is a flat grey. The Transmission structures are brown wooden monopoles. The transmission lines are dark to reflective from different angles in the midday sun.
TEX-TURE	The textures of the soils are medium to fine grained. The mountains appear jagged.	Grasses, agriculture and naturally occurring shrubs appear low profile and even or soft.	The pavement/road appears smooth with a coarser gravel shoulder. Existing transmission line structures, traffic signs, and lateral poles appear peppered throughout the landscape.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change	Transmission structures would follow an existing transmission line including steel monopoles placed within the middleground distance zone.
LINE	No change	No change	Replacing the existing H frame would result in fewer lateral structures.
COLOR	No change	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X					X
	LINE				X				X		X		
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended
__X_Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere — 5/9/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

The actions do not occur on BLM managed lands. This KOP is located just west of the Marana Regional Airport at the intersection of W. Avra Valley Road and Sanders Road with views oriented to the south toward the proponent's preferred alignment and the existing Western line. This KOP was selected because it is along a well-travelled access road for local residents as well as visitors to the Saguaro NP. From this vantage, the upgraded line would be visible and largely unobstructed by topography or vegetation. The line would appear as a horizontal line with sporadically placed lateral monopoles. The horizon line formed by the high profile jagged mountains and the proposed transmission line would not obstruct views of the mountain backdrop, but would be placed within the middleground contributing to the existing visual congestion. Additionally, agricultural fields and human-made development (e.g., roads, other transmission lines, and street signs) dominate the landscape in this area.

Distance. The KOP is located approximately 0.2 mile east of U3k.

Angle of Observation. The KOP is at a horizontal observational angle to segment.

Length of Time the Project Is In View. From the road portions of the upgrade would be in view for extended periods

Relative Size or Scale. The relative size of the upgraded structures would be similar to existing structures in place near the KOP, but larger than the existing transmission structures and other existing structures in the foreground of the landscape.

Season of Use. There would be changes to the color and texture of the vegetation in the foreground across the seasons that would not affect the apparent visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the paved roads and the open landscape with low desert vegetation. There are distant jagged mountains in the background. The proposed structures and conductors are to the west in the fore ground. The proposed structures that would be visible are larger, with greater conductor spans that would be more visible against the sky than the existing structures resulting in moderate contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment U3k would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **MA-03**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat lands along the Avra Valley Road with jagged dominant mountain peaks in the background (which form the horizon line)	Varying low to high profile vegetation line the foreground.	Flat paved roadway, and some sporadic buildings and distance development is evident in the middleground and background
LINE	Lines range between straight (along development such as roads) to jagged and curvy along natural vegetation and topography.	Shrubs and trees form irregular and patchy lines along the roadway. Trees along trail are tall and branched along the road.	Paved road in the immediate foreground is a straight line with a strong edge.
COLOR	Flat, greens, light grey, tans, and reds. Mountains in the background are dark browns and blacks.	Bare soil is light brown, vegetation is pale green to vibrant green.	Paved road is dark grey/black with gravel/dirt shoulders ranging from grey/brown to light tans. Green vegetation dominates the foreground and middleground and dark grey/black mountain profiles dominate the horizon line and background. Atmospheric haze causes the mountains to appear dull and under clear conditions the mountains appear vibrant black/grey/brown.
TEX-TURE	The textures of the soils and pavement are fine to medium grained. The mountains appear smooth at this distance with atmospheric haze present.	Tree, shrubs, and grasses appear dense and coarse textured.	The paved road appears very smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change	Transmission structures would follow an existing transmission line including steel monopole structure which forms a horizontal line through the middleground with lateral (poles) placed regularly.
LINE	No change	No change	Installing a new line would result in additional vertical and horizontal structures.
COLOR	Horizontal lines of non-reflective cable in varying shades of grey.	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM			X				X			X		
	LINE			X				X			X		
	COLOR			X				X				X	
	TEXTURE			X				X				X	

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended __X_Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere — 5/9/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

The actions do not occur on BLM managed lands. This KOP is located just south of the Marana Regional Airport with views oriented to the south toward the proponent's preferred alignment and the existing Western line. This KOP was selected as the Marana Regional Airport is a relatively popular destination for local residents to view planes from the airport restaurant. From this vantage (located at the edge of W. Avra Valley Road) the upgraded line would be visible as a horizontal line bisecting slightly above the vegetation line and below the horizon line formed by the high profile jagged mountains to the south. The proposed transmission line would not obstruct views of aviation activities (as that is mostly oriented northward or 180 degrees away from the proposed line). Additionally, vegetation, development, and topography are all present and dominate the landscape views.

