
CHAPTER 4 – CUMULATIVE EFFECTS

4.1 Introduction

This section presents the cumulative effects associated with the Project, including (1) a general definition of cumulative effects, (2) elements that were considered in the cumulative effects analysis, (3) the assessment approach, and (4) the results of the assessment of cumulative effects for the Project.

4.1.1 Definition

Cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions (RFFAs), regardless of what agency (federal or non-federal) or person undertakes other such actions. Cumulative impacts could result from individually minor, but collectively significant actions taking place over a period of time. The purpose of the cumulative effects analysis is to ensure that the decision-makers consider the full range of consequences of a Proposed Action and Alternatives, including the No Action Alternative.

The CEQ has defined the resulting effects of a Proposed Action and its alternatives as direct and indirect. Direct effects are caused by the Project Action and occur at the same time and place. Indirect effects also are caused by the Project Action, but are later in time or further removed in distance, yet are still reasonably foreseeable (40 CFR 1508.8). Cumulative effects, discussed in this chapter, are the total effects on a given resource or ecosystem of all actions taken or proposed.

4.1.2 Elements Considered in Cumulative Effects Analysis

The cumulative effects assessment process considered (1) scoping and Project issues; (2) cumulative effect timeframes and the resources (or receptors) that could be affected by the Proposed Action and Alternatives; (3) the geographical area in which the impacts would occur; and (4) other past, present, and RFFAs that have, or could be expected to cause, impacts on these resources when considered with development of the Project.

4.1.2.1 Cumulative Effects Issues

The identification of issues for analysis in the EIS is discussed in Section 1.6.2. Those issues determined to potentially involve a cumulative effect with other past, present, or RFFAs are included in the cumulative effects analysis. An exception is if the Proposed Action or Alternatives would have no direct or indirect effects on a resource, it would not contribute incrementally to cumulative effects and is not included in the analysis for that resource.

4.1.2.2 Geographic and Temporal Scope

The geographic scope is the spatial extent where cumulative effects may occur on a resource. The geographic scope is assessed, and will often be different, for each cumulative effects issue. It is generally based on the natural boundaries of the resource affected. In several cases, the geographic scope for a resource is substantially larger than the corresponding alternative route study corridors for Project-related effects to consider an area large enough to encompass likely effects from other projects on the same resource.

The temporal scope is established by the timeframe for a cumulative effects issue—that is, the duration of short-term and long-term effects anticipated. Together, the geographic and temporal scopes make up the cumulative impact analysis area (CIAA).

4.1.2.3 Cumulative Actions

In general, a cumulative action is a past, present, other proposed action, or RFFA that potentially has a cumulatively significant impact when combined with the Proposed Action. For purposes of this analysis, RFFAs are proposed projects or actions that have either applied for a permit from local, state, or federal authorities or which are publicly known. Tables 4-1 and 4-2 list known current and future projects and RFFAs located in or near the Project area. Past, present, and RFFAs also are shown in MV-25 and MV-26. The projects listed in Tables 4-1 and 4-2 were incorporated into the analysis for the Project.

4.2 Cumulative Assessment Approach

The elements considered in the cumulative effects assessment, (1) cumulative effects issues, (2) geographic and temporal scopes defined for analysis, and (3) method(s) of quantitative and/or qualitative analysis are described by resource in Table 4-3. In general, quantitative analyses were performed for issues where the relevant data were available for the CIAA. For purposes of this assessment, quantitative estimates of cumulative effects on resource are based on the estimated spatial extent of development for the proposed Project and each past, present, and other RFFAs. The specific methods used in these estimations are discussed in this section.

The quantitative assessment of cumulative effects was performed using a seven-step process:

1. **Compile Resource Inventory for the CIAA.** The available resource within a CIAA was compiled by overlaying a polygon representing the CIAA identified for a resource issue over the relevant resource inventory data.
2. **Estimate Spatial Extent of Existing Development.** A single base layer of existing development was defined to include the existing land use inventory developed for the effects analysis (refer to Section 3.2.10.4.1); buffered transmission lines, pipelines, railroads, and roads within the 2-mile-wide alternative route study corridors; LANDFIRE™ data and buffered transmission lines, pipelines, railroads, and roads outside of the 2-mile-wide alternative route study corridors; and data collected for past and present actions within the Project area boundary. Table 4-4 presents the data components used to compile the base layer for existing development.
3. **Estimate Spatial Extent of RFFA Development.** A single base layer of RFFA development was established based on the rationale or assumptions outlined in Table 4-2. For oil and gas development areas, the associated development for each area was estimated based on approved maximum disturbance levels and well pad spacing (i.e., the approved maximum disturbance was distributed equally within the area boundary using approved well pad spacing). The spatial extent of RFFA development was then compiled into a single base. The base layer was not developed to contain individual attribute information; rather, the base layer includes a summary of all attributes.
4. **Estimate Spatial Extent of Project Development.** The area was compiled depending on the CIAA. For some resource issues, the area was created by buffering each alternative route by a specified amount (i.e., 1 mile on either side of an alternative route). For other resource issues, alternative routes were intersected with the CIAA. For example, the CIAA for water resources is the 8-digit HUC (subbasin) drainage areas crossed by the alternative routes. Each alternative

route was intersected with the 8-digit HUC (subbasin) drainage areas to determine the spatial extent of Project development for each alternative route.

5. **Estimate Total Cumulative Development.** The layers were amalgamated to generate an estimated total cumulative development for each CIAA (i.e., the existing development data layer, the RFFA development layer, and the CIAA available resource inventory layer). In areas where existing development, RFFAs, and resource inventory all occurred, only the spatial extent of existing development and the CIAA available resource inventory were calculated (i.e., excluding RFFA development) to eliminate “double-counting” of development of an RFFA in areas already affected by past actions.
6. **Determine Incremental Project Development.** The spatial extent of the incremental Project effect on an available resource in the CIAA was determined by overlaying the existing and RFFA cumulative development layers with the estimated disturbance calculations generated from the Project description.
7. **Determine Remaining Available Resource.** The spatial extent of the remaining available resource (e.g., habitat) in the CIAA was determined by assessing the area outside of the estimated total cumulative development area.

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Multi-state Projects					
Northwest Colorado District Planning Unit					
Enterprise Mid-America Pipeline Western Expansion II Project	Pipeline	Crosses Baxter Pass in Colorado and turns west and proceeds along Interstate 70 to Thompson Springs, Utah	C196, C197, C270	96 miles (579 acres)	A 50-foot wide corridor was created by buffering the pipeline's centerline according to the description of the permanent right-of-way in the Environmental Assessment (EA) released July 2012 (Bureau of Land Management [BLM] 2012q). The source for the Project alignment is the BLM Northwest Colorado District (BLM 2012r).
Geospatial – Multi-agency Coordinating Group					
–	Historical fire	Throughout the Project area	C175, C177, C185, C186, C188, U432, U490, U600, U625, U631, U636, U637, U638, U639, U650	501,342 acres (501,342 acres)	The polygons (boundaries) for the historic fires from 2000 to 2012 were used in the analysis. These data were used to display historic fires because it is a consistent dataset for all three states. The source for these boundaries is the U.S. Forest Service (USFS 2011g, 2012h).
Wyoming					
Federal					
Bureau of Land Management Rawlins Field Office					
Anadarko Atlantic Rim Natural Gas Project	Oil and/or gas development	Carbon County, Wyoming, south of Interstate 80 (I-80), east of Wyoming Highway 789	W110, W111, W32	270,420 acres (8,446 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 80 acres. These assumptions are based on information in the Environmental Impact Statement (EIS) and Record of Decision for the Atlantic Rim Natural Gas Field Development Project (BLM 2007b). The source for the project boundary is the BLM Rawlins Field Office (BLM 2005f).
Arch of Wyoming, LLC Carbon Basin Mine	Coal mine	Located in Carbon County, Wyoming, north of I-80, east of Hanna, Wyoming	–	13,347 acres (13,347 acres)	The development assumption for this surface and underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the U.S. Geologic Survey (USGS 2011).
Kennecott Uranium Company Sweetwater Mine	Non-coal mine	23 miles north of Wamsutter, Wyoming	–	11,715 acres (11,715 acres)	The development assumption for this surface mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM Rawlins Field Office (BLM 2001c).
PacifiCorp Dunlap I Wind Farm	Wind energy facility	Near Medicine Bow, Wyoming	–	16,279 acres (60 acres)	The development assumptions for this project are the turbine points that were digitized and given a size of 0.7 acres of disturbance per pad based on the 2012 National Agriculture Imagery Program (NAIP) aerial imagery of the structures as digitized by EPG (NAIP 2012).
PacifiCorp Seven Mile Hill Wind Energy Facility	Wind energy facility	42 miles northeast of Rawlins, Wyoming	W15, W16, W21	8,942 acres (57 acres)	The development assumptions for this project are the turbine points that were digitized and given a size of 0.7 acres of disturbance per pad based on 2012 NAIP aerial imagery of the structures as digitized by EPG (NAIP 2012).
Power Company of Wyoming Chokecherry and Sierra Madre Wind Farm	Wind energy facility	South of I-80 and Rawlins, Wyoming	W30	214,122 acres (592 acres)	The development assumptions for this project are 0.6 acres of disturbance per turbine and 1,000 wind turbines distributed evenly within the Project area boundaries (Chokecherry: 220-acre spacing; Sierra Madre: 218-acre spacing). The project boundary and assumption for the number of turbines is based on information in the Chokecherry and Sierra Madre Programmatic Plan of Development (BLM 2012s), and the density is based on the Chokecherry and Sierra Madre Programmatic Record of Decision (BLM 2012t) as digitized by EPG.
Terry Hankins Copper Mine	Non-coal mine	15 miles west and south of Grand Encampment, Wyoming	–	54 acres (54 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM Rawlins Field Office (BLM 2001c).

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–	Vegetation management ⁴	Throughout the Rawlins Field Office	W32, W110, W300	156,840 acres (156,840 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of the vegetation management activities is unknown. The source for the project boundary is the BLM Rawlins Field Office (BLM 2010f).
Bureau of Land Management Rock Spring Field Office					
Ambre Energy Black Butte Mine	Coal mine	25 miles east of Rock Springs, Wyoming	–	42,413 acres (42,413 acres)	The development assumption for this surface mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the USGS (USGS 2011).
Chevron U.S.A., Inc. Table Rock Field Oil and Gas Development	Oil and/or gas development	40 miles east of Rock Springs, Wyoming	–	13,633 acres (849 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Table Rock Field Oil and Gas Development Environmental Assessment and Finding of No Significant Impact (BLM 2012u). The source for the project boundary is the BLM Rock Springs Field Office (BLM 2012v)
Level III/Anadarko Leucite Hills Mine	Coal mine	Southwest of Jim Bridger Coal Mine, 6 miles southeast of Superior, Wyoming	–	6,721 acres (6,721 acres)	The development assumption for this surface mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the USGS (USGS 2011).
PacifiCorp Jim Bridger Mine	Coal mine	10 miles east of Superior, Wyoming	–	26,640 acres (26,640 acres)	The development assumption for this surface and underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the USGS (USGS 2011).
–	Vegetation management ⁴	Along the Wyoming border, between Manila, Utah and Hiawatha, Colorado	–	55,722 acres (55,722 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of vegetation management activities is unknown. The source for the project boundary is BLM Rock Springs Field Office (BLM 2010g).
State					
Wyoming Office of State Lands and Investments					
–	Coal mine	Within a 2-mile-wide study corridor for the Project	W121, W299	3,183 acres (3,183 acres)	The development assumption for these leases are to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the Wyoming Office of State Lands and Investments (as digitized by EPG), March 2013 (Wyoming Office of State Lands and Investments [OSLI] 2013b).
–	Non-coal mine	Within a 2-mile-wide study corridor for the Project	–	632 acres (632 acres)	The development assumption these uranium leases are to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the Wyoming OSLI (as digitized by EPG), March 2013 (Wyoming OSLI 2013b).
–	Oil and/or gas development	Within a 2-mile-wide study corridor for the Project	W102, W111, W116, W120, W121, W299, W32, W35	11,111 acres (827 acres)	The development assumptions for these leases are 3.1 acres of disturbance per well pad and a density of 1 well pad per 40 acres. The assumption for well pad density is based on information in Chapter 3; Section 8 of the Wyoming State Statutes for Oil and Gas Development, (State of Wyoming 2008) and for the well pad size, this information is based on the existing Atlantic Rim Oil and/or Gas Development Field in the Rawlins Field Office (BLM 2007b). The source for the project boundary is the Wyoming OSLI (Wyoming OSLI 2013c).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Local					
Carbon County					
Cassidy River Ranch	Residential subdivision	In Medicine Bow, Wyoming	–	8,024 acres (8,024 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Wyoming 2012b).
PacifiCorp Standpipe Substation	Substation	2 miles southeast of Hanna, Wyoming	–	26 acres (26 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is Rocky Mountain Power (Rocky Mountain Power 2011).
Sweetwater County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Colorado					
Federal					
Bureau of Land Management Grand Junction Field Office					
–	Oil and/or gas development	Throughout the Grand Junction Field Office	C197	88,102 acres (697 acres)	The development assumptions for this project are 1.5 acres of disturbance per well pad and a density of 1 well pad per 160 acres. These assumptions are based on information in Reasonably Foreseeable Development Scenario for Oil and Gas Grand Junction Field Office (BLM 2012w). The source for the project boundary is the BLM Colorado State Office (BLM 2012x)
Bureau of Land Management Little Snake Field Office					
Tri-State Generation and Transmission Association, Salt River Project Agricultural Improvement and Power District, Platte River Power Authority, and PacifiCorp Trapper Mine	Coal mine	Southwest of Craig, Colorado; east of Colorado State Highway 13	–	10,569 acres (10,569 acres)	The development assumption for this surface mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM Rawlins Field Office (BLM 2001c).
TriState/Western Fuels-Colorado, LLC ColoWyo Coal Mine	Coal mine	12 miles north of Meeker, Colorado	–	14,369 acres (14,369 acres)	The development assumption for this surface mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM Rawlins Field Office (BLM 2001c).
WexPro Company Carl Allen #45	Oil and/or gas development	1.5 miles northeast of Powder Wash, Colorado	–	6 acres (6 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the development area is a minimal size. The source for the project boundary is WexPro Company (WexPro Company 2012).
–	Oil and/or gas development	Throughout the Little Snake Field Office	C106	314,599 acres (31,395 acres)	The development assumptions for this project are 4 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Little Snake Field Office Reasonable Foreseeable Development: Oil and Gas in the Little Snake Field Office (BLM 2004d). The source for the project boundary is the BLM Colorado State Office (BLM 2012x)
–	Vegetation management ⁴	Throughout the Little Snake Field Office	C91	18,480 acres (18,480 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of the vegetation management activities is unknown. The source for the project boundary is the BLM Little Snake Field Office (BLM 2011q).
Bureau of Land Management White River Field Office					
American Soda, LLP Sodium Mine	Non-coal mine	21 miles southwest of Meeker, Colorado	–	250 acres (250 acres)	The development assumption for the surface and underground mine is to use the entire project boundary since development at this point is unknown. The source for the project boundary is the BLM White River Field Office (BLM 2013e).

