CHAPTER 3 - AFFECTED ENVIRONMENT and ENVIRONMENTAL CONSEQUENCES

This chapter presents the relevant existing environmental conditions in the project area potentially affected by the Proposed Action and describes the potential environmental consequences of the Proposed Action. The affected environment and environmental consequences are described for each of the resource topics considered relevant for this Project. Also, the environmental consequences are summarized for the No Action Alternative and the Cumulative Effects are described for the Proposed Action. The affected environment section provides the baseline for comparison of potential impacts described in the environmental consequences section for each resource topic.

The resources associated with the natural, human, and cultural environment were studied and include the following categories:

- Biological Resources
- Earth and Water Resources
- Air Quality and Noise
- Cultural Resources
- Land Use and Recreation Resources
- Visual Resources
- Socioeconomics
- Environmental Justice

The following resources do not exist within the study area and therefore were not considered for further analysis.

- Wild and Scenic Rivers
- Wilderness Areas or Wilderness Study Areas (WSAs)
- Prime or Unique Farmlands and Farmlands of Statewide Importance

The affected environment for the proposed route is often referred to as the “study area”. The study area includes a 2-mile-wide corridor (1 mile on each side of the reference centerline) for land use and visual considerations, and a narrower corridor for cultural and biological considerations.

The environmental consequences section for each resource topic describes the potential effects or impacts on the natural, human, and cultural environment that result from implementing the Proposed Action. Potential impacts are described in terms of duration (short term or long term) and intensity. The thresholds of change for the intensity of a potential impact are defined as follows:

- Negligible – The impact is the lowest level of detection.
- Minor – The impact is slight, but detectable.
- Moderate – The impact is readily apparent.
- Major – The impact is either severe and adverse or exceptionally beneficial.

BIOLOGICAL RESOURCES

Affected Environment

The project corridor is located in the western foothills of the Wasatch Front, along the boundary of the Central Basin and Range and the Wasatch and the Uinta Mountains Level III ecoregions (EPA 2002). Topography in the project area consists of moderately steep slopes and benches with westerly aspects, and the corridor crosses several small drainages. Elevations in the project corridor generally range between 4,500 feet and 5,000 feet above mean sea level (msl).

The Southwest Regional Gap Analysis Project (SWREGAP) identifies seven land cover types along the portion of the transmission line that would cross the BFWMA (Lowry et al. 2005). The primary vegetative communities within the project area include invasive perennial grassland, inter-mountain basins big sagebrush shrubland, inter-mountain basins montane sagebrush steppe, and Colorado Plateau pinyon-juniper woodland.

While the vegetative communities in the project area represent habitat for a variety of wildlife species, the quality of wildlife habitat in this area has been reduced by a number of factors including wildfire, seeding with non-native vegetation, off-road vehicle activity, adjacent residential development, and nearby sand and gravel mining operations.

The quality of native sagebrush and pinyon-juniper habitats in the area has also been somewhat reduced by the factors previously noted. This is supported by results from the UDWR range trend study program, which has three study sites in proximity to the proposed project area (UDWR 2008). These study sites include: Brigham Face (site 3-19), Mathias Canyon (site 3-5), and Perry Basin (site 3-13). All three sites were suspended from active monitoring in 2001, due to the absence of significant wildlife use, which UDWR attributed to off-road vehicle activity and adjacent residential development (UDWR 2008*a*), a general absence of suitable forage (UDWR 2008*b*), and wildfires (UDWR 2008*c*).

Special Status Species

A total of 31 special status species have the potential to occur in Box Elder County, Utah (Table 3-1). These include four species that are federally listed or candidates for federal listing pursuant to the Endangered Species Act (USFWS 2008), and 31 species that are classified as sensitive by the State of Utah (UDWR 2008*d*). All four federally listed and candidate species are also classified as sensitive by Utah. Table 3-1 identifies whether suitable habitat is present within the project area for each species, based upon species-specific habitat requirements; likelihood of occurrence; and known species distribution (UNHP 2008).

The project area does not contain suitable habitat for most of the special status species (Table 3-1). Because of the absence of suitable habitat, none of the four federally listed or candidate species has the potential to occur in the project study area. The absence of perennial streams or surface waters along the route precludes the occurrence of any of the fish species listed in Table 3-1. Although there is no suitable breeding or foraging habitat for most of the special status bird species, transient individuals may occasionally pass through the project area.