Distance. The KOP is located approximately 1.0 mile north of U3i.

Angle of Observation. The KOP is at a horizontal observational angle to segment.

Length of Time the Project Is In View. From the road portions of the upgrade would be in view for extended periods.

Relative Size or Scale. The relative size of the upgraded structures would larger than the existing transmission structures and other existing structures in the foreground of the landscape.

Season of Use. There would be changes to the color and texture of the vegetation in the foreground across the seasons that would not affect the apparent visual contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the paved roads and the open landscape with low desert vegetation. There are distant jagged mountains in the background. The proposed structures and conductors are to the west in the fore ground. The proposed structures that would be visible are larger, with greater conductor spans that would be more visible against the sky than the existing structures resulting in moderate contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment U3i would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: 5/9/2013 District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township_____	5. Location Sketch See map
2. Key Observation Point **SA-01**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Rugged, undulating landscape, views of jagged high relief mountains in the background/horizon line	Medium to high vegetation in the immediate foreground, background and seldom seen is barren (developed or mountains)	Urban development (City of Tucson) is visible in the middleground and background in the valley floor.
LINE	Distinct horizon line splits the valley floor from the mountainous background.	Shrubs and trees form irregular and patchy lines within the immediate foreground/foreground. Medium to tall cactus and woody desert vegetation dominates the foreground.	Urban development reveals sporadic vegetation (such as street trees, and landscaping) in the distance.
COLOR	Variety of earth tones, and range of greens, browns, and blacks dominate the vegetation in the foreground. The background mountains are faded grey and hazy or dull.	Grasses along trail are tan and brown. Shrubs, trees, and cacti are several shades of green and brown.	Urban development appears patchy shades of brown, tans, and dull grey.
TEX-TURE	The textures of the soils are coarse and harsh. The mountains appear smooth with jagged edges that form the horizon line at this distance and under the late day sun light.	Tree, shrubs, and grasses appear dense and coarse textured.	Urban development within the valley floor appears flat and 2-dimensional due to the distance and angle of view.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change	Transmission structures would follow an existing transmission line including steel monopole.
LINE	No change	No change	Installing a new line under alternative would result in additional vertical and horizontal structures.
COLOR	No change	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X					X
	LINE				X				X				X
	COLOR				X				X				X
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No
(Explain on reverse side)
NA

3. Additional mitigating measures recommended
_X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere — 5/9/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

Represents views of the proposed alignment to the north and northeast from use trails in Saguaro NP. At this distance, the proposed transmission line is barely detectible due to distance, atmospheric conditions (haze), and vegetative and topographic obstruction. From this superior (elevated) vantage looking downward towards the City, structures such as monopole transmission lines tend to blend into the visual congestion and become difficult to discern in middleground and background distances. Sensitive viewers (hikers) along this portion of the Saguaro Nation Park may be able to discern the transmission line structures but would be expecting views of development as the view is oriented towards the City. Therefore, weak or low visual contrast is expected from this KOP.

SIMULATED

Distance. The KOP is within 1.5 miles of segment U3i from Saguaro NP.

Angle of Observation. The KOP is at a superior observational angle to segment U3i.

Length of Time the Project Is In View. Because of the distance and existing development, the upgrade would be barely visible, although in view for extended periods.

Relative Size or Scale. The relative size of the replacement structures would be small, although taller than the existing transmission structures.

Season of Use. There would be no changes to scenery across the seasons that would affect visible contrast.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because the upgrade is located in an already developed area, there would be no visible contrast.