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Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Blue Mountain Energy, Inc. Deserado Mine	Coal mine	Near the Moffat-Rio Blanco county line	C177	8,154 acres (8,154 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM White River Field Office (BLM 2009g).
Blue Mountain Energy, Inc. Deserado Mine Expansion	Coal mine	Just south of Moffat-Rio Blanco county line	–	3,175 acres (3,175 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM White River Field Office (BLM 2012y).
Chevron Shale Oil Company Oil Shale RDD	Oil shale and/or tar sands	19 miles northwest of Rio Blanco, Colorado	–	153 acres (153 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM White River Field Office (BLM 2012z).
EGL Resources, Inc. Oil Shale RDD	Oil shale and/or tar sands	25 miles northwest of Rio Blanco, Colorado	–	155 acres (155 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM White River Field Office (BLM 2012z).
Gravel Pits (Owner unknown)	Non-coal mine	Two pits – 6 miles southeast of Meeker, Colorado and 8 miles northeast of Rangely, Colorado	–	24 acres (24 acres)	The development assumption for this surface mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM White River Field Office (BLM 2012aa).
Natural Soda, Sodium Mine	Non-coal mine	24 miles southwest of Meeker, Colorado	–	577 acres (577 acres)	The development assumption for the surface and underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM White River Field Office (BLM 2013e).
Questar Gas Company, Greasewood Gas Plant Compressor Station	Oil and/or gas development	18 miles southwest of Meeker, Colorado	–	110 acres (110 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM White River Field Office (BLM 2013f).
Shell Frontier O&G, Inc. Oil Shale RDD	Oil shale and/or tar sands	Three units – 18 miles southeast of Rangely, Colorado	–	475 acres (475 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM White River Field Office (BLM 2012z).
–	Oil and/or gas development	Throughout the White River Field Office	C175, C195, C196	593,738 acres (56,586 acres)	The development assumptions for this project are 4 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the White River Draft Resource Management Plan/EIS for Oil and Gas Development (BLM 2012ab). The source for the project boundary is the BLM Colorado State Office (BLM 2012x).
–	Vegetation management ⁴	Throughout the White River Field Office	–	1,023 acres (1,023 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of vegetation management activities is unknown. The source for the project boundary is the BLM White River Field Office (BLM 2009h).
State					
Colorado State Lands Board					
–	Oil and/or gas development	Throughout the Colorado portion of the Project study area	C91, C101, C105, C100, C13, C61	131,500 acres (491 acres)	The development assumptions for this project are 3 acres of disturbance per well pad and a density of 1 well pad per 640 acres. In the Hiawatha area, the assumptions are 3 acres per well pad with a well pad density of 1 per 40 acres. These assumptions are based on information received from the Colorado State Land Board during a call on March 14, 2013 (Osborn 2013). The source for the project boundary is the Colorado State Land Board (Colorado State Land Board 2012).

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Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Local					
Garfield County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Mesa County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Moffat County					
Wilderness Ranches	Residential subdivision	30 miles north and east of Craig, Colorado	–	14,318 acres (14,318 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is information received from Moffat County (Moffat County 2009b).
Rio Blanco County					
County Special Use Permit	Local development (industrial)	Located to the east of Rangely, Colorado near Colorado State Highway 139	–	15 acres (15 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is information received from Rio Blanco County (Rio Blanco County 2012).
Routt County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Utah					
Federal					
Bureau of Land Management Fillmore Field Office					
Central Utah Telephone Fiber Optic Line	Communication facility	Nephi to Fountain Green	U639, U650	14 miles (33 acres)	A 20-foot buffer was added to the fiber optic centerline based on information from the Fillmore Field Office (BLM 2013g). The source for the Project alignment is the BLM Fillmore Field Office (BLM 2013h).
Chevron Rangely to Salt Lake City Pipeline	Pipeline	Begins near Rangely, Colorado and terminates near Salt Lake City, Utah	U420, U430, U300	368 miles (4,461 acres)	This 10-inch-diameter pipeline was buffered to create a 100 foot corridor based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011a). The source for the Project alignment is POWER Engineers (Power 2012).
Eureka Analysis Area	Vegetation management ⁴	1 mile west of Eureka, Utah	–	7,767 acres (7,767 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of the vegetation management within the boundary is unknown. The source for the project boundary is the BLM Fillmore Field Office (BLM 2012ac).
Hannifin Analysis Area	Vegetation management ⁴	1 mile southwest of Eureka, Utah	–	1,238 acres (1,238 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of the vegetation management within the boundary is unknown. The source for the project boundary is the BLM Fillmore Field Office (BLM 2012ac).
Intermountain Power Agency (IPP) Intermountain Mona Lines No. 1 and 2	Transmission line	From IPP substation through Leamington Canyon to Adelanto, California	–	100 miles (1,818 acres)	These 345kV transmission centerlines were buffered to 150 feet based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011b). The source for the Project alignment is POWERmap Platts as digitized by EPG (Powermap Platts 2009).
Kern River Gas Transmission Company Pipeline	Pipeline	Begins 6 miles southeast of Evanston, Wyoming, and terminates in Bakersfield, California	–	432 miles (15,709 acres)	This 36- to 42-inch diameter pipeline was buffered to create a 300 foot corridor based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011a). The source for the Project alignment is POWER Engineers (PennWell Map Search 2011).
Magnum Gas Storage Pipeline	Pipeline	Begins 2 miles northwest of Elberta, Utah, and terminates 4 miles east of Sugarville, Utah	–	373 acres (373 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the boundary is meant to represent the pipeline right-of-way. The source for the project boundary is the BLM Fillmore Field Office (BLM 2010h).