Six state-sensitive species are likely to occur in habitats within the project study area (Table 3-1). These include the burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*), kit

fox (*Vulpes macrotis*), short-eared owl (*Asio flammeus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and western toad (*Bufo boreas*). Suitable habitat exists for the burrowing owl, short-eared owl, and western toad along the transmission line route and these species may occur in the area. Also, the area contains potential nesting and foraging habitat for the ferruginous hawk. Finally, although there are no known roosting habitats or hibernacula in the project area, it does contain potential foraging habitat for the Townsend's big-eared bat.

Environmental Consequences

The Proposed Action has been designed to minimize habitat loss and potential fragmentation effects by paralleling the existing 138kV transmission line (see Figure 2), utilizing existing access roads, and maximizing overland travel to the extent practicable.

Potential adverse effects on wildlife associated with the Project include temporary displacement during construction, habitat loss and fragmentation, introduction and spread of noxious and invasive plants, and mortality of individual animals.

The temporary increase in human activity and noise levels associated with construction could result in the displacement of individual animals that occur in the vicinity of the proposed project. Construction-related displacement would be a short-term effect since activity and noise levels would return to normal upon the completion of construction. Seasonal restrictions on construction activities would be implemented, as necessary, to minimize potential adverse effects to mule deer on winter range. No construction activities would be permitted from January 1 – mid-April unless specifically authorized by UDWR. Construction-related displacement would represent a minor impact.

Construction of the Proposed Action would result in the loss and fragmentation of habitat as a result of vegetation clearing and ground disturbance in work areas, at structure locations, and along access roads. The Proposed Action primarily crosses invasive perennial grassland, inter-mountain basins big sagebrush shrubland, inter-mountain basins, montane sagebrush steppe, and Colorado Plateau pinyon-juniper woodland (Table 3-2). As previously noted, these communities on the BFWMA do not provide high-quality habitat due to the effects of wildfire and establishment of non-native vegetation, off-road vehicle activity, and adjacent residential development and mining operations. These habitats are not sensitive or unique. The proposed route would also cross approximately 0.04 mile of Rocky Mountain lower montane riparian woodland and shrubland, which is considered a sensitive habitat in Utah. Potential adverse impacts to riparian habitats would be minimized through project design measures. Specifically, the transmission line would span the riparian area and no structures would be placed within this vegetative community. New access roads would also be designed to avoid disturbance of riparian habitats and the line would be designed to minimize clearing of riparian vegetation. The loss of habitat associated with proposed project would represent a minor, long-term effect upon local plant communities and wildlife populations.

TABLE 3-1
SPECIAL STATUS SPECIES IN BOX ELDER COUNTY

Common Name	Scientific Name	Status[1]	Suitable Habitat in Project Corridor	Species Occurrence in Project Area
Fat-Whorled Pondsnail	*Stagnicola bonnevillensis*	FC, S	Absent	Does not occur
June Sucker	*Chasmistes liorus*	FE, S	Absent	Does not occur
Lahontan Cutthroat Trout	*Oncorhynchus clarki hensawi*	FT, S	Absent	Does not occur
Yellow-Billed Cuckoo	*Coccyzus americanus*	FC, S	Absent	Does not occur
American White Pelican	*Pelecanus erythrorhynchos*	S	Absent	Transient individuals may occur
Bald Eagle	*Haliaeetus leucocephalus*	S	Absent	Transient individuals may occur
Bluehead Sucker	*Catostomus discobolus*	S	Absent	Does not occur
Bobolink	*Dolichonyx oryzivorus*	S	Absent	Transient individuals may occur
Bonneville Cutthroat Trout	*Oncorhynchus clarkii utah*	S	Absent	Does not occur
Burrowing Owl	*Athene cunicularia*	S	Present	May occur
California Floater	*Anodonta californiensis*	S	Absent	Does not occur
Deseret Mountainsnail	*Oreohelix peripherica*	S	Absent	Does not occur
Ferruginous Hawk	*Buteo regalis*	S	Present	Likely to forage and nest in vicinity
Grasshopper Sparrow	*Ammodramus savannarum*	S	Absent	Transient individuals may occur
Gray Wolf	*Canis lupus*	S	Absent	Extirpated; Does not occur
Greater Sage-Grouse	*Centrocercus urophasianus*	S	Absent	Does not occur
Kit Fox	*Vulpes macrotis*	S	Present	Not likely to occur
Least Chub	*Iotichthys phlegethontis*	S	Absent	Does not occur
Lewis's Woodpecker	*Melanerpes lewis*	S	Absent	Transient individuals may occur
Long-Billed Curlew	*Numenius americanus*	S	Absent	Transient individuals may occur
Lyrate Mountainsnail	*Oreohelix haydeni*	S	Absent	Does not occur
Northern Goshawk	*Accipiter gentilis*	S	Absent	Does not occur
Northwest Bonneville Pyrg	*Pyrgulopsis variegata*	S	Absent	Does not occur
Pygmy Rabbit	*Brachylagus idahoensis*	S	Absent	Does not occur
Sharp-Tailed Grouse	*Tympanuchus phasianellus*	S	Absent	Does not occur
Short-Eared Owl	*Asio flammeus*	S	Present	May occur
Townsend's Big-Eared Bat	*Corynorhinus townsendii*	S	Present	Likely to forage in project area
Utah Physa	*Physella utahensis*	S	Absent	Does not occur
Western Pearlshell	*Margaritifera falcata*	S	Absent	Does not occur
Western Toad	*Bufo boreas*	S	Present	May occur
Yellowstone Cutthroat Trout	*Oncorhynchus clarkii bouvieri*	S	Absent	Does not occur