Spatial Relationships. The landscape in the park is open, sloping down towards to the development of Tucson with jagged mountains in the background, rectangular structures and trees are interspersed across the valley floor. The proposed replacement structures and conductors would be barely visible against the ground.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, visibility of the upgrade structures would be further reduced.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment U3i would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 5/9/2013
District/ Field Office:
Resource Area:
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **TH1-03**	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG: Elevated panoramic view, large downward sloping mountain hillside transitioning to alluvial valley floor MG: Valley floor rising to multiple pyramidal mountain formations BG: Large, undulating, jagged distant mountain ridgeline across center of view No water visible	FG: Smooth, uniform, low lying vegetative layer blanketing southern facing mountain slope, distinctive saguaros MG: Uniform low vegetation on valley floor; fine, gradational low lying vegetation on mountain forms BG: Swaths of vegetative forms on distant mountains	FG: Meandering trails; flat paved roadway; long transmission lines; blocky commercial structures at base of mountain form in center of view; domed blocky structure at peak of mountain form in right side of view MG: Distinctive linear paved roadway continuing into far MG; distinguishable blocky development in left side of view; blocky structures cushioned between mountain forms BG: None visible
LINE	FG: Smooth diagonal downward trending plane to flat horizontal valley floor MG: Flat valley floor rising sharply to multiple pyramidal mountain formations BG: Undulating, continuous mountain formations with pyramidal peaks No water visible	FG: Simple, continuous low lying vegetative layer; vertical saguaros MG: Directional, horizontal, gradational transition between valley floor and mountain forms BG: Patch-like swaths on distant mountains	FG: Vertical and horizontal transmission lines; curvilinear trails; continuous linear roadway MG: Broken horizontal line of development BG: None visible
COLOR	FG: Tans, browns MG: Tans, browns BG: Black and brown distant mountains No water visible	FG: Greens, light brown, tan MG: Dark green, light brown, tan BG: Browns, dark shades of gray	FG: Beige, whites, browns MG: Beige, whites, browns BG: None visible
TEX- TURE	FG: Smooth, continuous valley floor, clumped outcrop; Coarse, directional mountain, sloping to the south MG: Smooth valley floor; coarse, random pyramidal forms BG: Coarse, continuous, mountain peaks No water visible	FG: Smooth, continuous, directional vegetative plane; coarse saguaros MG: Stippled low lying vegetation on mountain forms BG: Fine and discontinuous	FG: Medium to fine textured transmission structures; fine, granular trails MG: Smooth roadway; medium to fine blocky buildings BG: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change
LINE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change
COLOR	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change
TEX-TURE	FG, MG, BG: no change	FG, MG, BG: no change	FG, MG, BG: no change

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X				X
	LINE				X				X				X
	COLOR				X				X				X
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No
(Explain on reverse side)
NA

3. Additional mitigating measures recommended
___Yes _X_No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere; Colin Agner — 10/27/2014
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

There is no visible change from this KOP.

Additional Mitigating Measures (See item 3)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point TH1-S10	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Tumamoc Hill is a prominent, flat topped landform to the south, with flat terrain surrounding the hill	Patchy low lying grass mixed with rounded shrubs and trees. Grasses and shrubs in the middle ground appear low and flat.	Flat paved road, and gravel road and shoulder. Simple vertical steel transmission structures and horizontal transmission lines. Vertical light poles interspersed with transmission structures. Boxy buildings of the commercial development to the west and south.
LINE	Tumamoc Hill is flat topped with sloping irregular flowing down into the surrounding flat lands.	Shrubs in the foreground form a jagged, irregular line. Vegetation further away is flat.	Paved road in the immediate foreground is a strong straight line. The transmission structures are vertical lines against the midday sky and surrounding landscape and the transmission lines are strong angular lines against the sky. Commercial buildings to the west are single storied, square and boxy.
COLOR	Surrounding lands are tans, grays, browns, reds,	Shrubs in the foreground are greens, grays, and yellows. The vegetation on Tumamoc Hill is beige and brown, with darker green vegetation towards the base of the hill.	Asphalt road is dark grey. Transmission structures are a dark wooden brown and the lines appear dark against the midday sky. The gravel roads and shoulders are grey. Buildings are tan, beige, and red.
TEXTURE	The textures of the soils are in the foreground are medium grained. Because of the distance, the rocky outcrops of Tumamoc Hill are fine grained.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured. Vegetation extending into the background appears smoother the texture.	The paved road appears very smooth. The gravel roads and shoulders are medium grained texture. The transmission structures are very fine and uniform. Buildings are smooth, fine textured.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change	Prominent, taller transmission structures would follow an existing single pole transmission line parallel to road.
LINE	No change	No change	Installing a new line under alternative TH1a would result in a bolder, more prominent vertical structure.
COLOR	There would be lighter soils exposed in the foreground where areas are cleared for installation of new structures.	No change	Steel tower structures, metallic wires would result in lighter, more reflective structures.
TEXTURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X			X	
	LINE				X				X			X	
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended
_X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, Pam Cecere — 5/9/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