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PacifiCorp Camp Williams to Sigurd No. 1	Transmission line	From Camp Williams, Utah County, Utah, to Sigurd Substation, Sevier County	–	0.3 miles (6 acres)	This 345kV transmission centerline was buffered to 150 feet based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011b). The source for the Project alignment is POWERmap Platts as digitized by EPG (Powermap Platts 2009).
PacifiCorp Camp Williams to Sigurd No. 2	Transmission line	From Camp Williams, Utah County, Utah, to Sigurd Substation, Sevier County	–	0.3 miles (6 acres)	This 345kV transmission centerline was buffered to 150 feet based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011b). The source for the Project alignment is POWERmap Platts as digitized by EPG (Powermap Platts 2009).
PacifiCorp Currant Creek Power Plant	Power generation	2 miles west of Mona, Utah	–	(165 acres) (165 acres)	The development assumption for this project is to consider the area within the project boundary as the development area. Development was digitized (by EPG) using 2011 NAIP aerial imagery (NAIP 2011c).
PacifiCorp Mona to Oquirrh Transmission Project	Transmission line	Begins at Clover Substation near Mona, Utah, and proceeds to the proposed Limber Substation site in Tooele County, Utah	–	114 miles (2700 acres)	The 500kV portion of the transmission centerline was buffered to 225 feet, and the 345kV portion was buffered to 150 feet based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011b). The source for the Project alignment is POWERmap Platts as digitized by EPG (Powermap Platts 2009).
Questar Currant Creek Lateral Pipeline	Pipeline	Extends north from the Currant Creek Power Plant west of Mona, Utah, to the end of Questar's Main Line 104	–	6 miles (142 acres)	This 20-inch-diameter pipeline was buffered to create a 200-foot corridor based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011a). The source for the Project alignment is the BLM Fillmore Field Office (BLM 2013i).
UNEV, LLC Pipeline	Pipeline	Begins at Woods Cross, Utah and has terminals in Cedar City, Utah, and northeast of Las Vegas, Nevada	–	409 miles (4,961 acres)	This 12-inch-diameter pipeline was buffered to create a 100-foot corridor based on average scar widths visible on 2011 NAIP aerial imagery (NAIP 2011a). The source for the Project alignment is the BLM Fillmore Field Office (BLM 2006b).
Bureau of Land Management Moab Field Office					
Flatirons Resource, LLC No. 1-4 Helium Well Project (includes well pad, pipeline and compressor station)	Industrial	15 miles southwest of Mack, Colorado	–	7 acres (7 acres)	The development assumptions for this project are 0.8 acres of disturbance per well pad and a 25-foot corridor for the pipeline. The compressor station boundary is considered to be fully developed. These Project boundaries and assumptions are based on information in Flatirons Resources EA (BLM 2013j).
–	Oil and/or gas development	Throughout the Moab Field Office	U486, U487	248,370 acres (6,061 acres)	The development assumptions for this project are 4 acres of disturbance per well pad and a density of 1 well pad per 160 acres. These assumptions are based on information in the Reasonably Foreseeable Development Scenario for Oil and Gas Development for the Moab Field Office (BLM 2005g). The source for the project boundary is the BLM Utah State Office (BLM 2012ad).
Bureau of Land Management Price Field Office					
Anadarko Petroleum Corporation Ferron Natural Gas Project	Oil and/or gas development	North of Price, Utah	U498, U587, U628, U629, U765	108,680 acres (812 acres)	The development assumptions for this project are 1.38 acres of disturbance per well pad and a density of 1 well pad per 160 acres. The well pad size is based on the number of wells and well pad density within the project boundary and the density assumption is based on information in the Appeals from the Ferron Natural Gas Record of Decision (Interior Board of Appeals [BLM] 2003). The source for the project boundary is the BLM Price Field Office (BLM 1998b).
Bill Barrett Corporation Peter's Point Loop Pipeline	Pipeline	T12S, R16E, Sec. 26, 27, 35	–	3 miles (18 acres)	This pipeline was digitized and buffered to create a 50 foot wide corridor based on maps and existing right-of-way widths given in the Peter's Point Loop EA ¹ (BLM 2011r).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Bill Barrett Corp. West Tavaputs Plateau Project	Oil and/or gas development	30 miles east-northeast of Price, Utah	–	137,932 acres (1,723 acres)	The development assumptions for this project are 2 acres of disturbance per well pad and a density of 1 well pad per 160 acres. These assumptions are based on information in the West Tavaputs Plateau Record of Decision and Final EIS, (BLM 2010i). The source for the project boundary is the BLM Price Field Office (BLM 2012ae).
Interwest Mining Company Deer Creek Coal Mine, Coal Exploration	Coal mine	T16S, R6E, Sec. 22-27	U629	25,958 acres (25,958 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is TetraTech (Tetra Tech 2012).
–	Oil and/or gas development	Throughout the Price Field Office	U493, U494, U496, U537, U544, U585, U586, U587, U600, U629, U630	175,948 acres (872 acres)	The development assumptions for this project are 1 acre of disturbance per well pad and a density of 1 well pad per 160 acres. These assumptions are based on information in the Price Field Office Proposed RMP/Final EIS (BLM 2008d). The source for the project boundary is the BLM Utah State Office (BLM 2012ad).
Bureau of Land Management Richfield Field Office					
–	Oil and/or gas development	Throughout the Richfield Field Office	U600, U630	49,704 acres (4,934 acres)	The development assumptions for this project are 4 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions for well pad size are based on information in the Reasonably Foreseeable Development Scenario for Oil and Gas Development in the Richfield Field Office, March 2005 and the well pad density is based on information from Utah Administrative Code R649-3-Drilling and Operating Practices (State of Utah 2013c). The source for the project boundary is the BLM Utah State Office (BLM 2012ad).
Bureau of Land Management Salt Lake Field Office					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Bureau of Land Management Vernal Field Office					
Bill Barrett Corporation Blacktail Ridge Exploration and Development Agreement (EDA)	Oil and/or gas development	West of Duchesne, Utah	U421, U420	98,874 acres (6,108 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, March 2012 (BLM 2012af). The source for the project boundary is the URMCC (URMCC 2013a).
Bill Barrett Corporation Lake Canyon EDA	Oil and/or gas development	South of Fruitland, Utah	U424, U426	244,730 acres (15,341 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, March 2012 (BLM 2012af). The source for the project boundary is the URMCC (URMCC 2013a).
Encana North Chapita Wells Natural Gas Development	Oil and/or gas development	6 miles northwest of Bonanza, Utah	–	9,191 acres (453 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, March 2012 (BLM 2012af). The source for the project boundary is the BLM Vernal Field Office (BLM 2012ag).
Enduring Resources Rock House Development	Oil and/or gas development	11 miles southwest of Bonanza, Utah	–	4,859 acres (31 acres)	The development assumptions for this project are 2 acres of disturbance per well pad and a density of 1 well pad per 285.8 acres (17 pads distributed across 4859.2 acres). These assumptions are based on information in the Saddletree Draw Leasing and Rock House Development Proposal EA, December 2007 (BLM 2007c). The source for the project boundary is the BLM Vernal Field Office (BLM 2012ag).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
EOG Resources, Inc. Chapita Wells-Stagecoach Area Natural Gas Development	Oil and/or gas development	10 miles southeast of Ouray, Colorado	U300, U285	31,861 acres (220 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 320 acres. These assumptions are based on information in the Chapita Wells-Stagecoach Area Natural Gas Development Final EIS, January 2008 and the Greater Natural Buttes Final EIS, March 2012 for well pad size (BLM 2008h, 2012ai). The source for the project boundary is the BLM Vernal Field Office (BLM 2012ag).
Gasco Energy, Inc. Uinta Natural Gas Development Project	Oil and/or gas development	T9-11S, R14-19E	U400, U401	165,895 acres (15,833 acres)	The development assumptions for this project are 3.8 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Gasco Final EIS, June 2012 (BLM 2012ai). The source for the project boundary is the BLM Vernal Field Office (2011q).
Gilsonite Mines	Non-coal mine	Throughout the southern portion of the Vernal Field Office	U300, U242	174 miles (212 acres)	These linear mines were buffered to be 10 feet wide based on an average width of mining scars visible on 2011 NAIP aerial imagery (NAIP 2011d). The source for the project boundary is the BLM Vernal Field Office (BLM 2008i).
Kerr-McGee Oil and Gas Onshore LP Greater Natural Buttes Project	Oil and/or gas development	T8S, R20-23E T9S, R20-24E T10S, R20-23E T11S, R12-22E	U280, U285, U300	160,285 acres (9,955 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in Greater Natural Buttes Final EIS, March 2012 (BLM 2012ah). The source for the project boundary is the BLM Vernal Field Office (BLM 2012aj).
Koch Exploration Company North Alger EA II	Oil and/or gas development	T10S, R19E, Sec. 27-28, 34-35 T11S, R19E, Sec 1	–	2,390 acres (210 acres)	The development assumptions for this project are 3.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the North Alger Project EA, October 2012 (BLM 2012ak). The source for the project boundary is the BLM Vernal Field Office (BLM 2012ag).
Newfield Gusher Development	Oil and/or gas development	5 miles northeast of Randlett, Utah	U391	38,138 acres (2,324 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, March 2012 (BLM 2012af). The source for the project boundary is the BLM Vernal Field Office (BLM 2012ag).
Petro-Canada Resources (USA), Inc. Rye Patch EA	Oil and/or gas development	21 miles south of Duchesne, Utah	–	5,506 acres (11 acres)	The development assumptions for this project are 2.1 acres of disturbance per well pad and a density of 1 well pad per 790.9 acres (seven pads distributed across 7,283 acres). These assumptions are based on information in the Rye Patch Exploratory Drilling EA, July 2007 (BLM 2007d). The source for the project boundary is the BLM Vernal Field Office (BLM 2012ag).
Questar Exploration and Production Company Greater Deadman Bench	Oil and/or gas development	8 miles northeast of Ouray, Colorado	U390, U310, U241	98,538 acres (5,772 acres)	The development assumptions for this project are 2.3 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Greater Deadman Bench Final EIS, January 2008 (BLM 2008j). The source for the project boundary is the BLM Vernal Field Office (BLM 2012ag).
Seep Ridge Road	Highway/road	From Ouray, Colorado to Uintah County line	–	702 acres (702 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the boundary is meant to represent the actual road development. The source for the project boundary is the BLM Vernal Field Office (BLM 2012al).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Stewart Petroleum Tumbleweed II	Oil and/or gas development	37 miles southwest of Bonanza, Utah	–	7,283 acres (16 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 1,040.4 acres (seven pads distributed across 7,283.1 acres). These assumptions are based on information in the Tumbleweed II Exploratory Natural Gas Drilling Project Final EA, June 2010 (BLM 2010j). The source for the project boundary is the BLM Vernal Field Office (BLM 2012ag).
XTO Energy Riverbend Directional Infill	Oil and/or gas development	T10S, R19-20E	U300, U400	17,127 acres (2,137 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 20 acres. These assumptions are based on information in the River Bend Unit Infill Development Environmental Assessment and Biological Assessment, July 2012 (BLM 2012am). The source for the project boundary is the BLM Vernal Field Office (BLM 2012ag).
–	Habitat/rangeland management ⁵	Throughout the Vernal Field Office	U241, U242, U421, U401	122,122 acres (122,122 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of habitat/rangeland management activities is unknown. The source for the project boundary is the BLM Vernal Field Office (BLM 2012an).
–	Oil and/or gas development	Throughout the Vernal Field Office	U241, U280, U310, U290, U431, U300, U400	395,068 acres (14,152 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, March 2012 (BLM 2012af). The source for the project boundary is the BLM Utah State Office (BLM 2012ad).
–	Vegetation management ⁴	Throughout the Vernal Field Office	U241	68,956 acres (68,956 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of vegetation management activities is unknown. The source for the project boundary is the BLM Vernal Field Office (BLM 2013k).
Ashley National Forest					
Berry Petroleum South Unit Oil and Gas Development	Oil and/or gas development	Between Antelope and Sowers Canyon in the Duchesne Ranger District	U431	25,608 acres (237 acres)	The development assumptions for this project are 1 acres of disturbance per well pad and a density of 1 well pad per 106.7 acres (six pads per section; section = 640 acres). These assumptions are based on information in the South Unit Oil and Gas Development Project Record of Decision, February 2012 (USFS 2012f). The source for the project boundary is the Ashley National Forest (USFS 2007c).
Manti-La Sal National Forest					
Canyon Fuel Company, LLC Skyline Mine	Coal mine	3 miles west of Clear Creek, Utah	U600	10,455 acres (10,455 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the Utah Division of Natural Resources (UDNR 2013a).
Fossil Rock Fuels, LLC Coal Exploration Drilling	Coal mine	10 miles northwest of Orangeville, Utah	–	8,707 acres (8,707 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the Manti-La Sal National Forest (USFS 2012g).
Liberty Pioneer Energy Source, Inc. Liberty Pioneer #10-17 Gas Exploration	Oil and/or gas development	25 miles northwest of Huntington, Utah along Utah State Route 31 in Sanpete County	–	2 acres (2 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the Manti-La Sal National Forest 2012 (USFS 2012h).
Millers Flat Project	Vegetation management ⁴	10 miles east of Mount Pleasant, Utah	U630	15,328 acres (15,328 acres)	The development assumption for this project is to use the entire project boundary since the extent of the vegetation management activities is unknown. The source for the project boundary is the Manti-La Sal National Forest (USFS 2012i).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Sunroc Corporation Chicken Creek Surface Gypsum Mine	Non-coal mine	2 miles east of Levan, Utah	–	38 acres (38 acres)	The development assumption for this surface mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the Manti-La Sal National Forest (USFS 2012j).
Uinta-Wasatch-Cache National Forest					
Sheep Creek Project	Vegetation management ⁴	North and west of Gilluly, Utah	U433, U539, U530	9,190 acres (9,190 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of the vegetation management activities is unknown. The source for the project boundary is the Uinta-Wasatch-Cache National Forest (USFS 2012k).
Utah Reclamation Mitigation and Conservation Commission (URMCC)					
Lower Duchesne River Wetlands Project	Habitat/ rangeland management ⁵	East of Myton, Utah	–	5,114 acres (5,114 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of the habitat/rangeland activities is unknown. The source for the project boundary is the URMCC (URMCC 2013b).
State					
Central Utah Water Conservancy District					
Roosevelt Pipeline	Pipeline	Extends from Roosevelt, Utah, to the west 9 miles	U420	18 miles (6,371 acres)	This pipeline was buffered to create a 3,000-foot corridor based on direction from the Central Utah Water Conservancy District to avoid affecting the pipeline with the proposed Project. The source for the project boundary is the Central Utah Water Conservancy District (Central Utah Water Conservancy District 2012).
State of Utah School and Institutional Trust Lands Administration (SITLA)					
Red Leaf Resources Red Leaf Project	Oil shale and/or tar sand	Uinta Basin, Utah	–	16,803 acres (16,803 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the SITLA (SITLA 2012a).
University of Utah leases	Educational	8 miles southeast of Columbia, Utah	–	2,802 acres (2,802 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the SITLA (SITLA 2013a).
Utah National Guard Engineering Battalion training area	Military training/testing site	6 miles east of Price, Utah	–	163 acres (163 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the SITLA (SITLA 2013a).
White Sands Missile Launch Facility (abandoned)	Military training/testing site	Near Green River, Utah	U487	728 acres (728 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the SITLA (SITLA 2013a).
–	Coal and Non-coal mine	Throughout the Project area	U241, U280, U285, U300, U310, U390, U400, U406, U410, U430, U432, U460, U486, U487, U488, U489, U490, U493, U495, U496, U498, U523, U524, U530, U537, U546, U548, U585, U586, U587, U600, U621, U625, U628, U629, U631, U636, U638, U650, U730, U731, U765	1,038,793 acres (1,038,793 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the SITLA (SITLA 2013b).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
–	Oil and/or gas development	Throughout the Project area	U241, U280, U285, U300, U310, U390, U400, U401, U406, U408, U409, U410, U411, U430, U432, U435, U436, U486, U487, U488, U489, U490, U493, U495, U496, U498, U512, U514, U516, U520, U523, U524, U527, U537, U546, U548, U585, U586, U587, U600, U621, U628, U629, U631, U636, U638, U650, U730, U731, U734, U765	760,835 acres (15,381 acres)	The development assumptions for this project are 3 acres of disturbance per well pad and a density of 1 well pad per 107 acres. This is an average of 6 wells per section based on Utah Department of Oil, Gas, and Mining map found at this website: http://stage.mapserv.utah.gov/oilgasmining/ (State of Utah 2013d). The source for the project boundary is the SITLA (SITLA 2013c).
–	Oil shale tar sands development	Throughout the Project area	U280, U285, U300	143,677 acres (143,677 acres)	The development assumption for this project is to consider the area within the project boundary since development at this point is unknown. The source for the project boundary is the SITLA (SITLA 2013c).
Utah Division of Natural Resources – Oil, Gas and Mining					
Andalex Resources, Inc. Centennial Mine	Coal mine	6 miles northeast of Helper, Utah	–	6,556 acres (6,556 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Canyon Fuel Company, LLC Banning Siding Loadout	Coal mine	8 miles east of Wellington, Utah	–	40 acres (40 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Canyon Fuel Company, LLC Dugout Canyon Mine	Coal mine	11 miles northeast of Wellington, Utah	–	9,383 acres (9,383 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Canyon Fuel Company Soldier Canyon Mine	Coal mine	12 miles northeast of Wellington, Utah	U523	7,140 acres (7,140 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Carbon Resources, LLC Kinney # 2	Coal mine	East of Scofield, Utah	–	709 acres (709 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Castle Valley Mining, LLC Bear Canyon Mine	Coal mine	10 miles west of Huntington, Utah	–	10,831 acres (10,831 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
COVOL Engineered Fuels, LLC COVOL Site	Coal mine	Industrial area on Ridge Road, Carbon County, Utah	–	31 acres (31 acres)	The development assumption for this surface mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Energy West Mining Company Cottonwood Waste Rock Site	Coal mine	12 miles northwest of Orangeville, Utah	–	2,153 acres (2,153 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Hiawatha Coal Company, Inc. Hiawatha Mine	Coal mine	15 miles southwest of Price, Utah	–	11,623 acres (11,623 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Hidden Splendor Resources Horizon Mine	Coal mine	5 miles east of Scofield, Utah	–	1,539 acres (1,539 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Intermountain Power Agency Wildcat Loadout	Coal mine	3 miles west of U.S. Highway 6, on Consumers Road near Helper, Utah	U548	268 acres (268 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
PacifiCorp Trial Mountain Mine	Coal mine	12 miles west of Orangeville, Utah	–	3,492 acres (3,492 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Savage Services Corporation Savage Coal Terminal	Coal mine	4 miles south-southeast of Price, Utah	–	166 acres (166 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Sunnyside Cogeneration Associates Star Point Waste Fuel	Coal mine	3 miles north of Hiawatha, Utah	–	156 acres (156 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Sunnyside Cogeneration Associates Sunnyside Refuse/Slurry	Coal mine	25 miles east of Price, Utah	–	331 acres (331 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Utah American Energy, Inc. Horse Canyon Mine (Lila Canyon extension)	Coal mine	7 miles east of Cedar, Utah	–	4,566 acres (4,566 acres)	The development assumption for this surface mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
West Ridge Resources, West Ridge Mine	Coal mine	10 miles north of Sunnyside, Utah	–	5,990 acres (5,990 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the UDNR (UDNR 2013b).
Local					
Carbon County					
All-Terrain Vehicle Trail	Local development (recreation)	North of Price, Utah, to the southeast, terminating near Sunnyside, Utah	U492	36 miles (66 acres)	The development assumption for this project is the trail centerline is buffered to 15 feet wide based on existing portions of the trail in 2011 NAIP aerial imagery. The source for the Project alignment is Carbon County (Carbon County, Utah 2011a).
Clear Creek subdivision	Residential subdivision	4 miles south of Scofield, Utah	–	19 acres (19 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Utah 2011b).
Dennis Plat of Spring Glen subdivision	Residential subdivision	1 mile south of Helper, Utah	–	23 acres (23 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Utah 2011b).
Frank Jr. and Judy Saccomanno subdivision	Residential subdivision	1 mile southeast of Helper, Utah	–	5 acres (5 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Utah 2011b).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Kenilworth subdivision	Residential subdivision	2 miles east of Helper, Utah	–	42 acres (42 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Utah 2011b).
Spring Glen Townsite	Residential subdivision	1 mile south of Helper, Utah	–	53 acres (53 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Utah 2011b).
Theo Vista subdivision	Residential subdivision	1 mile south of Helper, Utah	–	5 acres (5 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Utah 2011b).
City of Helper					
Castle Gate Addition subdivision	Residential subdivision	Western portion of the city limits of Helper, Utah	–	69 acres (69 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Utah 2011b).
Fitch's subdivision	Residential subdivision	Western portion of the city limits of Helper, Utah	–	1 acre (1 acre)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Utah 2011b).
Giacoletto subdivision	Residential subdivision	Northern portion of the city limits of Helper, Utah	–	2 acres (2 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Utah 2011b).
Hillcrest Addition subdivision	Residential subdivision	Eastern portion of the city limits of Helper, Utah	–	6 acres (6 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Utah 2011b).
New Helper Townsite subdivision	Residential subdivision	Northern portion of the city limits of Helper, Utah	–	23 acres (23 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Utah 2011b).
Sheya Addition subdivision	Residential subdivision	Within the municipal boundary of Helper, Utah	–	8 acres (8 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Carbon County (Carbon County, Utah 2011b).
Daggett County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Duchesne County					
Airport Estates subdivision	Residential subdivision	On the western edge of Roosevelt, Utah	–	323 acres (323 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Arch View Ranchettes subdivision	Residential subdivision	15 miles west of Duchesne, Utah	U421	51 acres (51 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Brad Knight subdivision	Residential subdivision	2 miles south of Roosevelt, Utah	–	21 acres (21 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Cedar Mountain No. 6 and 6A subdivision	Residential subdivision	22 miles west of Duchesne, Utah	U426	1,698 acres (1,698 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Cedar Mountain No. 8 subdivision	Residential subdivision	6 miles west of Duchesne, Utah	–	334 acres (334 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Cedar Mountain No. 9 subdivision	Residential subdivision	13 miles west of Duchesne, Utah	U421	1,967 acres (1,967 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Cove Estates subdivision	Residential subdivision	Northern portion of Roosevelt municipal boundary, Utah	–	416 acres (416 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Dale Gines subdivision	Residential subdivision	6 miles north of Duchesne, Utah	–	102 acres (102 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Deer Field subdivision	Residential subdivision	25 miles west of Duchesne, Utah	–	43 acres (43 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Elk Tracks at Golden Eagle subdivision	Residential subdivision	5 miles northwest of Duchesne, Utah	U420	789 acres (789 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Fruitland Ranchettes subdivision	Residential subdivision	24 miles west of Duchesne, Utah	–	26 acres (26 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Golden Eagle subdivision	Residential subdivision	5 miles northwest of Duchesne, Utah	–	359 acres (359 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Great Basin Estates I subdivision	Residential subdivision	7 miles northwest of Duchesne, Utah	U420	319 acres (319 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Hidden Meadow subdivision	Residential subdivision	24 miles west of Duchesne, Utah	–	63 acres (63 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Highland Estates subdivision	Residential subdivision	2 miles south of Roosevelt, Utah	–	12 acres (12 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Ioka Meadows subdivision	Residential subdivision	2 miles southwest of Roosevelt, Utah	–	38 acres (38 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Karren Industrial Park	Industrial	Directly south of the City of Roosevelt municipal boundary, Utah	–	20 acres (20 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this industrial park is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Lazy JP Ranchettes subdivision	Residential subdivision	23 miles west of Duchesne, Utah	U426	70 acres (70 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Ledge Rock Cove subdivision	Residential subdivision	6 miles west of Roosevelt, Utah	–	36 acres (36 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Lobo Ranchettes subdivision	Residential subdivision	20 miles northeast of Price, Utah	–	368 acres (368 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Moondance Ranch Phase I and II subdivision	Residential subdivision	6 miles southeast of Duchesne, Utah	U430, U431	4,162 acres (4,162 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Pheasant Run subdivision	Residential subdivision	3 miles southwest of Roosevelt, Utah	–	13 acres (13 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
River Breeze Estates subdivision	Residential subdivision	5 miles north of Duchesne, Utah	U420	32 acres (32 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Robbers Roost subdivision	Residential subdivision	25 miles west of Duchesne, Utah	–	80 acres (80 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Rosalinda Park subdivision	Residential subdivision	4 miles north of Duchesne, Utah	–	24 acres (24 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Silver Moon subdivision	Residential subdivision	5 miles southeast of Duchesne, Utah	U430, U431	6,443 acres (6,443 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Sundown Ridge subdivision	Residential subdivision	26 miles west of Duchesne, Utah	U426	141 acres (141 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Sunrise Estates subdivision	Residential subdivision	4 miles southwest of Roosevelt, Utah	–	21 acres (21 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Tabby Shadows subdivision	Residential subdivision	15 miles west-northwest of Duchesne, Utah	U421	659 acres (659 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Uintah Haven subdivision	Residential subdivision	5 miles north of Duchesne, Utah	U420	50 acres (50 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Uintah View Ranches subdivision	Residential subdivision	1 mile north of Duchesne, Utah	–	2,511 acres (2,511 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Valle Del Padre subdivision	Residential subdivision	25 miles west of Duchesne, Utah	–	441 acres (441 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Victory Pipeline	Water pipeline	Duchesne County	U410, U430	746 acres (746 acres)	The development assumption is to use the shapefile boundary provided by Jones and DeMille Engineering (Jones and DeMille Engineering 2013)
View subdivision	Residential subdivision	2 miles south of Roosevelt, Utah	–	12 acres (12 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Vista Valley subdivision	Residential subdivision	18 miles west of Duchesne, Utah	U421, U425	768 acres (768 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Vonsville subdivision	Residential subdivision	1 mile south of Roosevelt, Utah	–	157 acres (157 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Wasatch Meadow subdivision	Residential subdivision	26 miles west of Duchesne, Utah	–	69 acres (69 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
West Star Properties	Residential subdivision	20 miles west of Duchesne, Utah	U421	79 acres (79 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).
Young Meadows subdivision	Residential subdivision	20 miles west of Duchesne, Utah	–	934 acres (934 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Duchesne County February 2012 (Duchesne County 2009).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Emery County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Grand County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Juab County					
Birch Creek subdivision	Residential subdivision	Adjacent to Nortonville of Juab, 6 miles north and west of Nephi, Utah	–	13 acres (13 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Juab County (Juab County 2009).
Burraston View subdivision	Residential subdivision	Adjacent to Old 91, and Burraston Hill of Juab, 6 miles north and west of Nephi, Utah	–	40 acres (40 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Juab County (Juab County 2009).
Burraston Hill of Juab subdivision	Residential subdivision	Adjacent to Burraston View, and Old 91, 6 miles north and west of Nephi, Utah	–	40 acres (40 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Juab County (Juab County 2009).
Majestic Estates subdivision	Residential subdivision	6 miles north and west of Nephi, Utah	–	7 acres (7 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Juab County (Juab County 2009).
Nortonville subdivision	Residential subdivision	Adjacent to Birch Creek, 6 miles north and west of Nephi, Utah	–	13 acres (13 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Juab County (Juab County 2009).
Old 91 subdivision	Residential subdivision	Adjacent to Burraston View, and Burraston Hill of Juab, 6 miles north and west of Nephi, Utah	–	40 acres (40 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Juab County (Juab County 2009).
West Creek of Moab subdivision	Residential subdivision	6 miles north and west of Nephi, Utah	–	26 acres (26 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Juab County (Juab County 2009).
Nephi City					
Deer Acre Plat 'B' subdivision	Residential subdivision	Eastern edge of the municipal boundary of Nephi, Utah	–	6 acres (6 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Juab County (Juab County 2009).
Sanpete County					
Mount Baldy subdivision	Residential subdivision	7 miles northeast of Fountain Green, Utah	–	307 acres (307 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Sanpete County (Sanpete County 2009).
Uintah County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Utah County					
Solider Summits residential estates	Residential subdivision	13 miles north of Scofield, Utah	U530	811 acres (811 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since this subdivision is not fully developed. The source for the project boundary is Utah County (Utah County 2009).
Wasatch County					
There are not any actions identified or data received to be used in cumulative analysis					
Additional Actions⁶					
LANDFIRETM					
–	–	Throughout the Project area	–	–	The development assumption for land fire data is based on the following attributes: Agriculture-Cultivated Crops and Irrigated Agriculture: Value = 82 Agriculture-Pasture and Hay: Value = 81 Developed-High Intensity: Value = 24 Developed-Medium Intensity = Value 23 Developed-Roads = Value 25 Developed-Upland Deciduous Forest = Value 13 Developed-Upland Evergreen Forest = Value 14 Developed-Upland Herbaceous = Value 16 Developed-Upland Mixed Forest = Value 15 Developed-Upland Shrubland = Value 17 National Agricultural Statistics Service (NASS)-Close Grown Crop = Value 65 NASS-Fallow/Idle Cropland = Value 66 NASS-Orchard = Value 60 NASS-Row Crop = Value 64 NASS-Row Crop-Close Grown Crop = Value 63 Quarries-Strip Mines-Gravel Pits = Value 32 Recently Disturbed Developed Upland Deciduous Forest = Value 2541 Recently Disturbed Developed Upland Evergreen Forest = Value 2542 Recently Disturbed Developed Upland Herbaceous = Value 2544 Recently Disturbed Developed Upland Mixed Forest = Value 2543 Recently Disturbed Developed Upland Shrubland = Value 2545 Recently Disturbed Orchard Vegetation = Value 2548 Recently Disturbed Pasture and Hayland = Value 2549 The source for the boundaries is LANDFIRE (LANDFIRE 2012)
Transmission Line					
–	Transmission line	Throughout the Project area	–	–	The development assumption for transmission lines is based on averaging corridor widths estimated by 2011 and 2012 NAIP aerial imagery interpretation (NAIP 2011b). 500kV transmission lines: 225-foot-wide corridor 345kV transmission lines: 150-foot-wide corridor 230kV transmission lines: 100-foot-wide corridor 138kV transmission lines: 75-foot-wide corridor 115kV transmission lines: 50-foot-wide corridor The source for transmission line alignments is POWERmap Platts as digitized by EPG (POWERmap Platts 2009).