[1] FC= Federal Candidate; FE= Federal Endangered; FT= Federal Threatened; S= State Sensitive

TABLE 3-2 VEGETATIVE COMMUNITIES CROSSED ON THE BFWMA	
SWREGAP Landcover Category	**Linear Miles Crossed**
Invasive Perennial Grassland	0.6
Inter-Mountain Basins Big Sagebrush Shrubland	0.4
Inter-Mountain Basins Montane Sagebrush Steppe	0.4
Colorado Plateau Pinyon-Juniper Woodland	0.3
Rocky Mountain Gambel Oak-Mixed Montane Shrubland	0.0
Rocky Mountain Lower Montane Riparian Woodland and Shrubland	0.04
Agriculture	0.02
TOTAL	**1.8**

The Proposed Action could also affect wildlife habitat through the introduction and spread of noxious and invasive plant species. A Weed Mitigation Plan would be developed and implemented to minimize the potential for introducing and spreading noxious and invasive plants during project construction. Construction-related impacts would be a short-term effect since activity would return to normal upon the completion of construction. These impacts would be minor.

The Proposed Action could result in the mortality of individual animals. Species with limited mobility or that occupy burrows within construction areas could be crushed during clearing and grading activities. This threat of mortality would be short-term (limited to the duration of construction) and would not be significant given the ability of most species to avoid vehicles and equipment. These impacts would be minor.

The transmission line (conductors and poles) represents a potential long-term mortality threat to birds, due to potential for collisions. While birds do occasionally collide with transmission lines and poles, research indicates that the risk of collision is largely related to the location of the line relative to bird concentration areas (Avian Power Line Interaction Committee [APLIC] and USFWS 2005). Given the presence of an existing adjacent transmission line and the absence of any notable features that would concentrate bird use in the project corridor, the Proposed Action would not be expected to result in significant levels of avian mortality. In order to further reduce the potential for avian collisions, markers (i.e., diverters or balls) may be installed on the transmission line, as directed by UDWR. These impacts would be moderate.

Concern over raptor electrocutions has resulted in the development of “raptor-safe” or “avian-safe” design guidelines for new transmission lines (APLIC 1996; APLIC and USFWS 2005). Research indicates that most avian electrocutions occur on low-voltage transmission lines (4kV to 69kV) due to the small separation (<60 inches) between conductors, a distance which can be bridged by large birds (APLIC and USFWS 2005). Raptor-safe design standards include a minimum vertical separation of 60 inches between conductors. The proposed 345kV transmission line design would include a minimum vertical separation of 108 inches between conductors, thereby eliminating the potential for avian electrocutions.

A draft Biological Assessment (BA) has been prepared to evaluate potential effects of the proposed project on federally listed species (EPG 2008) (See Appendix B). RMP will also conduct surveys for special status wildlife species prior to the initiation of construction activities if required by UDWR. The results of these surveys would be integrated into the project design in

order to avoid important resources (i.e., raptor nests) and minimize potential adverse impacts to wildlife and habitats on the BFWMA.