The actions do not occur on BLM managed lands. The proposed upgrade and Agency Alternative TH-3b are located in the foreground of the KOP where it crosses the I-10. The view from the KOP is looking south toward Agency Alternative TH-3b, and along the proposed upgrade. TH-3b would be screened by existing buildings. At this distance, the new transmission structures and lines associated with the proposed upgrade would be visible with the open sky as the backdrop.

Distance. The KOP is within 0.2 mile of segment TH3b which crosses private land in this area.

Angle of Observation. The KOP is at a horizontal observational angle to segment TH3b.

Length of Time the Project Is In View. The would be limited views from the KOP, however, Segment TH3b would potentially remain in view for extended periods as viewers travel along Santa Cruz River Trail parallel to the segment.

Relative Size or Scale. The relative size of the structures would be similar to the existing transmission structures. The structures would be similar in form to some of the existing structures. Because of the relative size of the structures when compared with other existing structures there would be weak contrasts.

Season of Use. The area is developed and there would be no native vegetation recovery visible.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit. Because there are limited views of the segment from this KOP, these variations are not expected to change the apparent contrasts.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes paved roads, commercial development, and numerous utility structures and conductors interspersed with taller trees and small signs. The proposed structures and conductors would be partially screened from view by all the existing development and in places visible against the sky similar to the existing sequence of linear structures.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along the segment would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point TH3-S1	Range	
3. VRM Class NA	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Rolling terrain below Sentinel Peak to the East, and other low lying mountains to the west.	Low lying clumpy grass along the roadsides in the immediate foreground. Low to medium rounded shrubs interspersed with spiky perennial grasses, and taller angular trees are visible just past the road.	Urban development (City of Tucson) is visible in the middleground and background in the valley floor.
LINE	Low flat horizon line straight ahead of the alluvial fan coming off Sentinel Peak. Rounded but irregular peaks lie to the west.	Shrubs and trees form an irregular line visible below the transmission line. There is a straight line of vegetation that follows parallel to the road and transmission lines.	Urban development reveals sporadic vegetation (such as street trees, and landscaping) in the distance.
COLOR	Flat, light grey and tans in the immediate foreground. Fans, hills, and mountains are darker tans, browns, reds,	Grasses along shoulder are tan and brown. Shrubs and trees are a several shades of green and brown.	Urban development appears patchy shades of white, brown, tans, and dull grey.
TEX-TURE	The textures of the soils are smooth and fine grained. Because of the distance, the rocky outcrops of the surrounding hills and mountains in the middle ground and background are smooth.	Tree, shrubs, and grasses in the foreground appear sparse and coarse textured. Vegetation extending into the background appears smoother the texture.	Urban development within the valley floor appears flat and 2-dimensional due to the distance and angle of view.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Prominent, taller transmission structures would follow an existing single pole transmission line parallel to road.
LINE	No change	No change	Installing a new line under alternative TH3 would result in a bolder, more prominent vertical structure.
COLOR	No change	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES												2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side) NA 3. Additional mitigating measures recommended X___Yes __No (Explain on reverses side)
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	
ELEMENTS	FORM				X			X				X		
	LINE				X				X			X		Evaluator's Names / Date Steve Leslie, Pam Cecere 5/9/2013 Revised by Steve Leslie, 2/24/2015
	COLOR				X				X				X	
	TEXTURE				X				X				X	