TABLE 4-1 PAST AND PRESENT ACTIONS					
Applicant Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Ground Disturbance)	Assumptions for Analysis ³
Pipelines					
–	Pipeline	Throughout the Project area	–	–	The development assumption for pipelines is based on averaging corridor widths estimated by 2011 and 2012 NAIP aerial imagery interpretation (NAIP 2011a). 30- to 42-inch-diameter pipelines: 300-foot-wide corridor 20- to 26-inch-diameter pipelines: 200-foot-wide corridor 10- to 18-inch diameter pipelines: 100-foot-wide corridor 6- to 8.6-inch diameter pipelines: 50-foot-wide corridor The source for pipeline alignments is POWER Engineers (POWER 2012).
Highways/Roads					
–	Transportation	Throughout the Project area	–	–	The development assumption for highways and roads is based on averaging corridor widths estimated by 2011 and 2012 NAIP aerial imagery interpretation (NAIP 2011e). Interstate highways: 75-foot-wide corridor Intra-state/Intra-metro Area/Inter-metro Area: 50-foot-wide corridor City/County/Local: 25-foot-wide corridor The source for the road alignments are the U.S. Department of Transportation (2008) and Automated Geographic Reference Center (2012).
Railroads					
–	Transportation	Throughout the Project area	–	–	The development assumption for railroads is an average corridor width of 25 feet based on 2011 and 2012 NAIP aerial imagery interpretation (NAIP 2011e). The source for railroad alignments is the U.S. Department of Transportation (2008).
<p>NOTES:</p> <p>¹All locations are approximate unless township/range/section is provided.</p> <p>²The acreage and mileage is calculated from the available data received from agencies or digitized maps. The total acreage is based on the data boundary received from an agency and may not directly reflect what is described in the project description.</p> <p>³The assumptions were used in the quantification portion of the cumulative analysis to achieve an approximate amount of disturbance for each activity.</p> <p>⁴Vegetation management activities include but are not limited to prescribed fires; chemical and mechanical weed treatments; mastication; mowing; bullhog; cut and pile; cut, pile, and burn; lop and scatter; plantings; chaining; stream channel work; shaded fuel breaks; etc.</p> <p>⁵Habitat/rangeland management activities include but are not limited to gate, pond, well, corral, check dam, erosion structure, cattleguard, pit, water trough, seep, etc.</p> <p>⁶Additional activities are datasets of existing development but are not called out as individual projects.</p> <p>Rural residential development, farming, grazing, private airstrips, transportation, and mining claims are dispersed throughout the Project area; however, data inventory for these categories was limited to the 2-mile-wide alternative route study corridors.</p> <p>During the analysis, a few past and present actions were identified for which data either have not been received from the field offices or were received after analysis began and will be added between the Draft and Final EIS. These past and present actions include:</p> <ul style="list-style-type: none"> ▪ Little Snake Field Office <ul style="list-style-type: none"> • Sand Wash Artillery Range Site and Craig Range National Guard Training Site (waiting on information from CH2MHill) ▪ Moab Field Office <ul style="list-style-type: none"> • Vegetation/habitat management activities ▪ Manti-La Sal National Forest <ul style="list-style-type: none"> • Dry Canyon Fuels • Questar Pipeline • Gooseberry Campground • Spoon Creek Timber Sales 					

TABLE 4-2 REASONABLY FORESEEABLE FUTURE ACTIONS					
Applicant/Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Surface Disturbance)	Assumptions for Analysis ³
Multi-state Actions					
Bureau of Land Management (BLM) Wyoming State Office					
Idaho Power and Rocky Mountain Power Gateway West 500-kilovolt (kV) Transmission Project	Transmission line	Starts at Windstar Substation near Dave Johnston Power Plant in Wyoming to Hemingway Substation near Melba, Idaho	W15, W30, W35, W36	1,114 miles (31,539 acres)	The development assumption buffers the centerline for the double-circuit 500-kilovolt (kV) sections and the single-circuit 500kV section for a 250-foot-wide corridor; and the 230kV section, for a 125-foot-wide corridor. This is based on information in the Gateway West Draft Environmental Impact Statement (EIS), 2011 (BLM 2011t). The source of the project alignment is Tetra Tech (Tetra Tech 2013).
TransWest Express, LLC TransWest Express 500kV Transmission Project	Transmission line	Begins near Sinclair, Wyoming, and terminates near Las Vegas, Nevada; with possible alternative routes proposed in Colorado and Utah	W102, W110, W111, W113, W116, W117, W120, W121, W124, W15, W16, W22, W27, W299, W30, W300, W302, W32, W321, W36, W409, W411C100, C101, C105, C106, C13, C170, C175, C177, C185, C186, C187, C188, C195, C196, C197, C270, C61, C91, U241, U285, U300, U310, U390, U400, U401, U404, U406, U410, U420, U421, U424, U427, U429, U430, U431, U432, U433, U435, U460, U486, U487, U488, U490, U496, U498, U523, U524, U525, U530, U537, U539, U544, U545, U546, U548, U585, U586, U587, U600, U621, U625, U628, U629, U630, U631, U636, U637, U638, U639, U650, U728, U729, U730, U731, U732, U733, U734, U765	2,551 miles (77,182 acres)	The development assumption buffers the centerline for a 250-foot-wide right-of-way based on information in the right-of-way application submitted in 2010 (TransWest Express LLC 2010). The source of the project alignment is AECOM (AECOM 2013).
Bureau of Land Management Rock Springs and Little Snake Field Offices					
Questar Exploration and Production Company, Wexpro Company, and other natural gas development companies Hiawatha Regional Energy Development Project	Oil and/or gas development	Northwest Colorado/southwest Wyoming	–	158,114 acres (7,552 acres)	The development assumptions for this project are 1.9 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions and the project boundary are based on information in the public scoping announcement in 2006 (BLM 2006c).
Wyoming					
Federal					
Bureau of Land Management Rawlins Field Office					
Ambre Energy Anadarko Rosebud Mine	Coal mine	Northeast of Hanna, Wyoming	W21, W22	12,644 acres (12,644 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is Ambre Energy (Ambre Energy 2012a).
BP (consortium) Continental Divide-Creston Natural Gas Project	Oil and/or gas development	25 miles west of Rawlins, Wyoming, within Carbon and Sweetwater counties	W101, W102, W107, W108, W109, W110, W111, W116, W117, W120, W125, W128, W27, W32	1,028,334 acres (66,723 acres)	The development assumptions for this project are 2.6 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Project Draft EIS and Plan of Development 2012 (BLM 2012ao). The source of the project boundary is the BLM Rawlins Field Office (BLM 2007g).
Warren Exploration and Production, Inc., Double Eagle Petroleum Company, and Anadarko Exploration and Production Company Doty Mountain Plan D	Oil and/or gas development	19 miles southwest of Rawlins, Wyoming	–	1,368 acres (17 acres)	The development assumptions for this project are 2 acres of disturbance per well pad and a density of 1 well pad per 152 acres (9 wells distributed across 1,368 acres). These assumptions are based on information in the Plan of Development, 2012 (BLM 2012ap). The source of the project boundary is the BLM Rawlins Field Office (BLM 2012aq).

TABLE 4-2 REASONABLY FORESEEABLE FUTURE ACTIONS					
Applicant/Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Surface Disturbance)	Assumptions for Analysis ³
Whirlwind I	Wind energy facility	2 miles southwest of Rawlins, Wyoming	W30, W32	42,568 acres (255 acres)	The development assumptions for this project are 1.0 acres of disturbance per turbine pad and a density of 1 turbine pad per 167 acres. These assumptions are based on averaging wind-turbine pad sizes for existing projects in the roject area. The density assumption was developed by evenly spacing 300 turbines within the project-area boundary. The source of this information is from BLM National Environmental Policy Act (NEPA) Hotsheet released in January 2013 and reviewing the National Agricultural Information Program (NAIP) 2012 aerial imagery (BLM 2013l). The source for the project boundary is the BLM Rawlins Field Office (BLM 2013m).
Bureau of Land Management Rock Spring Field Office					
Ambre Energy Black Butte Mine	Coal mine	25 miles east of Rock Springs, Wyoming	–	45,846 acres (45,846 acres)	The development assumption for this surface mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is Ambre Energy (Ambre Energy 2012b).
Anadarko Petroleum Corp. Monell/Arch Unit Infill Project – Monell Unit	Oil and/or gas development	35 miles east of Rock Springs, Wyoming	–	10,146 acres (509 acres)	The development assumptions for this project are 2 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the public scoping notice, 2012 (BLM 2012ar). The source for the project boundary is the BLM Rock Springs Field Office (BLM 2012as).
Anadarko Petroleum Corp. Monell/Arch Unit Infill Project – Arch Unit	Oil and/or gas development	35 miles east of Rock Springs, Wyoming	–	12,540 acres (312 acres)	The development assumptions for this project are 1 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the public scoping notice, 2012 (BLM 2012ar). The source for the project boundary is the BLM Rock Springs Field Office (BLM 2012as).
Evergreen Wind Power Partners, LLC Quaking Aspen Mountain	Wind energy facility	Southeast of Rock Springs, Wyoming	–	7,172 acres (109 acres)	The development assumptions for this project are 1.0 acres of disturbance per turbine pad and a density of 1 turbine pad per 65 acres. These assumptions are based on averaging wind-turbine pad sizes for similar existing wind projects in the Project area. The density assumption was developed by evenly spacing 79 turbines within the project-area boundary. The source of this information is from the scoping notice extension in 2011 (BLM 2011u). The source for the project boundary is the BLM Rock Springs Field Office (BLM 2012at).
Sweeney Ranch Wind Park, LLC Sweeney Ranch	Wind energy facility	9 miles south of Thayer Junction, Wyoming	–	12,097 acres (329 acres)	The development assumptions for this project are 1.0 acre of disturbance per turbine pad and a density of 1 turbine pad per 36 acres. The density assumption was developed by evenly spacing 150 turbines within the project area boundary. The source of this information is the BLM NEPA Hotsheet, January 2013 (BLM 2013l). The source for the project boundary is BLM Rock Springs Field Office (BLM 2009i).
Teton Wind, LLC White Mountain Wind Farm	Wind energy facility	Located west-northwest of Rock Springs, Wyoming (T19N & 20N, R105W and 106W)	–	13,165 acres (191 acres)	The development assumptions for this project are 0.8 acres of disturbance per turbine pad and a density of 1 turbine pad per 54.85 acres. The density assumption was developed by evenly spacing 240 turbines within the project area boundary. The source of these assumptions is from the Environmental Assessment (EA) in 2010 (BLM 2010k). The source for the project boundary is the BLM Rock Springs Field Office (BLM 2012at).
State					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Local					
Carbon County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					