EARTH AND WATER RESOURCES

Geology and Soils

Affected Environment

The Proposed Action is part of the Basin and Range Province of the Southwestern U.S. (Chronic 1990). The project traverses the Wasatch Front, particularly areas of upper Pleistocene lacustrine, alluvial, and marsh deposits (PSI 2008), which are remnants of the ancient shoreline of Lake Bonneville. In particular, the alluvial deposits in this area are characterized by sand and gravels, including those of the Kilborn gravelly sandy loam series (USDA 2008), and lacustrine deposits characterized by clay, sand, and silt (PSI 2008). In addition, the proposed project is located near the Wasatch fault, a seismically active fault, characterized by Quaternary period faults that either parallel or run close to the proposed project (PSI 2008).

Environmental Consequences

Impacts to earth resources for the Proposed Action are generally related to soils and may include an increase in soil erosion, compaction, and mixing of soil horizons, which would temporarily reduce soil productivity and restoration potential. With the application of project BMPs, compaction and mixing of soil horizons and impacts to soils are expected to be minimal. Other mitigation measures would include using existing access roads where possible, avoiding earthwork when soils are too wet or dry, stockpiling topsoil on-site, and restoring and retaining vegetation to the extent practicable. It is expected that increases in erosion potential would be minimal and short term.

Floodplains, Wetlands and Municipal Watersheds

Affected Environment

The Proposed Action does not cross wetlands within the BFWMA according to the National Wetlands Inventory (USFWS 2008) and a wetland delineation survey prepared for the Project (Frontier Corporation USA 2009). However, some ephemeral drainages containing riparian wetland habitats in defined channels and some isolated springs are known to occur in the BFWMA. The project area consists mostly of dry uplands located among the shallow rolling hills and benches, or wave cut terraces, that formed along the ancient Lake Bonneville shoreline. In addition, the project does not cross floodplains designated by the Federal Emergency Management Agency (FEMA). Portions of the BFWMA serve as municipal watershed lands for Perry City and Brigham City and provide water recharge and water source functions for the communities. The project crosses the lower portion of the municipal watersheds and water sources and springs are primarily located above the elevation of the Proposed Action.

Environmental Consequences

The Proposed Action does not cross federally designated wetlands on the BFWMA (USFWS 2008) but would likely cross very small areas of ephemeral drainages containing riparian habitat (Table 3-2). Structures would be located to avoid impacting any riparian areas and conductors would span these areas. Access roads would be located to avoid riparian areas to the extent feasible. However, if access roads could not be located to avoid riparian areas, the mitigation measures identified in Chapter 2 for road crossings of drainages would be applied to minimize impacts to these areas. Also, mitigation measures identified in Chapter 2 (Table 2-4) would be applied to minimize any impacts to wetlands during construction. Therefore, impacts to wetlands would be minor to negligible.

Water sources and springs are primarily located above the elevation of the proposed project and are unlikely to be affected by the Proposed Action. Structures and access roads would be located and constructed to avoid impacts to water sources and springs. Therefore, the Proposed Action would not adversely affect the watersheds and municipal water sources and impacts would be minor to negligible. In addition, the project will not have any impact on floodplains because it does not cross FEMA-designated floodplains.

AIR QUALITY AND NOISE

Affected Environment

The Proposed Action is located in Box Elder County, Utah, which is an attainment area for National Ambient Air Quality Standards (NAAQS) for all pollutants (U.S. Government Printing Office [USGP] 2008).

Ambient noise along the proposed corridor is minimal, with intermittent noise from passing vehicles on State Route 89, nearby residential neighborhoods, and Geneva Rock gravel mining operations.

Environmental Consequences

Construction of the transmission line would cause a short-term minimal increase in fugitive dust. Also, ambient levels of nitrogen oxides, hydrocarbons, and carbon monoxide near the construction zone would be temporarily increased due to emissions from heavy construction equipment. Emissions would be managed to comply with applicable federal, state, and local requirements. These impacts would be minor and short term. There would be no measurable air emissions associated with the operation of the line.

Historical noise measurements along transmission corridors in similar settings have shown ambient audible noise levels in the range of 43 to 52 decibels, A-weighted (dBA) with average value of 50 dBA. The line noise would normally be inaudible at the edge of the right-of-way during fair weather. Considering the relatively few hours of audible noise producing weather and the location of the line with respect to neighboring land uses, no major audible noise impacts are expected.