SECTION D. (Continued)

The actions do not occur on BLM managed lands. The project is located in the foreground of the KOP. At this distance, two to three of the new transmission structures and lines associated with alternative TH3 would be clearly visible. Because there are currently transmission structures and lines that the project would parallel, the apparent contrast with the surrounding landscape is weak.

Distance. The KOP is within 0.25 miles of segment TH3 from Sentinel Peak.

Angle of Observation. The KOP is at a superior observational angle to segment TH3.

Length of Time the Project Is In View. Segment TH3 would be viewed for extended periods from Sentinel Peak.

Relative Size or Scale. The relative size of the replacement structures would be taller than the existing transmission structures.

Season of Use. There would be few changes to scenery across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Restoration of desert vegetation can take several years to complete. Although vegetation conditions in areas of disturbance are expected to change over several years as restoration takes place, because of the distance from the KOP, and the small scale of vegetation disturbance required, there would be no visible contrast.

Spatial Relationships. The landscape in the fore ground slopes down to the river channel and eh development of Tucson. The river channel, existing utility structures, and the highway all cross the view. The commercial and residential development fill in the valley floor with rectangular structures and trees are interspersed throughout. There are mountains in the background The proposed structures and conductors would be visible against the ground and would be similar to the existing sequence of linear structures.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment and installation of new structures along segment TH3 would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: District/ Field Office: Resource Area: Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point NPS-02	Range	
3. VRM Class **NA**	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Meandering channel and flat park area in the foreground. Mountains in the background.	Low lying shrubs and grasses interspersed with taller trees. Very patchy and irregular.	Flat paved trail with a square blocky metal fence along the edge. Strong lattice transmission structures within the channel and opposite the channel. Additional steel transmission structures visible to the north and south.
LINE	River channel curving line going to north to south. Irregular mountain range. Broad flat area along the trail.	Shrubs and trees form irregular and patchy lines.	Paved trail in the immediate foreground with metal blocky fence are strong horizontal, straight lines. The transmission structures and several transmission lines are visible going north to south, and east to west creating right angles that clearly stand out against the midday sky.
COLOR	Flat, light grey and tans in the immediate foreground. Mountains are darker tans, browns, and black,	Grasses along trail and throughout the park are tan and brown. Shrubs and trees are a several shades of green and brown.	Asphalt trail is light faded grey, fence is a flat beige color. Transmission structures are grey steel. The transmission lines are dart to reflective from different angles in the midday sun.
TEXTURE	The textures of the soils are medium to coarse grained. Because of the distance, the rocky outcrops of the surrounding hills and mountains in the middle ground and background are smooth.	Tree, shrubs, and grasses in the foreground appear dense and coarse textured. Vegetation in the channel is sparse and patchy.	The paved trail appears very smooth. The transmission structures are very fine and uniform. The transmission lines are very smooth.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	Increased patchiness would occur where vegetation is removed for installation of new transmission structures.	Transmission structures would follow an existing lattice transmission line parallel to the Santa Cruz river channel.
LINE	No change	No change	Installing a new line under alternative U3 would result in additional vertical and horizontal structures.
COLOR	There would be lighter soils exposed in the foreground where areas are cleared for installation of new structures.	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEXTURE	No change	No change	The new structures, structure base, and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X				X	
	LINE				X				X		X		
	COLOR			X					X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended _X_Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie, — 5/9/2013
Revised by Steve Leslie, 2/24/2015

SECTION D. (Continued)

The actions do not occur on BLM managed lands. The project is located in the immediate foreground of the KOP which is the Santa Cruz River Park along "The Loop" including a paved trail. Views from the KOP are directly along agency alternative U3 both directions. At this distance and form this viewing angle, new transmission structures and lines associated with the agency alternative U3would be clearly visible against the sky. In addition, the large concrete base of the proposed towers would be clearly visible. They would be visible from the trail, and for the length of the alternative along the paved trail.