TABLE 4-2 REASONABLY FORESEEABLE FUTURE ACTIONS					
Applicant/Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Surface Disturbance)	Assumptions for Analysis ³
Sweetwater County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Colorado					
Federal					
Bureau of Land Management Grand Junction Field Office					
-	Oil and/or gas development	20 miles northwest of De Beque, Colorado	-	23,682 acres (228 acres)	The development assumptions for these units are 1.5 acres of disturbance per well pad and a density of 1 well pad per 160 acres. These assumptions are based on information in the Reasonable Foreseeable Development Scenario for Oil and Gas, Grand Junction Field Office 2012 (BLM 2012x). The source of the project boundary is the BLM Colorado State Office (BLM 2012x).
Bureau of Land Management Little Snake Field Office					
Tri-State Generation and Transmission Association, Salt River Project Agricultural Improvement and Power District, Platte River Power Authority, and PacifiCorp Trapper Mine	Coal mine	Southwest of Craig, Colorado, east of Colorado State Highway 13	-	10,186 acres (10,186 acres)	The development assumption for this surface mine including the entire area within the project boundary as the development area, since the extent of the development at this point is unknown. The boundary was provided by Trapper Mine (Trapper Mining, Inc. 2012).
-	Oil and/or gas development	9 miles southeast of Moffat, Colorado	-	11,974 acres (1,205 acres)	The development assumptions for these units are 4 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Reasonable Foreseeable Development: Oil and Gas in the Little Snake Field Office Administrative Boundary Area, 2004 (BLM 2004d). The source of the project boundary is the BLM Colorado State Office (BLM 2012x).
Bureau of Land Management White River Field Office					
ExxonMobil Exploration Company and Natural Soda Holdings, Inc. Colorado Oil Shale Research Development, and Demonstration Lease Tracts Project	Oil shale and/or tar sand development	Site 1 is located at T1S, R98W, Sec.35 (Lots 1, 2, 3, and 4) Site 2 is located at T1S, R98W, Sec. 34 (Lots 1, 2, 7, and 8)	-	359 acres (359 acres)	The development assumption for this project is to consider the area within the project lease area as the development area since development occurs throughout the project lease area. The source for the project boundary is from the ExxonMobil Exploration Company and Natural Soda Holdings, Inc. Colorado Oil Shale Research, Development, and Demonstration Lease Tracts Project EA, 2012 (BLM 2012au). The source for the project boundary is the BLM White River Field Office (2010I).
State					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Local					
Garfield County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Mesa County					
Clouse No. 1 and No. 2 Simple Land Divisions	Local development (annexation/ land division)	12 miles northeast of Fruita, Colorado	-	87 acres (87 acres)	The development assumption for this project is to use the entire land division area. The boundary was provided by Mesa County as a GIS shapefile (Mesa County 2011).
Moffat County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Rio Blanco County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Routt County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					

TABLE 4-2 REASONABLY FORESEEABLE FUTURE ACTIONS					
Applicant/Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Surface Disturbance)	Assumptions for Analysis ³
Utah					
Federal					
Bureau of Land Management Fillmore Field Office					
Ferner Valley Analysis Area	Vegetation management ⁴	7 miles east of Jericho, Utah	–	8,046 acres (8,046 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of vegetation management activities is unknown. The source for the project boundary is the BLM Fillmore Field Office (BLM 2012ac).
Levan Pastures Analysis Area	Vegetation management ⁴	5 miles west of Levan, Utah	–	3,163 acres (3,163 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of vegetation management activities is unknown. The source for the project boundary is the BLM Fillmore Field Office (BLM 2012ac).
Mona South Pumped Storage Project	Transmission line	In Wide Canyon, 4 miles southwest of Mona, Utah	–	Transmission: 4.7 miles (143 acres) Facilities: 394 acres	Transmission line: The development assumption buffers the 4.7-mile-long centerline for a 250-foot-wide right-of-way based on information developed by EPG of average right-of-way widths for transmission lines of different voltages, 2013. ⁵ The source for the Project alignment is the BLM Fillmore Field Office (BLM 2013n). Facilities: The development assumption for this project is to use the entire project boundary since development at this point is unknown. The source for the project boundary is the BLM Fillmore Field Office (BLM 2013n).
Mona North Pumped Storage Project	Transmission line	Old Canyon stream in the Long Ridge area west of Mona, Utah	–	Transmission: 6 miles (182 acres) Facilities: 833 acres	Transmission line: The development assumption buffers the 6-mile-long centerline for a 250-foot-wide right-of-way based on information developed by EPG of average right-of-way widths for transmission lines of different voltages, 2013. ⁵ The source for the Project alignment is the BLM Fillmore Field Office (BLM 2013o). Facilities: The development assumption for this project is to use the entire project boundary since development at this point is unknown. The source for the project boundary is the BLM Fillmore Field Office (BLM 2013o).
Bureau of Land Management Moab Field Office					
–	Oil and/or gas development	9 miles south of Cisco, Utah	–	26,069 acres (662 acres)	The development assumptions for this project are 4.0 acres of disturbance per well pad and a density of 1 well pad per 160 acres. These assumptions are based on information in the Reasonably Foreseeable Development Scenario for Oil and Gas, Moab Field Office (BLM 2005g). The source for the project boundary is the BLM Utah State Office (BLM 2012ac).
Bureau of Land Management Price Field Office					
Wasatch Natural Resources Long Canyon Coal Lease	Coal mine	3 miles east of Scofield along a north-south trending ridge east parallel to Pleasant Valley/Scofield	–	7,623 acres (7,623 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the BLM Price Field Office (BLM 2012aw).
Woodside Site	Power generation	Boundary encompasses 50 miles around Green River and East Carbon, Utah	U488, U489, U734	50,046 acres (50,046 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The Woodside substation assumption is 6.5 acres. The source for these boundaries is the BLM Price Field Office (BLM 2012aw).
–	Oil and/or gas development	4 miles southwest of Woodside, Utah	U734	11,919 acres (292 acres)	The development assumptions for this project are 1.0 acre of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Price Proposed Resource Management Plan/Final EIS, 2008 (BLM 2008d). The source for the project boundary is the BLM Utah State Office (BLM 2012ac).
Bureau of Land Management Richfield Field Office					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					

TABLE 4-2 REASONABLY FORESEEABLE FUTURE ACTIONS					
Applicant/Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Surface Disturbance)	Assumptions for Analysis ³
Bureau of Land Management Salt Lake Field Office					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Bureau of Land Management Vernal Field Office					
Newfield Corporation Monument Butte EIS	Oil and/or gas development	T8S, R15E, Sec. 24-26, 35, 36 T8S, R16E, Sec. 13-15, 19-36 T8S, R17E Sec. 14-36 T8S, R18E Sec. 19-21, 25-36 T8S, R19E, Sec. 31,32 T9S, R19E, Sec. 4-9, 17-20 T9S, R18E, Sec. 1-35 T9S, R16-17E, all sections T9S, R15E, Sec.1-3, 10-12, 13-15, 22-24, 25-27, 34-36	–	119,669 acres (7,213 acres)	The development assumptions for this project are 1.2 acres of disturbance per well pad and a density of 1 well pad per 20 acres. These assumptions are based on information in the Newfield Master Development Plan No. 6 EA, 2011 (BLM 2011v). The source for the project boundary is the BLM Vernal Field Office (BLM 2012ag).
–	Oil and/or gas development	4 miles southeast of Ouray, Utah	U300	44,726 acres (2,793 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, 2012 (BLM 2012af). The source for the project boundary is the BLM Utah State Office (BLM 2012ac).
–	Vegetation Management ⁴	One portion in the southeastern corner of the Vernal Field Office; other portion 20 miles east of Manila, Utah	–	1,704 acres (1,704 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of vegetation management activities is unknown. The source for the project boundary is the BLM Vernal Field Office (BLM 2013k).
Ashley National Forest					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Manti-La Sal National Forest					
Meadow Fork Trail	Recreation	7 miles southeast of Spring City, Utah	–	2.4 miles (4 acres)	The development assumption for this project buffers the trail centerline to create a 15-foot-wide corridor. The assumption is based on an existing trail that part of the proposed trail follows. The source for the Project alignment is the Manti-La Sal National Forest (USFS 2011h).
Flat Canyon Coal Lease Tract	Coal mine	5 miles west of Clear Creek, Utah	U600	2,717 acres (2,717 acres)	The development assumption for this underground mine is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the Manti-La Sal National Forest, (USFS 2013e).
Shalom Fuels Project	Vegetation management ⁴	3 miles west of Clear Creek, Utah	U600	5,361 acres (5,361 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the extent of vegetation management activities is unknown. The source for the project boundary is the Manti-La Sal National Forest, (USFS 2012l).
Sunroc Corporation Chicken Creek Surface Gypsum Mine	Non-coal mine	2 miles east of Levan, Utah	–	18 acres (18 acres)	The development assumption for this surface mine is to consider the area within the project boundary as the development area since development at this point is unknown. The proposed access road assumption is the centerline buffered to a 25-foot width. The source for the project boundary is the Manti-La Sal National Forest, (USFS 2012j).
Uinta-Wasatch-Cache National Forest					
Squaw Creek Road Relocation Project	Highway/Road	Between Spanish Fork Road and Heber-Kamas Road	–	5 miles (12 acres)	The development assumption for this project is to buffer the road centerline for a 30-foot-wide corridor based on the portion of existing road alignment that the project follows (USFS 2012m). The source for the project alignment is the Uinta-Wasatch-Cache National Forest (USFS 2012n).

TABLE 4-2 REASONABLY FORESEEABLE FUTURE ACTIONS					
Applicant/Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Surface Disturbance)	Assumptions for Analysis ³
Utah Reclamation Mitigation and Conservation Commission and Bureau of Indian Affairs					
Bill Barrett Corporation Blacktail Ridge	Oil and/or gas development	In Duchesne County, 8 miles east of Fruitland, Utah, and 2 miles north of U.S. Highway 40	U421	933 acres (21 acres)	The development assumptions for this project are 3.5 acres of disturbance per well pad and a density of 1 well pad per 159 acres (5 wells on 790.52 acre parcel). These assumptions are based on information in the Blacktail Ridge 12-Well Exploratory Drilling Project EA Scoping Notice, November 2012 (Utah Reclamation Mitigation and Conservation Commission 2012). The source for the project boundary is Utah Reclamation Mitigation and Conservation Commission 2013c).
Bureau of Reclamation					
Bureau of Reclamation and Sanpete Water Conservancy District The Narrows Dam and Reservoir Project (including highway relocation, tunnel, and East Bench and Oak Creek Pipeline)	Dam and reservoir project	6 miles northeast of Fairview, Utah	U600 (Tunnel and Highway), U630, U636 (pipelines)	Reservoir: 669 acres Pipelines: 16 miles (59 acres) Highway: 3 miles (8 acres) Tunnel: 0.6 miles (2 acres) Dam: 0.3 acres	Reservoir: The development assumption for this project is based on using the entire project boundary since development at this point is unknown. The source for the project boundary is Central Utah Water Conservancy District, 2012. Pipelines: The development assumption is to buffer the pipelines for a 30-foot-wide corridor. Highway: The development assumption is to buffer the centerline for a 24-foot-wide corridor. Tunnel: The development assumption is to buffer the centerline for a 30-foot-wide corridor based on aerial imagery scar measurement of the current alignment. Dam: The development assumption is to buffer the dam point to 14,251 square feet. All of the development assumptions are based on information from the Narrows Project Final EIS, November 2012 (U.S. Bureau of Reclamation 2012). The source for the Project boundaries is Sanpete Water Conservancy District (Sanpete Water Conservancy District.2012).
State					
State of Utah School and Institutional Trust Lands Administration (SITLA)					
Santaquin Residential, Utah County South Price residential, Price Fairgrounds, Carbon County Arches Overlook, Grand County Johnsons Up On Top/Moab Golf Course College of Eastern Utah, Utah State University Branch Campus Site, Grand County Price Industrial, Carbon County Price City 40, Carbon County Price Industrial Large Lots Price Fairgrounds Exchange Parcel Green River Industrial	Multiple types of development ⁶	Throughout the Utah portion of the Project area	-	5,751 acres (5,751 acres)	The development assumption for this project is to use the entire project lease boundary since development in each lease or project area currently is unknown. The source for the project boundary is SITLA (SITLA 2013b).
Local					
Carbon County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
City of Helper					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Daggett County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Duchesne County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					

TABLE 4-2 REASONABLY FORESEEABLE FUTURE ACTIONS					
Applicant/Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Surface Disturbance)	Assumptions for Analysis ³
Emery County					
Blue Castle Nuclear Power Plant Project	Power generation	4 miles west-northwest of Green River, Utah	U488	1,030 acres (1,030 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is Emery County (Emery County 2009a).
–	Wind energy facilities	20 miles east of Castle Dale, Utah	–	3,838 acres (3,838 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is Emery County (Emery County 2009b).
Grand County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Juab County					
Juab County Loop Road	Highway/road	West of Mona, Utah	U640	3.8 miles (34 acres)	The development assumption for this project is to buffer the road centerline for a 75-foot-wide corridor based on the average road width for an interstate. This average was identified by EPG staff after measuring existing interstates. The source for the Project alignment is the BLM Fillmore Field Office (BLM 2012ax).
Nephi City					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Sanpete County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Uintah County					
Enefit American Oil shale development	Oil shale and/or tar sand development	In the Uinta Basin, south of Vernal, Utah	–	305 acres (305 acres)	The development assumption for this project is to use the entire project boundary since development at this point is unknown. The source for the project boundary is Stantec Corporation (Stantec Corporation 2012).
City of Naples					
Proposed Golf Course (private)	Recreation	2 miles east of Naples, Utah	–	433 acres (433 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the City of Naples (Naples City 2009a).
Proposed Heliport (private)	Air Facility	1.5 miles east of Naples, Utah	–	59 acres (59 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since development at this point is unknown. The source for the project boundary is the City of Naples (Naples City 2009b).
Utah County					
No actions have been identified or no data have been received to use in the cumulative effects analysis.					
Wasatch County					
Strawberry Highlands subdivision	Residential subdivision	30 miles west of Duchesne, Utah	–	1,906 acres (1,906 acres)	The development assumption for this project is to consider the area within the project boundary as the development area since the subdivision development at this point is unknown. The source for the project boundary is Wasatch County (Wasatch County 2012).