CULTURAL RESOURCES

Affected Environment

Regulatory Setting

The State Historic Preservation Officer (SHPO) administers state and federally mandated historic preservation programs. The following are Utah laws governing the treatment of cultural resources:

- Section 9-8-404 of the Utah Annotated Code
- Historic District Act
- CLG provision of the National Historic Preservation Act

Section 9-8-404 of the Utah Code Annotated requires state agencies to "take into account" how their activities will affect historic properties. Activities include construction, rehabilitation, demolition, licenses, permits, loan guarantees, transfer of state property, etc. The state agency is required to consult with the SHPO on its determinations of eligibility and effect. In this case, the UDWR would be required to consult with the SHPO because a portion of the proposed project involves UDWR's granting of a right-of-way easement.

Methodology

EPG, Inc. conducted a Class I Cultural Resource literature review for the entire Project, including the portion proposed through the BFWMA. This section documents the results of that review for the Project. The literature review involved an examination of records maintained at the Archaeological Records Archives in the Utah Division of State History in Salt Lake City, Utah, as well as the following online databases and maps:

- National Park Service's National Register of Historic Places (http://www.cr.nps.gov/nr/index.htm)
- Division of History/Utah State Historical Society (http://history.utah.gov/)
- 7.5-minute United States Geological Survey (USGS) Quadrangles

The goal of the review was to identify if any sites listed on the National Register of Historic Places (NRHP), Utah Register of Historic Places (URHP), historic monuments and markers, historic cemeteries, or listed historic trails were located within the project area.

The sites identified within the study area were plotted on 1:24,000 scale USGS topographic maps, and site information concerning site type, location, size, and original recorder was tabulated. Site locations were then digitized and entered into the project GIS database.

The records review, in support of the Project, was conducted on July 16, 2007 by EPG, Inc. at the Archaeological Records Archives in the Utah Division of State History in Salt Lake City, Utah.

A Class III Cultural Resource Inventory was conducted for the project segments located within the BFWMA (see Appendix C). The field survey was conducted on November 13, 2008 by EPG,

Inc. Following the field survey, additional research was conducted and data collected and analyzed.

Results

The Class I Cultural Resource literature review did not identify any previously recorded cultural resources located within the BFWMA-related project area. Also, no cemeteries, historical monuments, markers, landmarks, or sites listed on either the NRHP or the URHP were identified.

The Class III Cultural Resource Inventory field survey resulted in the identification of three cultural properties located within the proposed BFWMA right-of-way. These properties include a 1930s canal (42BO1685), a 1920s flood control feature (42BO1686), and a ca. 1950s trash scatter (42BO1687). The Pearson Canyon Flood Control Feature and the Ogden-Brigham Canal are recommended eligible to the NRHP, based upon age and integrity among other criteria of the NRHP. The results of the Class III Cultural Resource Inventory were documented and submitted to UDWR and SHPO for review (Weymouth and Huffman 2008).

Environmental Consequences

The Class I Cultural Resource literature review did not identify any previously recorded cultural resources located within the BFWMA project area. Also, no cemeteries, historical monuments, markers, landmarks, or sites listed on either the NRHP or the URHP were identified. Therefore, impacts to previously recorded cultural resources by the Proposed Action would be negligible.

With regard to the two cultural properties identified within the proposed BFWMA right-of-way during the Class III survey and recommended as eligible to NRHP, the Project will be designed to avoid these properties. Structures, access roads (both temporary and permanent), and areas that would be disturbed during construction of the project will be located to avoid these eligible properties. Spanning of the transmission conductors above the eligible sites would likely provide adequate avoidance and provide for a finding of no significant effect to the cultural properties. Any further mitigation measures would need to be determined in consultation with the SHPO and UDWR. If previously unknown cultural resources are discovered during construction, the construction contractor will follow previously identified standard practices and protocols for reporting, documenting, and recording cultural resource discoveries. Therefore, because impacts to previously identified cultural resources will be avoided and any discoveries of cultural resources during construction would be handled appropriately, impacts to cultural resources would be negligible.

LAND USE AND RECREATION RESOURCES

Affected Environment

Land uses adjacent to and outside of the BFWMA in the vicinity of the Proposed Action include vacant/undeveloped lands, residential neighborhoods, orchards, and gravel mining operations. The adjacent Geneva Rock gravel mine has future expansion plans south of its current operations.

An existing 138kV transmission line is located in the northern portion of the BFWMA. An active irrigation canal runs along the lower slopes of the BFWMA through portions of both the northern and southern areas of the BFWMA.