Distance. The KOP is located approximately 0.5 mile north of U3c.

Angle of Observation. The KOP is at a horizontal observational angle to segment.

Length of Time the Project Is In View. From the trail, the upgrade would be in view for extended periods.

Relative Size or Scale. The relative size of the replacement structures and the necessary bases across the channel would be larger than the existing transmission structures. Because of the relative size of the structures, and concrete bases required when compared with other existing structures there would be moderate contrasts.

Season of Use. The vegetation would vary in color and texture across the seasons.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There would be a greater contrast where structures are back lit.

Recovery Time. Because of existing disturbance, some available screening, and the small scale of vegetation disturbance required for the upgrade through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the Santa Cruz River Channel interspersed with trees and small signs. There are mountains in the background. The proposed structures and conductors would be visible against the sky. The proposed structures are larger, with greater conductor spans that would be more visible against the sky than the existing structures resulting in moderate contrasts.

Atmospheric Conditions. Because of the proximity of the segment, changes in atmospheric conditions are not expected to contribute to changes in contrast. However, during times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along segment TH3b would attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

- The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.
- Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.
- All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: May 18, 2015
District/ Field Office: NA
Resource Area: NA
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **WB-01 (Zarpara Vineyard Tasting Room)**	Range	
3. VRM Class NA	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat lands with low to high profile rugged mountains in the backdrop.	Low lying shrubs and grasses. Vineyard present in the foreground. Uniform rows of grape vines extending away from the observation point.	Flat roadway and shoulders dominate the foreground, with vineyards throughout the view, There are several distribution line structures (monopole lines), and ranch buildings throughout the view.
LINE	Broad, flat panoramic views with jagged mountain backdrop.	Vineyards form a uniform, linear structure.	The road, support structures, and existing monopole structures form both horizontal and vertical lines within the landscape.
COLOR	Flat, light grey, tans, and greens. Mountains in the background are dark browns and blacks.	Vineyards are vibrant green, exposed dirt is tan, brown, and gray.	Gravel road is a flat grey. The distribution structures are brown wooden monopoles. The buildings are dark to a reflective white from different angles in the midday sun.
TEX-TURE	The textures of the soils are medium to fine grained. The mountains appear jagged.	Grasses, vineyards, and naturally occurring shrubs appear low profile and even or soft.	The gravel road appears smooth. Existing distribution structures, fence poles, vine support structures, and buildings appear peppered throughout the landscape.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change	Transmission structures would follow an existing distribution line including wooden monopole approximately 2 miles away.
LINE	No change	No change	Installing a new line would result in additional vertical and horizontal structures. The line caused by the addition of the structures would be the tallest vertical lines on the Willcox Bench, but would be viewed partially against the mountainous backdrop.
COLOR	No change	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				x				x				x
	LINE				x				x			x	
	COLOR				x				x			x	
	TEXTURE				x				x				x

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names — Date
Steve Leslie 5/18/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. However, the Southline Transmission project repeats the basic elements of form, line, color, and texture of the existing conditions within the area. The route variation is located approximately 2 miles from the KOP which is just outside the Winery Tasting Room of the Zarpara Winery. From this distance and from this viewing angle, new transmission structures and the lines associated with the route variation would only partially be visible against the sky. The low vegetation and open landscape would allow direct views of the transmission line. Because there are currently distribution line structures and the apparent contrast with the surrounding landscape is weak to none.

Distance. Two miles from the observation point.

Angle of Observation. The KOP is at a horizontal to inferior observational angle to the route variation

Length of Time the Project Is In View. From the KOP, the route variation would be in view for extended periods

Relative Size or Scale. The relative size of the structures would appear somewhat larger than the existing distribution structures and other existing structures of the landscape.

Season of Use. There would be changes to the color and texture of the vegetation in the foreground across the season, because of the height of the vegetation, there would be affect to the visibility of the route variation structure.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There may be greater visible contrasts associated with different lighting conditions.