TABLE 4-2 REASONABLY FORESEEABLE FUTURE ACTIONS					
Applicant/Project Name	Type of Action	General Location ¹	Links Crossing the Action	Approximate Size of Action ² (Surface Disturbance)	Assumptions for Analysis ³
<p>NOTES:</p> <p>¹All locations are approximate unless township/range/section is provided.</p> <p>²The acreage and mileage is calculated from the available data received from agencies or digitized maps.</p> <p>³The assumptions were used in the quantification portion of the cumulative analysis to achieve an approximate amount of disturbance for each action.</p> <p>⁴Vegetation management activities include but not are not limited to prescribed fires; chemical and mechanical weed treatments; mastication; mowing; bullhog; cut and pile; cut, pile, and burn; lop and scatter; plantings; chaining; stream channel work; shaded fuel breaks; etc.</p> <p>⁵The development assumption for transmission lines is based on averaging corridor widths estimated by aerial interpretation for the following voltages:</p> <ul style="list-style-type: none"> ▪ 500kV Transmission Lines: 225-foot-corridor ▪ 345kV Transmission Lines: 150-foot-corridor ▪ 230kV Transmission Lines: 100-foot-corridor ▪ 138kV Transmission Lines: 75-foot-corridor ▪ 115kV Transmission Lines: 50-foot-corridor <p>⁶SITLA Active Pre-Designation Leases include the following types of development: Residential, Recreation, School/Education Facility, Industrial, and Annexation.</p> <p>During the analysis, some known reasonably foreseeable future actions in the Project area were identified for which spatial data either have not been received from the field office or forest or were received after analysis began and will be added between the Draft and Final EIS. These reasonably foreseeable future actions include:</p> <ul style="list-style-type: none"> ▪ Multi-State Projects <ul style="list-style-type: none"> • LS Power and Wyoming Infrastructure Authority Wyoming-Colorado Intertie Transmission Project • High Plains Express Transmission Project • Jade Energy Associates Overland Transmission Project • Regional Watershed Supply Project Pipeline ▪ Bureau of Land Management Rawlins Field Office <ul style="list-style-type: none"> • Catalina Plans of Development, G & I Proposed Atlantic Rim Natural Gas Wells • DKRW Facility and pipeline • Intermountain Wind (Boswell Springs) • Samson Endurance Northern Access Loop Pipeline ▪ Bureau of Land Management Rock Springs Field Office <ul style="list-style-type: none"> • Miller Mountain Wind Farm ▪ Bureau of Land Management Moab Field Office <ul style="list-style-type: none"> • Professor Valley Land and Water Conservation Fund Site Land Purchase ▪ Bureau of Land Management Richfield Field Office <ul style="list-style-type: none"> • May 2013 Oil and Gas lease ▪ Manti-La Sal National Forest <ul style="list-style-type: none"> • Graben Fuels • Mary's Slide 					

TABLE 4-3 SUMMARY APPROACH TO CUMULATIVE EFFECTS ANALYSIS					
Resource or Resource Issue	Issue(s) for Analysis	Cumulative Impact Analysis Area		Methods of Analysis	
		Geographic Scope	Temporal Scope	Quantitative	Qualitative
Climate and Air Quality	<ul style="list-style-type: none"> What are the cumulative effects of the Project, other present and past projects, and reasonably foreseeable future actions (RFFA) on air quality? 	Local airshed	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	None	Assess nature and extent of cumulative effects associated with emissions during construction and operation phases of the of the Project, other present and past projects, and RFFAs
Geologic Hazards	<ul style="list-style-type: none"> What are the impacts of the Project, other present and past projects, and RFFAs on areas with geological hazards? 	The geographical extent of geologic hazards crossed by the 2-mile-wide alternative route study corridors	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate extent of development associated with the Project, other present and past projects, and RFFAs to assess potential effects on geologic hazards by (1) physiographic province and (2) areas of flooding and landslide susceptibility	None
Mineral Resources	<ul style="list-style-type: none"> What are the impacts of the Project, other present and past projects, and RFFAs on existing land uses and future land uses (including minerals operations)? 	2-mile-wide alternative route study corridors	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate extent of development associated with the Project, other present and past projects, and RFFAs to assess potential effects on mineral resources with regards to conflicting with the development of a mineral resource	None
Soil Resources	<ul style="list-style-type: none"> What are the impacts of the Project, other present and past projects, and RFFAs on soils, including erosion on steep slopes as a potential result of ground disturbance? 	The geographical extent of soil units crossed by 0.1 mile from either side of the reference centerline of alternative routes.	5 years for construction and stabilization; for operation and maintenance, will assume transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate the extent of development associated with the Project, other present and past projects, and RFFAs to assess potential impacts on areas of susceptible to flooding or landslides	None
Water Resources	<ul style="list-style-type: none"> What are the cumulative effects of the Project, other present and past projects, and RFFAs on: <ul style="list-style-type: none"> surface water quality; wetlands, riparian areas, and associated water quality; other areas susceptible to erosion and potential for associated sediment deposition into water resources? 	8-digit hydrologic unit code (HUC) (subbasin) drainage areas crossed by alternative routes	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Assess cumulative impacts by alternative route	<p>Assess potential cumulative impacts on water resources particularly valuable or susceptible to ground-disturbing activities (e.g., specially designated waters, wetlands and riparian areas, perennial systems)</p> <p>Assess potential cumulative impacts on areas with high potential for discharging erosion related sediment into water resources (i.e., areas particularly susceptible to erosion)</p>
Vegetation	<ul style="list-style-type: none"> What are the cumulative effects of the Project, other present and past projects, and RFFAs on: <ul style="list-style-type: none"> the spread of noxious weeds; and wetland and riparian areas? 	8-digit HUC (subbasin) drainage areas crossed by alternative routes	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate extent of potential cumulative loss of vegetation cover associated with the Project, other present and past projects, and RFFAs by community; existing vegetation cover by community estimated by summarizing Gap analysis Project data combined with recent fire boundaries (and incorporate other disturbance databases, if available)	Assess potential cumulative impacts on vegetation associated with the spread of noxious weeds
Special Status Plants	<ul style="list-style-type: none"> What are the cumulative effects of the Project, other present and past projects, and RFFAs on sensitive plant populations and potential habitats? 	Areas of potentially suitable habitat and known populations in 8-digit HUC (subbasin) drainage areas crossed by alternative routes	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate extent of development associated with the Project, other present and past projects, and RFFAs in special status plant species population areas or potential habitats associated with the Project, other present and past projects, and RFFAs for species with available agency or modeled data	Assess potential cumulative impacts on special status plant species populations or potential habitats for species without available agency or modeled data

TABLE 4-3 SUMMARY APPROACH TO CUMULATIVE EFFECTS ANALYSIS					
Resource or Resource Issue	Issue(s) for Analysis	Cumulative Impact Analysis Area		Methods of Analysis	
		Geographic Scope	Temporal Scope	Quantitative	Qualitative
Wildlife	<ul style="list-style-type: none"> What are the cumulative effects of the Project, other present and past projects, and RFFAs on big game crucial and severe habitat and migratory bird species, including: anthropogenic development on migratory birds? 	<p>Big game: Areas of mapped crucial or seasonally important habitat in herd units (i.e., Hunt Units in Wyoming, Game Management Units in Colorado, and Herd Units in Utah) crossed by alternative routes</p> <p>Migratory birds: Vegetation communities in 8-digit HUC (subbasin) drainage areas crossed by alternative routes</p>	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate extent of development associated with the Project, other present and past projects, and RFFAs in mapped big game habitat, including crucial (Utah and Wyoming) and severe (Colorado) big game habitat	Assess potential cumulative impacts on migratory birds
Special Status Wildlife	<ul style="list-style-type: none"> What are the cumulative effects of the Project, other present and past projects, and RFFAs on special status wildlife species, including: <ul style="list-style-type: none"> loss of special status species habitat; and long-term sustainability of populations? 	Defined in collaboration with Biological Resources Task Group for each species or species group (Section 4.3.8)	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate extent of development associated with the Project, other present and past projects, and RFFAs in special status species habitat (for species with available agency or modeled data)	Assess potential cumulative impacts on long-term sustainability of special status populations by species group (for species without available agency or modeled data)
Fish and Aquatic Resources	<ul style="list-style-type: none"> What are the cumulative effects of the Project, other present and past projects, and RFFAs on: <ul style="list-style-type: none"> Federally listed threatened, endangered, proposed and candidate fish; Bureau of Land Management, U.S. Forest Service, and state-listed special status fish and aquatic species; and game fish and other aquatic organisms? 	8-digit HUC (subbasin) drainage areas crossed by alternative routes	10 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	None	Assess potential cumulative impacts on critical habitats or known locations of special status species effects from the Project, other present and past projects, and RFFAs within 1 mile upstream; resources are grouped by watershed in the discussion
Cultural Resources	<ul style="list-style-type: none"> What are the cumulative effects of the Project, other present and past projects, and RFFAs on: <ul style="list-style-type: none"> archaeological and historic sites; cultural resources dependent on visual settings (e.g., national historic trails); and traditional cultural properties? 	4-mile-wide study corridor (2 miles on either side of the reference centerline) as defined by Cultural Resources Task Group	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	None. Effects on cultural resources are highly dependent on unknown site-specific conditions that may change substantially over time (i.e., site is destroyed through natural environmental processes; site is destroyed through human causes) and on unknown project-specific conditions (i.e., project engineering)	Assess potential cumulative effects on cultural resources, including the potential for effective mitigation
Paleontological Resources	<ul style="list-style-type: none"> What are the cumulative effects of the Project, other present and past projects, and RFFAs on paleontological resources? 	Geographic extent of geological formations crossed by 2-mile-wide alternative route study corridors	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	None	Assess cumulative ground disturbance by geologic formation
Visual Resources	<ul style="list-style-type: none"> What are the cumulative effects of the Project, other present and past projects, and RFFAs on: <ul style="list-style-type: none"> scenery; and views from residences and other viewing areas (e.g., travel routes, recreation areas, and special designations)? 	<p>Scenery: Scenic Quality Rating Units (SQRU) that would be fully or partially located within 3 miles of the alternative routes were considered</p> <p>Viewers: Defined by the agency-approved simulations locations that would have views of the Project and of the TransWest Express and/or Gateway West transmission projects, where the projects could be collocated</p>	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	<p>Scenery: Estimate extent of development associated with the Project, other present and past projects, and RFFAs in each SQRU (total area of development in the SQRU and a percentage of the SQRU)</p> <p>Viewers: Illustrate potential cumulative impacts on viewers at 32 key observation points using visual simulations</p>	Scenery: For key SQRUs, assess cumulative effects on landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modification as appropriate

TABLE 4-3 SUMMARY APPROACH TO CUMULATIVE EFFECTS ANALYSIS					
Resource or Resource Issue	Issue(s) for Analysis	Cumulative Impact Analysis Area		Methods of Analysis	
		Geographic Scope	Temporal Scope	Quantitative	Qualitative
Land Use Resources	<ul style="list-style-type: none"> What conflicts does the Project, other present and past projects, and RFFAs pose with existing land uses or land management objectives (agricultural, recreational, conservation)? What are the impacts of the Project, other present and past projects, and RFFAs on existing land uses and future lands uses (planned development)? 	2-mile-wide alternative route study corridors	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate the extent of potential land use conflicts associated with the Project, other present and past projects, and RFFAs	None
Parks, Preservation, and Recreation	<ul style="list-style-type: none"> What are the impacts of the Project, other present and past projects, and RFFAs on recreational uses and areas? 	Boundary of recreation resources crossed by alternative routes	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate the extent of potential recreation resource or resource use conflicts associated with the Project, other present and past projects, and RFFAs	None
Transportation and Access	<ul style="list-style-type: none"> What are the impacts of the Project, other present and past projects, and RFFAs on airports and landing strips, roadways and railroads? 	2-mile-wide alternative route study corridors	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate the extent of potential conflicts with transportation and access associated with the Project, other present and past projects, and RFFAs	None
Special Designations and Other Management Areas	<ul style="list-style-type: none"> What are the impacts of the Project, other present and past projects, and RFFAs on special designations? 	Boundary of special designations or other management areas crossed by alternative routes	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate extent of development associated with the Project, other present and past projects, and RFFAs in special designations or other management areas potentially crossed by the Project	Evaluate potential cumulative effects on the relative or important values for which the area was designated
U.S. Forest Service Inventoried Roadless Areas (IRAs) and Unroaded/Undeveloped area	<ul style="list-style-type: none"> What are the impacts of the Project, other present and past projects, and RFFAs on IRAs and Unroaded/Undeveloped areas? 	Boundary of IRA or Unroaded/Undeveloped area boundary crossed by alternative routes	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate extent of development associated with the Project, other present and past projects, and RFFAs in IRAs or Unroaded/Undeveloped areas potentially crossed by the Project	Evaluate potential cumulative impacts on wilderness characteristics and/or roadless character
Non-Wilderness Study Area Lands with Wilderness Characteristics	<ul style="list-style-type: none"> What are the impacts of the Project, other present and past projects, and RFFAs on inventoried non-wilderness study area lands with wilderness characteristics, natural areas, or non-wilderness study area lands with wilderness characteristics adopted into a BLM resource management plan? 	Boundary of inventoried non-wilderness study area lands with wilderness characteristics, natural area, or non-wilderness study area lands with wilderness characteristics adopted into a BLM resource management plan crossed by alternative routes	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	Estimate extent of development associated with the Project, other present and past projects, and RFFAs in natural areas or non-wilderness study area lands with wilderness characteristics adopted into a BLM resource management plan potentially crossed by the Project	Evaluate potential cumulative impacts on wilderness criteria inventoried on non-wilderness study area lands with wilderness characteristics
Wildland and Fire Ecology Management	<ul style="list-style-type: none"> What contribution would the Project, other present and past projects, and RFFAs have to fire risk caused by ongoing human activities, and how does it contribute to the fire suppression challenges associated with an expanding wildland urban interface? 	Project area	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	None. Effects on fire ecology and management are highly dependent on unknown site-specific conditions that may change substantially in a single season, and unpredictable temporal conditions (e.g., weather).	Evaluate the potential for any type of ground disturbance associated with the Project, other present and past projects, and RFFAs to facilitate spread of invasive plants, change fire regime. Evaluate existing wildland urban interface and other transmission lines, and whether or not the Project could facilitate or constrain fire management

TABLE 4-3 SUMMARY APPROACH TO CUMULATIVE EFFECTS ANALYSIS					
Resource or Resource Issue	Issue(s) for Analysis	Cumulative Impact Analysis Area		Methods of Analysis	
		Geographic Scope	Temporal Scope	Quantitative	Qualitative
Social and Economic Conditions	<ul style="list-style-type: none"> ▪ What are the impacts of the Project, other present and past projects, and RFFAs on local tourism in affected areas? ▪ What is the availability of employment for the local workforce during construction of the Project, other present and past projects, and RFFAs? ▪ Could the Project, other present and past projects, and RFFAs result in disparate impacts on low-income and/or disadvantaged populations? ▪ What are the impacts of Project, other present and past projects, and RFFAs on private property values? ▪ What are the impacts of Project, other present and past projects, and RFFAs on businesses and existing and future economic development? 	Project area by county	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	None	Evaluate possible cumulative effects on available workforce, employment, population, housing, and property values
Electric and Magnetic Fields	<ul style="list-style-type: none"> ▪ What are the potential health effects of Project, other present and past projects, and RFFAs on humans and animals from electric and magnetic fields? ▪ Would Project, other present and past projects, and RFFAs cause interference with cellular phone, Internet, radio and/or television reception? ▪ What are other potential cumulative effects of the Project, other present and past projects, and RFFAs on occupational and public safety? 	2-mile-wide study corridor where the Project is or could be adjacent to other extra-high voltage transmission lines	5 years for construction and stabilization; for operation and maintenance; assuming transmission line and ancillary facilities would be for the life of the Project (50 years or longer) and could be permanent if the Project is not decommissioned	None	Evaluate potential for disease or adverse effects from cumulative exposure to electric and magnetic fields and audible noise levels; evaluate potential cumulative effects on occupational health and safety

TABLE 4-4 DATA COMPONENTS OF EXISTING DEVELOPMENT BASE LAYER	
Dataset	Attributes
Two-mile-wide Alternative Route Study Corridors	
Existing Land Use Layer	Air facilities
	Agriculture
	Commercial
	Communication facilities
	Industrial
	Military
	Parks/Preservation
	Public/Quasi public
	Recreation
	Residential
	School/Educational facility
	Transportation (ground)
Utilities	
Utilities–Existing Transmission Lines	Utilities–transmission lines
Utilities–POWER Engineers Pipelines	Utilities–pipelines
ESRI StreetMap Roads™	Ground transportation–roads
Federal Railroad Administration–Railroads	Ground transportation–railroads
Two-mile-wide Alternative Route Study Corridors to the Largest Cumulative Impact Analysis Area	
LANDFIRE™	Agricultural
	Developed
	Recently disturbed
	Agricultural
Utilities–Existing Transmission Lines	Utilities–transmission lines
Utilities–POWER Engineers Pipelines	Utilities–pipelines
ESRI StreetMap Roads™	Ground transportation–roads
Federal Railroad Administration–Railroads	Ground transportation–railroads
Reference Centerlines of Alternative Routes to the Project Area Boundary	
Past and Present Activities	Coal mining
	Historical fires
	Industrial
	Military
	Mineral or other material mining
	Oil shale and/or tar sands