The BFWMA is open to the public for a variety of permitted recreation uses. Permitted recreation activities on the BFWMA consist of seasonal hunting and non-consumptive activities such as hiking, horseback riding, mountain biking, cross-country skiing, snowshoeing, birding, nature study, and photography. Deer hunting occurs during the fall season and some other upland game hunting occurs at other times of the year. Use of the BFWMA for winter recreation activities and horseback riding is generally light. Camping is allowed in designated areas only and permits are required; however, there are no designated campgrounds on the BFWMA and overnight camping there is uncommon.

OHV and motorcycle use is permitted in the BFWMA on designated roads only; however, this activity occurs illegally off of designated roads and is considered by UDWR to be a problem on the BFWMA. Because the primary purpose of the BFWMA is to serve as winter range habitat for deer and other large mammals, the area is closed to vehicular access each year from January 1 to the second Saturday in April. Pedestrian travel and non-motorized activities are allowed year-round. While mountain biking is permitted in the BFWMA, it is restricted to designated roads and trails. However, unauthorized mountain biking occurs regularly off of designated roads and trails in some areas within the BFWMA and is considered a concern by UDWR (UDWR 2008f).

Environmental Consequences

The Proposed Action, including mitigation measures described in Chapter 2, would not substantially affect current recreation activities or levels of use on the BFWMA. No new recreation activities would be introduced and the current level of recreation use is not anticipated to change substantially as a result of the Proposed Action. The addition of the 345kV transmission line and associated operations and maintenance activities are not anticipated to reduce wildlife use in the area; consequently, seasonal hunting activities are not anticipated to be impacted.

New access roads and improvement of some existing access roads that would be required within the BFWMA for construction and periodic inspections and maintenance of the new transmission line could potentially increase access and illegal use by off-road vehicles (i.e., ATV and motorcycle) in the BFWMA. However, as described in Chapter 2, if determined necessary, all new access roads would use locking steel gates and peripheral barriers at entry points to the BFWMA to control illegal entry and use of these roads by motorized vehicles. The locked gates and barriers would not substantially control pedestrian and other non-motorized access to these roads and it is anticipated that some increase in non-motorized and pedestrian recreation use could occur in the BFWMA. However, this increase would be small relative to the current level of use. In addition, the length of access roads within the right-of-way would decrease slightly because 0.5 mile of the existing 138kV transmission line in the northern area would be removed and relocated in a new 0.3 mile-long segment of the new right-of-way and the existing segment restored. In the southern area, the Project would rely on an existing access road along the canal for access to the structures. Thus, the total length of access roads in the right-of-way available for recreation use would decrease slightly with the Proposed Action.

VISUAL RESOURCES

Affected Environment

The landform within the project area is characterized by shallow rolling hills, benches (i.e., horizontal terraces) formed by the Lake Bonneville shoreline, and an abruptly rising backdrop of mountains to the east, which are dissected by prominent canyons and smaller drainages. Vegetation within the project area is characterized by a mosaic of invasive grasslands, sagebrush shrublands, and scattered pinyon pines and junipers. The majority of the area is covered by low grasslands and shrublands. Large woody vegetation is limited to a few canyons and protected drainages incised into the steep slopes.

Within the project area, human modifications to the landscape include unpaved roads, a buried pipeline, a canal, and a 138kV transmission line supported by double-pole (H-frame) wood structures. Human modifications to the landscape adjacent to and visible from the project area include residential developments in the nearby communities of Brigham City, Perry, Willard, and South Willard, several schools, a golf course, orchards and agricultural fields, gravel mining operations, a buried pipeline corridor, transmission lines, a lined canal, and roads. Human modifications, especially gravel mining operations, housing developments, and to a lesser degree the existing 138kV transmission line, along the lower slopes where the right-of-way is proposed, substantially reduce the quality of views of the lower slopes. Views of the upper slopes and mountains in the background are generally of high scenic quality.

The combination of generally steep and rising slopes with the vegetation cover of low grasslands and shrublands provides a generally open character to the landscape of the BFWMA. Consequently, the area is highly visible to residential viewers in the valley and nearby communities below the BFWMA. Although highly visible, much of the area is located in middle ground to background distance zones for viewers. Viewers of the BFWMA are generally residents of the area and would be considered to have moderately high viewer sensitivity. Also, some recreationists with moderately high viewer sensitivity use the BFWMA. Views from the BFWMA are of valleys dominated by a combination of agriculture and development, mountains, and the Great Salt Lake, and are moderate to moderately high in scenic quality. The combination of low diversity of vegetation cover, steep topography, few human modifications in the upper slopes, substantial human modifications in the lower slopes, moderately high visibility, and viewers with moderately high sensitivity to views results in a generally moderate to moderately high scenic quality for the BFWMA.