Recovery Time. Because of the distance to the route variation, existing vegetation, and the small scale of vegetation disturbance required for the structures through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes the dirt road and the open landscape with the rows of grape vines extending away from the observation point. There are distant jagged mountains in the background. The proposed structures and conductors are to the east in the fore ground. The proposed structures that would be visible are larger, with greater conductor spans that would be visible primarily against the darker backdrop of the mountains resulting in weak contrasts.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along the route variations may attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.

Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: May 18, 2015
District/ Field Office: NA
Resource Area: NA
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **WB-02 (Pillsbury Vineyard Tasting Room)**	Range	
3. VRM Class NA	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat lands with low to high profile rugged mountains in the backdrop.	Low lying shrubs and grasses mixed with taller fruit trees and pine trees. Small grape vines are planted in the foreground. Uniform shrubs extend away from the observation point.	There is one existing distribution line structure (monopole lines), and fences throughout the view.
LINE	Broad, flat panoramic views with jagged mountain backdrop.	Bushy shrubs and grasses.	The fence structures and existing monopole structure and conductors form both horizontal and vertical lines within the landscape.
COLOR	Flat, light tan soils. Mountains in the background are dark browns and blacks.	Vegetation is a vibrant green, exposed dirt is tan, brown, and gray.	The distribution structures are brown wooden monopoles.
TEX-TURE	The textures of the soils are medium to fine grained. The mountains appear jagged.	Grasses, trees, and naturally occurring shrubs appear medium grained.	Existing distribution structure, fence poles, nd winery storage containers are smooth and appear throughout the landscape.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change	Transmission structures would follow an existing distribution line including wooden monopole approximately 2 miles away.
LINE	No change	No change	Installing a new line would result in additional vertical and horizontal structures. The line caused by the addition of the structures would be the tallest vertical lines on the Willcox Bench, but would be viewed partially against the mountainous backdrop.
COLOR	No change	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				x				x				x
	LINE				x				x			x	
	COLOR				x				x			x	
	TEXTURE				x				x				x

2. Does project design meet visual resource management objectives? __Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names Date
Steve Leslie 5/18/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. However, the Southline Transmission project repeats the basic elements of form, line, color, and texture of the existing conditions within the area. The route variation is located approximately one mile from the KOP which is just outside the Winery Testing Room of the Pillsbury Winery. From this distance and from this viewing angle, new transmission structures and the lines associated with the route variation would be visible against the sky. The low vegetation and open landscape would allow direct views of the transmission line. Because there are currently distribution line structures much closer to the observation point, the apparent contrast with the surrounding landscape is weak to none.

Distance. One mile from the observation point.

Angle of Observation. The KOP is at a horizontal to slightly inferior observational angle to the route variation

Length of Time the Project Is In View. From the KOP, the route variation would be in view for extended periods

Relative Size or Scale. The relative size of the structures would appear similar to the existing distribution structures that are closer to the observation point.

Season of Use. There would be changes to the color and texture of the vegetation in the foreground across the seasons. When vegetation is sparser, more of the upgrade line structures would be visible.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There may be greater visible contrasts associated with different lighting conditions.

Recovery Time. Because of the distance to the route variation, existing vegetation, and the small scale of vegetation disturbance required for the structures through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes a number of fruit trees, shade trees and shrubs. There are distant jagged mountains in the background. The proposed structures and conductors are to the east in the fore ground. The proposed structures that would be visible are larger, with greater conductor spans that would be visible primarily against the sky.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along the route variations may attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

•The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.

•Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

•All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: May 18, 2015
District/ Field Office: NA
Resource Area: NA
Activity (program): Transmission

SECTION A. PROJECT INFORMATION

1. Project Name **Southline Transmission Project**	4. Location Township____	5. Location Sketch See map
2. Key Observation Point **WB-03 (Narita Property)**	Range	
3. VRM Class NA	Section_____	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat lands with low to high profile rugged mountains in the backdrop.	Low lying shrubs and grasses mixed with taller pine trees. Variable hrubs extend away from the observation point.	There are existing distribution line structures, wire fences and gates throughout the view.
LINE	Broad, flat panoramic views with jagged mountain backdrop.	Bushy trees, shrubs, and grasses.	The fence structures and existing monopole structure and conductors form both horizontal and vertical lines within the landscape.
COLOR	Flat, light tan soils. Mountains in the background are dark browns.	Vegetation is a dull green, exposed dirt is tan, brown, and gray.	The distribution structures are brown wooden monopoles.
TEX-TURE	The textures of the soils are medium to fine grained. The mountains appear jagged.	Grasses, trees, and naturally occurring shrubs appear medium grained.	Existing distribution structures and fence structures are smooth and appear throughout the landscape.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	No change	Transmission structures would follow an existing distribution line including wooden monopole less than ¼ mile away.
LINE	No change	No change	Installing a new line would result in additional vertical and horizontal structures. The line caused by the addition of the structures would be the tallest vertical lines visible and would be viewed against the sky.
COLOR	No change	No change	Steel tower structures, metallic wires would repeat the colors of existing structures and lines on the landscape.
TEX-TURE	No change	No change	The new structures and wire would be smooth and uniform in texture.

SECTION D. CONTRAST RATING __SHORT TERM __LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X				X				X
	LINE				X				X		X		
	COLOR				X				X			X	
	TEXTURE				X				X				X

2. Does project design meet visual resource management objectives? __ Yes ___No (Explain on reverse side)
NA

3. Additional mitigating measures recommended _X__Yes __No (Explain on reverses side)

Evaluator's Names Date
Steve Leslie 5/18/2015

SECTION D. (Continued)

Comments from item 2.

The actions do not occur on BLM managed lands. However, the Southline Transmission project repeats the basic elements of form, line, color, and texture of the existing conditions within the area. The route variation is located less than ¼ mile from the KOP which is in the backyard of the Narita private property parcel. From this distance and from this viewing angle, new transmission structures and the lines associated with the route variation would be the tallest visible structures, and would be clearly visible against the sky. The low vegetation and open landscape would allow direct views of the transmission line.

Distance. Less than ¼ mile from the observation point.

Angle of Observation. The KOP is at a horizontal observational angle to the route variation

Length of Time the Project Is In View. From the KOP, the route variation would be in view continuously by the property resident.

Relative Size or Scale. The relative size of the structures would be much larger when compared with the existing distribution structures.

Season of Use. There would be changes to the color and texture of the vegetation in the foreground across the seasons. When vegetation is sparser, more of the upgrade line structures would be visible.

Light Conditions. Because of the open landscape, natural light conditions will vary across the day as well as across different times of the year. There may be greater visible contrasts associated with different lighting conditions.

Recovery Time. Because of the existing vegetation, and the small scale of vegetation disturbance required for the structures through this area, there would be no visible contrast during recovery.

Spatial Relationships. The landscape in the fore ground includes a number of shade trees and shrubs. There are distant jagged mountains in the background. The proposed structures and conductors are to the east and extending north in the fore ground. The proposed structures that would be visible are larger, with greater conductor spans that would be visible primarily against the sky.

Atmospheric Conditions. During times of cloudiness, haze, and increased dust in the area, there may be reduced visibility of the upgrade structures as they are further from the KOP.

Motion. There is limited motion within the landscape. In the short term, motion associated with construction equipment along the route variations may attract more attention to the project. During operation, the structures would be static.

Additional Mitigating Measures (See item 3)

The following measures are recommended to reduce the visual impact of the proposed transmission line.

The project should incorporate non-specular conductors into their design to decrease reflectivity and visibility of the project features.

Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated BLM Environmental Color Chart "Shadow Gray", unless otherwise directed by authorizing officer based on a field evaluation of color choices that will demonstrate better measureable performance over Shadow Gray.

EXHIBIT B-2 – Final Scoping Report[2]

[2] A hard copy of the Final Scoping Report can be found at pages B-13.1 – B-13.35 in the original Application filed with the Siting Committee and an electronic copy is provided at Exhibit B-2 on the DVD attached to the bound copy of the Application.