**TABLE 4-4
DATA COMPONENTS OF EXISTING DEVELOPMENT BASE LAYER**

Dataset	Attributes
Past and Present Activities	Oil and/or gas development
	Residential
	Sand and gravel mining
	Tar sands
	Vegetation management/Habitat improvement
	Vegetation management/Recreation improvement
	Wind-energy facility

NOTE: Other data layers are available in the existing land use and LANDFIRE™ datasets. Layers shown in this table have been selected to represent existing development. These layers include the following: Agriculture-Cultivated Crops and Irrigated Agriculture, Agriculture-Pasture and Hay, Developed-High Intensity, Developed-Medium Intensity, Developed-Roads, Developed-Upland Deciduous Forest, Developed-Upland Evergreen Forest, Developed-Upland Herbaceous, Developed-Upland Mixed Forest, Developed-Upland Shrubland, National Agricultural Statistics Service (NASS)-Close Grown Crop, NASS-Fallow/Idle Cropland, NASS-Orchard, NASS-Row Crop, NASS-Row Crop-Close Grown Crop, Quarries-Strip Mines-Gravel Pits, Recently Disturbed Developed Upland Deciduous Forest, Recently Disturbed Developed Upland Evergreen Forest, Recently Disturbed Developed Upland Herbaceous, Recently Disturbed Developed Upland Mixed Forest, Recently Disturbed Developed Upland Shrubland, Recently Disturbed Orchard Vegetation, and Recently Disturbed Pasture and Hayland. Additional LANDFIRE™ data types including Recently Burned Herbaceous Wetlands and Recently Burned-Herb and Grass Cover were not included to represent existing development. Existing transmission lines were compiled according to kilovolt (kV) capacity. Average corridor sizes were estimated by aerial interpretation: 500kV (225-foot-wide corridor); 345kV (150-foot-wide corridor); 230kV (100-foot-wide corridor); 138kV (75-foot-wide corridor); 115kV (50-foot-wide corridor). Pipelines were compiled according to data provided by POWER Engineers. Pipeline sizes vary from 6 inches to 42 inches in diameter. Average visible scar widths were estimated by aerial interpretation to develop average corridors for the following pipeline groups: 30- to 42-inch-diameter pipelines (300-foot-wide corridor); 20- to 26-inch-diameter (200-foot-wide corridor); 10- to 18-inch-diameter (100-foot-wide corridor); and 6- to 8.6-inch-diameter pipelines (50-foot-wide corridor). Roads are compiled according to road type. Average road corridor size was estimated by averaging the following road categories corridor widths using aerial interpretation: Interstate Highway (75-foot-wide corridor); Intra-State/Intra-Metropolitan Area/Inter-Metropolitan Area (50-foot-wide corridor); and City/County/Local (25-foot-wide corridor). Railroad corridors, based on aerial interpretation, were averaged to be 25-foot-wide.

4.3 Cumulative Effects

4.3.1 Climate and Air Quality

The approach for analysis of cumulative effects on air quality, including the geographic and temporal scopes defined for analysis, is presented in Table 4-3. This analysis relies on the analysis of direct and indirect impacts from the Project (refer to Section 3.2.1) and considers them in conjunction with the past, present, and RFFAs listed in Tables 4-1 and 4-2.

4.3.1.1 Issues Identified for Analysis

Air pollutant emissions, including the major regulated criteria pollutants, GHGs, and lesser amounts of other regulated pollutants, such as hazardous air pollutants, would occur primarily during construction of the transmission line and series compensation stations. During the operations phase, emission sources would be limited to vehicular use for routine maintenance and emergency repair activities. The sources would be similar to those from construction, but pollutants would be emitted in much smaller amounts on an annual basis; therefore, the majority of emissions and impacts would be associated with construction. In addition, circuit breakers at the series compensation stations would release negligible amounts of SF₆, a GHG, due to leakage over time.

Construction of the transmission line and series compensation stations would release air pollutants from construction sources such as traffic, construction equipment, fugitive dust from earthmoving, etc. These emissions would combine with emissions from other existing local and regional sources of air pollutant to affect ambient concentrations of pollutants. The smaller amounts of pollution released during operation would combine with both existing and future emissions sources to affect ambient pollutant concentrations. GHGs released from Project sources would combined with global GHG emissions to affect climate change.

4.3.1.2 Existing Condition

Tables 3-2, 3-3, and 3-4 detail the current climate in the Project area. Tables 3-5, 3-6, and 3-7 detail the existing air quality.

Most of the area traversed by the alternative routes is in compliance with federal and state ambient air quality standards. The exception is Utah County, Utah, which would be traversed by portions of Alternatives COUT-A, COUT-B, and COUT-C and local route variations. The entire county is considered a nonattainment area with respect to the NAAQS for PM₁₀.

4.3.1.3 Results

Cumulative ambient effects from the construction phase of the Project and other existing sources of air pollutant emissions have been quantified in Appendix D. The background air-quality concentrations shown are indicative of impacts due to air pollutant emissions from existing sources.

Overall, impacts on air quality from construction would be temporary, localized to the vicinity of the activity, and would disperse or settle. The screening-level air-quality model performed to analyze potential impacts on air quality could not rule out a potential exceedance of the numerical value of the 1-hour standard for NO₂ because of emissions from construction equipment used during transmission line and series compensation station construction (all other projected impacts were within standard limitations). However, current screening-level modeling methodology is inadequate to accurately characterize these impacts. Based on the conservative assumptions used in estimating the concentrations

and dispersion of criteria pollutants generated from construction activities, violations of the NAAQS for NO₂ resulting from Project construction would not be anticipated. In addition, the 1-hour NO₂ NAAQS is based on a 3-year average of sub-maximum concentrations. The activities resulting in maximum construction emissions would not occur in the same location for multiple years and the model only predicts maximum impacts, not the sub-maximum impacts that are the basis of the standard.

With respect to RFFAs, the likelihood of overlap with other development impacts is slight, because the proposed Project impacts would be temporary and localized. Emissions related to transmission line construction would affect different areas as the construction activity progresses, and series compensation station emissions would only affect the immediate area of the station (maximum impacts occur in a few hundred feet of the construction activities). In addition, transmission line or series compensation station construction emissions—such as dust or emissions from construction equipment that are emitted near ground level—do not produce measurable impacts at regional scales. Project-related traffic would represent a negligible portion of total traffic on public roads.

In addition, most of the reasonably foreseeable projects listed in Table 4-2 also would have air-quality impacts that are primarily related to their construction, rather than operation. This includes wind and solar projects, subdivisions, other transmission lines, pipelines, and substations. Impacts from such projects would be unlikely to overlap in time and space with construction emissions from the proposed Project because they would likewise be temporary and localized.

One activity that would occur with increasing frequency over portions of the Project area that could combine with transmission line and series compensation station construction emissions is oil and gas development. Southwestern Wyoming, northwestern Colorado, and northeastern Utah are all seeing increases in drilling and production. Both southwestern Wyoming and eastern Utah are currently being studied to determine the expected magnitude of emissions and impacts from these activities. Ambient impacts from oil and gas development will likely increase to some extent in future years as development occurs; however, recent EPA regulations on oil and gas production, as well as state-level regulations, are aimed at limiting these increases and preventing ambient standard violations or remedying any existing violations. Again, the localized and temporary nature of Project construction impacts would limit the opportunity for overlap of emissions and impacts.

With respect to GHGs, emissions from construction of the transmission line would range from 108 to 143 tons of CO₂e per mile of transmission line. Total emissions for the Applicant's Preferred Alternative (WYCO-B/COUT-H) would total approximately 50,000 tons of CO₂e over the 3 years of Project construction; other alternative routes would emit somewhat more due to longer transmission line distances. Construction of the two series compensation stations would emit an additional 3,000 tons CO₂e each. In contrast, the United States' energy-related CO₂ emissions totaled 6,215 million tons in 2010 (U.S. Energy Information Administration 2011a); energy related CO₂ constitutes approximately 80 percent of total U.S. man-made GHG emissions (U.S. Energy Information Administration 2011b). The maximum annual GHG emissions from Project construction would represent less than 0.001 percent of annual United States energy-related emissions, a minor additional contribution to cumulative emissions.

During operation of the series compensation stations, approximately 50 tons of CO₂e (as SF₆) would be emitted per year. This represents less than 0.000001 percent of annual energy-related emissions in the United States, a negligible amount.

Because GHG emissions from proposed projects contribute to climate change on a global scale, project-specific impacts of GHG emissions on the local environment cannot be quantified. The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts. Currently, BLM does not have an established mechanism to accurately predict the effect of resource management-level decisions from this project-specific effort on global climate change.

Although the Project would emit GHGs during construction, the emissions would be temporary, only occurring over a period of approximately 3 years. GHG emissions from operation of the series compensation stations would be negligible.

4.3.2 Earth Resources

The approaches for analysis of cumulative effects on geologic hazards, soil resources, and mineral resources including the geographic and temporal scopes defined for analysis, are presented in Table 4-3. These analyses rely on the analysis of direct and indirect impacts from the Project (refer to Section 3.2.2) and considers them in conjunction with the past, present, and RFFAs listed in Tables 4-1 and 4-2.

4.3.2.1 Issues Identified for Analysis

4.3.2.1.1 Potential Impacts on Geologic Hazards

Potential cumulative effects on geologic hazards include landslide susceptibility resulting from the loss of vegetation or ground-disturbing activities related to the construction phase of multiple projects in a localized area. Also, mine subsidence could increase above subsurface mining activities in a localized area. Geologic hazards could directly and indirectly impact the construction, operation, and maintenance of the Project, either through direct loss of equipment or injury to personnel as a result of seismic activity, flooding, or landslides or indirect loss of transmission service as a result of these hazards. Cumulative effects of past, present and RFFAs are not expected to affect Quaternary faults or flooding.

4.3.2.1.2 Potential Impacts on Soil Resources

Cumulative effects on soil resources can result either from (1) alterations to the natural environment and land surface that could increase the rate of soil erosion by water or wind or (2) the permanent conversion of designated farmland soils to nonagricultural uses that could collectively result in limited loss of productivity of soils with the geographic scope for analysis. The implementation of appropriate selective mitigation measures would minimize short-term impacts, such as disturbance of surface soils and other alterations to the natural environment stemming from construction of the Project, other present and past projects, and RFFAs, such that the local soil resources would be stabilized or returned to a state close to their pre-construction state. Long-term impacts on soil resources would be associated with increased public access via new access roads to previously undisturbed areas crossed by the Project.

4.3.2.1.3 Potential Impacts on Existing Mineral Operations

Mineral resources are associated with the geologic formations or units they are found in. Not all geologic formations contain mineral resources or mineral resources may be found only in a portion of a geologic formation. The addition of the Project to past, present, and RFFAs could result in greater potential for effects on mineral resources throughout the Project area. The potential direct cumulative effects include ground disturbance, such as grading and cutting of access roads, auguring for tower footings and anchors, and conflicts with the development of mineral resources. Indirect effects include improved access to areas with mineral potential.

4.3.2.2 Existing Condition

4.3.2.2.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

Geologic Hazards

Areas of potential mine subsidence are present along all of the WYCO alternative routes and are associated with underground coal mines crossed by the alternative routes. Quaternary faults are present, but rare, along all of the WYCO alternative routes. Areas with moderate potential for flooding are present

along all of the WYCO alternative routes along the rivers, streams, and drainages crossed by the alternative routes. Areas with high and moderate potential for landslides are present along all of the WYCO alternative routes and are most common in the steep areas crossed by the Project.

Soil Resources

Soils that are highly susceptible to water erosion are rare along the WYCO alternative routes and soils that are moderately susceptible occur intermittently along all of the alternative routes. Soils that are highly susceptible to wind erosion are rare along the WYCO alternative routes and soils that are moderately susceptible to wind erosion occur intermittently along all of the alternative routes. Designated Prime or Unique Farmland soils are present along all of the WYCO alternative routes and generally are restricted to valleys that are currently actively irrigated in Colorado.

Existing Mineral Operations

Active mines and producing wells are common along all of the WYCO alternative routes. Active mining claims are only present along Alternative WYCO-D and its route variation. Permitted mines are present along all of the WYCO alternative routes with the greatest past and present development along Alternative WYCO-D and its route variation. Coal and other leases are present along all of the WYCO alternative routes with the greatest past and present development along Alternative WYCO-D and its route variation. Oil and gas leases are present along all of the WYCO alternative routes with the greatest past and present development along Alternative WYCO-D and its route variation. There are no geothermal leases along the WYCO alternative routes.

4.3.2.2.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

Geologic Hazards

Areas of potential mine subsidence are present along all of the COUT BAX alternative routes and are associated with underground coal mines crossed by the alternative routes. Quaternary faults are present, but rare, along all of the COUT BAX alternative routes. Areas with moderate potential for flooding are present along all of the COUT BAX alternative routes along the rivers, streams, and drainages crossed by the alternative routes. Areas with high and moderate potential for landslides are present along all of the COUT BAX alternative routes are most common in the mountainous areas of central Utah crossed by the Project.

Soil Resources

Soils that are highly susceptible to water erosion are most common in the mountainous areas of central Utah and soils that are moderately susceptible occur intermittently along all of the alternative routes. Soils that are highly susceptible to wind erosion are rare along the COUT BAX alternative routes and soils that are moderately susceptible to wind erosion occur intermittently along all of the alternative routes. Designated Prime or Unique Farmland soils are present along all of the COUT BAX alternative routes and generally are restricted to valleys that are currently actively irrigated.

Existing Mineral Operations

Active mines and producing wells are common along all of the COUT BAX alternative routes with the greatest past and present development along Alternative COUT BAX-E. Active mining claims and permitted mines are present, but rare, along all of the COUT BAX alternative routes. Coal and other leases are common along all of the COUT BAX alternative routes with the greatest past and present development along Alternatives COUT BAX-B and COUT BAX-C. Oil and gas leases are common along all of the COUT BAX alternative routes with the greatest past and present development along Alternatives COUT BAX-B and COUT BAX-C. One geothermal lease is present along Alternative COUT BAX-E.

4.3.2.2.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

Geologic Hazards

Areas of potential mine subsidence are only present along Alternatives COUT-H and COUT-I. Quaternary faults are present, but rare, along all of the COUT alternative routes. Areas with moderate potential for flooding are present along all of the COUT alternative routes along the rivers, streams, and drainages crossed by the alternative routes. Areas with high and moderate potential for landslides are present along all of the COUT alternative routes are most common in the mountainous areas of central Utah crossed by the Project.

Soil Resources

Soils that are highly susceptible to water erosion are most common in the mountainous areas of central Utah and soils that are moderately susceptible occur intermittently along all of the alternative routes. Soils that are highly susceptible to wind erosion are rare along the COUT alternative routes and soils that are moderately susceptible to wind erosion occur intermittently along all of the alternative routes. Designated Prime or Unique Farmland soils are present along all of the COUT alternative routes and are generally restricted to valleys that are currently actively irrigated.

Existing Mineral Operations

Active mines and producing wells are present along all of the COUT alternative routes with the greatest past and present development along Alternatives COUT-H and COUT-I. Active mining claims are present only along Alternatives COUT-C and its route variations, COUT-H, and COUT-I. Permitted mines are present, but rare, along all of the COUT alternative routes. Coal and other leases are common along all of the COUT alternative routes but the greatest past and present development occur along Alternatives COUT-H and COUT-I. Oil and gas leases are common along all of the COUT alternative routes with the greatest past and present development along Alternative COUT-I. Geothermal leases are present, but rare, along Alternatives COUT-C and its route variations, COUT-H, and COUT-I.