Environmental Consequences

The Proposed Action would mostly parallel the existing 138kV transmission line on the BFWMA. Visual changes to the landscape resulting from the project would be apparent, but would not substantially alter the character of scenic quality of views of the BFWMA from surrounding communities and neighborhoods. Structures for the 345kV line would be substantially taller than the existing 138kV structures, but would be single-pole structures. Their finish would be rust-colored self-weathering steel designed to help blend with their surroundings. Appendix D contains a photograph of a view of the existing condition and a visual simulation of the same view with the Proposed Action on a portion of the BFWMA.

Few new access roads outside the right-of-way would be built for the project. Figures 2 and 3 show the locations of new access roads outside the right-of-way. Because the new roads would be on the lower slopes near existing development and gravel mining operations, they would not be highly noticeable or intrusive in the landscape. New access roads within the right-of-way would mostly run horizontally along the slopes, following the existing multiple horizontal shoreline terraces. Because they would match existing landscape patterns, the new permanent access roads in the right-of-way would not be highly noticeable or intrusive. New access roads and construction pads for the structures would be visible during construction, but the temporary construction pads would be restored by regrading and revegetating them following construction and the access roads would be mostly restored to two-track roads suitable for periodic access for inspections and maintenance.

Visual impacts during project construction would be noticeable in the landscape, but temporary and short-term. These impacts would be moderate. Long-term visual impacts of the permanent access roads and structures would be on lower slopes near existing visually intrusive elements and within middleground viewsheds for residential viewers. However, these permanent modifications would largely blend with their surroundings. Therefore, the long-term visual impacts would not substantially reduce the visual quality or character of views of the area and would be minor to moderate.

SOCIOECONOMICS

Affected Environment

This section describes the demographic, economic, and fiscal characteristics of the study area, as well as the primary influences upon the area economy. The study area is located adjacent to the towns of Brigham City, Perry City, and the community of South Willard, and is also located near Willard City and unincorporated portions of Box Elder County. According to the 2000 Census, the principal employment sectors in Box Elder County included manufacturing; education, health, and social services; retail business; and government. The principal employment sectors in Brigham City included manufacturing; education, health, and social services; retail business; and construction. The principal employment sectors in Perry City included manufacturing; education, health, and social services; retail trade; and government. The principal employment sectors in South Willard included manufacturing, construction, other services, wholesale trade, and retail trade. The principal employment sectors in Willard included manufacturing; government; retail trade; education, health, and social services; and construction.

According to the 2000 Census, Brigham City reports a median household income of $42,335, with 7.3 percent of families and 8.7 percent of individuals living below the poverty line; Perry City reports a median household income of $52,500, with 1.2 percent of families and 2.2 percent of individuals living below the poverty line; South Willard reports a median household income of $43,214, with 9.5 percent of families and 7.4 percent of individuals living below the poverty line; Willard City reports a median household income of $52,150, with 5.1 percent of families and 7.2 percent of individuals living below the poverty line; and Box Elder County reports a median household income of $44,630, with 5.8 percent of families and 7.1 percent of individuals living below the poverty line.

Environmental Consequences

In general, the effects of transmission lines on existing social structures and economic activities are relatively minor and short-term. Impacts to adjacent communities would include the short-term construction period and the associated influx of construction workers during the construction period. In general, the surrounding communities would likely experience a slight increase in employment and income from the construction activities. Any local hiring would primarily be laborers and would depend on the skill of the individuals. Long-term impacts could include economic effects of operation and maintenance activities, and tax revenue from easements on private lands.

ENVIRONMENTAL JUSTICE

Affected Environment

Presidential Executive Order 12898 (EO 12989), regarding "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires that each federal agency identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its program, policies, and activities on minority populations and low income populations. According to the 2000 Census (U.S. Census Bureau 2008), Brigham City has the greatest ethnic diversity within the study area. The ethnic diversity in Brigham City was 91.3 percent White, 0.2 percent African American, 1.6 percent American Indian, 0.8 percent Asian, 0.1 percent Native Hawaiian and Other Pacific Islander, 4.1 percent some other race, 1.9 percent two or more races, and 7.7 percent Hispanic or Latino.

Perry City recorded 95.7 percent White, 0.1 percent African American, 0.3 percent American Indian, 0.4 percent Asian, 2.2 percent some other race, 1.2 percent two or more races, and 3.7 percent Hispanic or Latino.

The ethnic diversity in South Willard was 95.2 percent White, 1.2 percent American Indian, 0.2 percent Asian, 1.9 percent some other race, 1.5 percent two or more races, and 5.1 percent Hispanic or Latino.

Willard City recorded 96.3 percent White, 0.1 percent African American, 0.3 percent American Indian, 0.7 percent Asian, 1.3 percent some other race, 1.3 percent two or more races, and 4.1 percent Hispanic or Latino.

Within Box Elder County, the ethnic diversity is 92.9 percent White, 0.2 percent African American, 0.9 percent American Indian, 1.0 percent Asian, 0.1 percent Native Hawaiian and Other Pacific Islander, 3.4 percent some other race, 1.6 percent two or more races, and 6.5 percent Hispanic or Latino.

Environmental Consequences

No disproportionately high or adverse environmental impacts on minority or low-income communities in surrounding areas are anticipated to occur from the Proposed Action. The Proposed Action would potentially provide jobs to minority and low-income communities and

could have positive economic effects associated with tax revenues and increased electrical reliability and system capacity.

NO ACTION ALTERNATIVE

Under the No Action Alternative, the Project would not be constructed and there would be no adverse effects on wildlife or vegetation associated with the Project, including temporary displacement during construction, habitat loss and fragmentation, introduction and spread of noxious and invasive plants, and mortality of individual animals. In addition, the 0.5-mile portion of the existing 138kV transmission line that would be relocated as part of the Proposed Action would remain in its current location higher on the slope and its associated right-of-way would not be rehabilitated.

Also, under the No Action Alternative, the project area would remain unchanged and there would be no impacts to geology and soils; floodplains, wetlands and municipal watersheds; air quality and noise; cultural resources; land use and recreation resources; visual resources; and environmental justice. With regard to socioeconomics, the No Action Alternative would not meet electrical load growth needs or maintain transmission grid reliability throughout the region, as described in the proponent's Purpose and Need section in Chapter 1.

CUMULATIVE EFFECTS

Cumulative effects are those impacts to the environment that result from incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). Cumulative impacts are interdisciplinary, multi-jurisdictional, and usually do not conform to political boundaries.

Method

To determine the cumulative effects in the analysis area, past, present, and future actions were evaluated. In addition, the analysis focused on meaningful effects related to long-term productivity of the resources analyzed. Impacts to vegetation, soils, wildlife habitat, cultural resources, and dispersed recreation are accounted for by estimating the incremental extent of land area affected by activities that take place within the analysis boundary. The cumulative impact analysis area is defined by the boundaries of the BFWMA and private lands immediately adjacent to the BFWMA.

Findings

The resources discussed below were found to be applicable to the Proposed Action, and both direct and indirect impacts to these factors and resources have been reviewed for significance. Past, present, and reasonably foreseeable actions were identified through review of federal, state, and local agency plans, and through interviews and meetings with agency officials and members of the public familiar with the development of the region. Field visits completed the review of present conditions.

The BFWMA has been managed as a wildlife area since the 1940s. Past actions that have occurred on the BFWMA include dispersed outdoor recreation, installation of a 138kV line and access road and trail development, and construction of an irrigation canal and access road. Wildfires have also occurred in the foothills. However, all past disturbances are not known.

Reasonably foreseeable future actions close to the Project include new housing and residential subdivisions in Brigham City, Perry City, and South Willard. The Geneva Rock gravel mining operation is planning an expansion to the south of its current operation area. Temporary and permanent disturbances associated with these potential projects are not yet known, but given their expected locations adjacent to and outside of the BFWMA, disturbances are expected to be moderate as a result of habitat loss and fragmentation.

Impacts related to past, present, and reasonably foreseeable future actions include the loss of wildlife habitat and native vegetation, soil erosion and compaction, increased recreational use, increased man-made facilities in the visual landscape, introduction of non-native plant species, and impacts to washes and drainages from road building.

There are no cumulative effects anticipated to any federally listed threatened or endangered species. The incremental impact of the proposed project (13 acres of temporary disturbance and 3.0 acres of permanent disturbance), when added to the amount of past, present, and future disturbance in the analysis area, would be minor. The incremental impact would be minor because it accounts for a very small percentage of the total disturbance that has occurred from past and present actions combined with potential future actions in the area.