4.3.2.3 Results

4.3.2.3.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes

Results of the analyses of cumulative effects from geologic hazards and on mineral and soil resources are summarized in Tables 4-5 through 4-23.

Geologic Hazards

The WYCO alternative routes do not cross any areas with Quaternary faults. The WYCO alternative routes cross areas with rare occurrences of potential mine subsidence. Cumulative effects from areas with potential mine subsidence on projects would only occur where other projects are sited in the immediate vicinity of the Project.

Soil Resources

Sensitive soils with moderate or high susceptibility to water or wind erosion, would experience the greatest cumulative effects along Alternative WYCO-D and WYCO-D-1; whereas, the least cumulative effects would occur along Alternative WYCO-B and its variants.

Past and present developments that would have cumulative effects on sensitive soils include historic fire perimeters from 2000 to 2012, BLM vegetation treatments in the Little Snake Field Office, BLM oil and gas units on the Price, Richfield, and Vernal Field Offices, oil and gas leases on Colorado and Utah state lands, the Chokecherry Wind Farm Expansion, and Seven Mile Hill Wind Energy Facility. RFFAs that

would have cumulative effects on sensitive soils include the Continental Divide-Creston Junction oil and gas project, the Gateway West 230kV and 500kV and TransWest Express transmission lines, and Hogback Ridge (Whirlwind I) Wind Energy Project.

TABLE 4-5 SOIL RESOURCES (SENSITIVE SOILS) CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	26,200	1,600	1,900	2,800	6,300	19,900
WYCO-B-1	26,200	1,600	1,800	2,900	6,200	20,000
WYCO-B-2 (Agency Preferred Alternative)	26,200	1,600	1,900	2,800	6,300	19,900
WYCO-B-3	26,200	1,700	1,900	2,800	6,400	19,800
Alternative WYCO-C and Route Variations						
WYCO-C	27,000	2,700	2,600	2,600	8,000	19,000
WYCO-C-1	27,000	2,700	2,500	2,700	7,900	19,100
WYCO-C-2	26,900	2,700	2,600	2,600	7,900	19,000
WYCO-C-3	27,000	2,800	2,600	2,600	8,000	19,000
Alternative WYCO-D and Route Variation						
WYCO-D	32,000	3,900	3,000	2,700	9,600	22,400
WYCO-D-1	32,000	4,000	3,000	2,600	9,600	22,400
Alternative WYCO-F and Route Variations						
WYCO-F	28,000	1,600	2,900	2,900	7,400	20,600
WYCO-F-1	28,100	1,600	2,800	2,900	7,300	20,800
WYCO-F-2	28,000	1,600	2,900	2,900	7,300	20,700
WYCO-F-3	28,000	1,700	2,900	2,800	7,500	20,500
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Designated farmland soils would experience similar cumulative effects along all of the WYCO alternative routes and their variants.

Past and present developments that would have cumulative effects on designated farmland soils include historic fire perimeters from 2000 to 2012 and oil and gas fields. Reasonably foreseeable future action that would have cumulative effects on designated farmland soils includes the TransWest Express Transmission Project.

TABLE 4-6 SOIL RESOURCES (FARMLAND SOILS) CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	16,300	1,200	400	200	1,800	14,500
WYCO-B-1	16,500	1,100	400	200	1,700	14,800
WYCO-B-2 (Agency Preferred Alternative)	15,800	1,300	400	200	1,800	14,000
WYCO-B-3	15,800	1,200	400	200	1,700	14,100
Alternative WYCO-C and Route Variations						
WYCO-C	16,300	1,200	400	200	1,800	14,500
WYCO-C-1	16,500	1,100	400	200	1,700	14,800
WYCO-C-2	15,800	1,300	400	200	1,800	14,000
WYCO-C-3	15,800	1,200	400	200	1,800	14,000
Alternative WYCO-D and Route Variation						
WYCO-D	30,200	7,200	500	200	7,800	22,400
WYCO-D-1	29,700	7,100	500	100	7,800	21,900
Alternative WYCO-F and Route Variations						
WYCO-F	16,300	1,200	400	200	1,800	14,500
WYCO-F-1	16,500	1,100	400	200	1,700	14,800
WYCO-F-2	15,800	1,300	400	200	1,800	14,000
WYCO-F-3	15,800	1,200	400	200	1,700	14,100
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Existing Mineral Operations

Active mining claims and producing wells are common along the WYCO alternative routes with concentrations in Wyoming. Cumulative effects on active mines and producing wells would be greatest along the similar Alternatives WYCO-B, WYCO-C, and WYCO-F, and would be the least along Alternative WYCO-D and WYCO-D-1.

Past and present development that would cumulatively affect active mines includes the Chokecherry Wind Farm Expansion, Sevenmile Hill Wind Energy Facility, oil and gas leases on Colorado and Wyoming state lands, and BLM oil and gas units on the White River and Little Snake Field Offices. RFFAs that would cumulatively affect active mines and producing wells include the Continental Divide-Creston Junction oil and gas project, the Gateway West and TransWest Express transmission projects, and the Hogback Ridge (Whirlwind I) Wind Energy Project.

TABLE 4-7 MINERAL RESOURCES (ACTIVE MINES AND PRODUCING WELLS) CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	84,000	9,500	11,200	200	20,900	63,100
WYCO-B-1	84,000	9,500	11,200	200	20,900	63,100
WYCO-B-2 (Agency Preferred Alternative)	84,000	9,500	11,200	200	20,900	63,100
WYCO-B-3	84,000	9,500	11,200	200	20,900	63,100
Alternative WYCO-C and Route Variations						
WYCO-C	82,800	9,400	11,300	200	20,800	62,000
WYCO-C-1	82,800	9,400	11,300	200	20,800	62,000
WYCO-C-2	82,800	9,400	11,300	200	20,800	62,000
WYCO-C-3	82,800	9,400	11,300	200	20,800	62,000
Alternative WYCO-D and Route Variation						
WYCO-D	69,400	7,900	10,400	100	18,400	51,000
WYCO-D-1	69,400	7,900	10,400	100	18,400	51,000
Alternative WYCO-F and Route Variations						
WYCO-F	85,000	9,500	11,300	200	21,000	64,000
WYCO-F-1	85,000	9,500	11,300	200	21,000	64,000
WYCO-F-2	85,000	9,500	11,300	200	21,000	64,000
WYCO-F-3	85,000	9,500	11,300	200	21,000	64,000
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Active mining claims are only present along Alternative WYCO-D and Route Variation WYCO-D-1 and cumulative effects would be associated with reasonably foreseeable future projects.

TABLE 4-8 MINERAL RESOURCES (ACTIVE MINING CLAIMS) CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-D and Route Variation						
WYCO-D	39	0	2	0	2	37
WYCO-D-1	39	0	2	0	2	37

Permitted mines occur infrequently along the WYCO alternative routes and would experience the greatest cumulative effect along Alternative WYCO-D and WYCO-D-1.

Past and present development that would have cumulative effects on permitted mines includes the Chokecherry Wind Farm Expansion and BLM oil and gas units on the White River and Little Snake Field Offices. RFFAs that would cumulatively affect permitted mines along the WYCO alternative routes would include the TransWest Express Transmission Project.

TABLE 4-9 MINERAL RESOURCES (PERMITTED MINES) CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	130	12	0	0	12	118
WYCO-B-1	130	12	0	0	12	118
WYCO-B-2 (Agency Preferred Alternative)	130	12	0	0	12	118
WYCO-B-3	130	12	0	0	12	118
Alternative WYCO-C and Route Variations						
WYCO-C	208	24	7	0	31	177
WYCO-C-1	208	24	7	0	31	177
WYCO-C-2	208	24	7	0	31	177
WYCO-C-3	208	24	7	0	31	177
Alternative WYCO-D and Route Variation						
WYCO-D	1,200	300	7	4	300	900
WYCO-D-1	1,200	300	7	4	300	900
Alternative WYCO-F and Route Variations						
WYCO-F	182	15	1	0	17	165
WYCO-F-1	182	15	1	0	17	165
WYCO-F-2	182	15	1	0	17	165
WYCO-F-3	182	15	1	0	17	165

NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.

Coal and other leases, including uranium, are present to varying degrees along the WYCO alternative routes. Cumulative effects would be greatest along Alternative WYCO-D and Route Variation WYCO-D-1 and would be least along Alternatives WYCO-B, WYCO-C, and WYCO-F and their route variations.

Past and present development that would have cumulative effects on coal or other leases include existing coal and uranium leases on Wyoming state lands, BLM oil and gas units on the White River and Little Snake Field Offices, oil and gas leases on Colorado and Wyoming state lands, and the Chokecherry Wind Farm Expansion. RFFAs that would have cumulative effects on coal and other leases include the Continental Divide-Creston Junction oil and gas project, the Gateway West and TransWest Express transmission projects, and the Hogback Ridge (Whirlwind I) Wind Energy Project.

TABLE 4-10 MINERAL RESOURCES (COAL AND OTHER LEASES) CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	173,300	7,900	7,400	900	16,200	157,100
WYCO-B-1	173,300	7,900	7,400	900	16,200	157,100
WYCO-B-2 (Agency Preferred Alternative)	172,200	7,900	7,400	900	16,200	156,000
WYCO-B-3	173,300	7,900	7,400	900	16,200	157,100
Alternative WYCO-C and Route Variations						
WYCO-C	197,400	9,600	7,400	800	17,800	179,600
WYCO-C-1	197,400	9,600	7,400	800	17,800	179,600
WYCO-C-2	196,200	9,600	7,400	800	17,700	178,500
WYCO-C-3	197,400	9,600	7,400	800	17,800	179,600
Alternative WYCO-D and Route Variation						
WYCO-D	255,400	26,400	5,500	800	32,700	222,700
WYCO-D-1	255,400	26,400	5,500	800	32,700	222,700
Alternative WYCO-F and Route Variations						
WYCO-F	168,100	7,800	7,600	700	16,100	152,000
WYCO-F-1	168,100	7,800	7,600	700	16,100	152,000
WYCO-F-2	167,000	7,800	7,600	700	16,100	150,900
WYCO-F-3	168,100	7,800	7,600	700	16,100	152,000
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Oil and gas leases are present to varying degrees along the WYCO alternative routes. Cumulative effects would be greatest along Alternative WYCO-D and Route Variation WYCO-D-1 and would be least along Alternatives WYCO-B, WYCO-C, and WYCO-F and their route variations.

Past and present development that would have cumulative effects on oil and gas leases include existing coal leases on Wyoming state lands, oil and gas leases on Colorado and Wyoming state lands, BLM oil and gas units on the White River and Little Snake Field Offices, and the Chokecherry Wind Farm Expansion. RFFAs that would have cumulative effects on oil and gas leases include the Continental Divide-Creston Junction oil and gas project, the Gateway West and TransWest Express transmission projects, and the Hogback Ridge (Whirlwind I) Wind Energy Project.

TABLE 4-11 MINERAL LEASES (OIL AND GAS LEASES) CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	49,300	3,200	1,700	400	5,200	44,100
WYCO-B-1	49,800	3,200	1,700	400	5,300	44,500
WYCO-B-2 (Agency Preferred Alternative)	49,200	3,100	1,700	300	5,200	44,000
WYCO-B-3	49,400	3,200	1,700	400	5,200	44,200
Alternative WYCO-C and Route Variations						
WYCO-C	49,200	3,200	1,800	400	5,300	43,900
WYCO-C-1	49,700	3,200	1,800	400	5,400	44,300
WYCO-C-2	49,100	3,100	1,800	400	5,300	43,800
WYCO-C-3	49,300	3,200	1,800	400	5,300	44,000
Alternative WYCO-D and Route Variation						
WYCO-D	61,600	8,900	1,300	400	10,500	51,100
WYCO-D-1	61,700	8,900	1,300	400	10,500	51,200
Alternative WYCO-F and Route Variations						
WYCO-F	51,100	3,300	1,700	400	5,400	45,700
WYCO-F-1	51,500	3,300	1,700	400	5,400	46,100
WYCO-F-2	51,000	3,300	1,800	300	5,400	45,600
WYCO-F-3	51,200	3,300	1,800	400	5,400	45,800
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Areas identified as having potential mineral resources are common along the WYCO alternative routes and would experience the greatest cumulative effect along Alternative WYCO-D and Route Variation WYCO-D-1.

TABLE 4-12 MINERAL RESOURCES (POTENTIAL MINERAL RESOURCE AREAS) CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	116,100	8,400	8,100	1,300	17,800	98,300
WYCO-B-1	116,600	8,400	8,100	1,300	17,800	98,800
WYCO-B-2 (Agency Preferred Alternative)	114,300	8,200	8,100	1,300	17,600	96,700
WYCO-B-3	115,500	8,300	8,100	1,300	17,700	97,800
Alternative WYCO-C and Route Variations						
WYCO-C	124,300	9,700	9,200	1,200	20,200	104,100
WYCO-C-1	124,800	9,700	9,200	1,300	20,200	104,600
WYCO-C-2	122,500	9,500	9,200	1,200	20,000	102,500
WYCO-C-3	123,600	9,700	9,200	1,200	20,100	103,500
Alternative WYCO-D and Route Variation						
WYCO-D	172,000	26,400	6,900	1,500	34,800	137,200
WYCO-D-1	171,300	26,300	6,900	1,500	34,700	136,600
Alternative WYCO-F and Route Variations						
WYCO-F	133,200	9,500	9,500	1,400	20,300	112,900
WYCO-F-1	133,700	9,500	9,500	1,400	20,400	113,300
WYCO-F-2	131,400	9,300	9,500	1,400	20,100	111,300
WYCO-F-3	132,600	9,400	9,500	1,400	20,300	112,300
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

4.3.2.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes

Geologic Hazards

The COUT BAX alternatives cross nearly equal areas of Quaternary faults that would have potential cumulative effects on the Project and other projects. Areas with potential mine subsidence occur infrequently along the COUT BAX alternatives with the greatest potential along Alternative COUT BAX-E. Cumulative effects from either Quaternary faults or areas with potential mine subsidence on projects would occur only where other projects are sited immediately nearby to the Project.

Soil Resources

Sensitive soils occur along all of the COUT BAX alternative routes, and cumulative effects on sensitive soils would be greatest along Alternative COUT BAX-C and least along Alternative COUT BAX-B.

Past and present developments that cumulatively would affect sensitive soils include various mines, oil and gas wells on BLM lands in the Price, Richfield, and Vernal Field Offices, oil and gas wells on Utah state lands, oil shale leases on Utah state lands, and the Carbon County proposed ATV trail. RFFAs that

cumulatively would affect sensitive soils include the Kerr-McGee oil and gas development, the Narrows proposed East Bench and Oak Creek pipeline, and the TransWest Express Transmission Project.

TABLE 4-13 SOIL RESOURCES (SENSITIVE SOILS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	34,900	5,300	2,900	3,200	11,400	23,500
COUT BAX-C	36,000	5,400	4,500	2,900	12,700	23,300
COUT BAX-E	36,600	5,300	4,200	3,000	12,500	24,100

NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.

Designated Prime or Unique Farmland soils occur along all of the COUT BAX alternative routes and cumulative effects on designated Prime or Unique Farmland soils would be equal along all of the COUT BAX alternative routes.

Past and present developments that cumulatively would affect designated Prime or Unique Farmland soils include historic fire perimeters between 2000 and 2011, the Deserado Mine expansion, active sand and gravel permits in Utah, oil and gas leases on BLM land in the Price Field Office, Colorado state lands, and Utah state lands, the Ferron Natural Gas project, and the Carbon County proposed ATV trail. RFFAs that cumulatively would affect designated Prime or Unique Farmland soils would include Narrows proposed East Bend and Oak Creek pipeline, Mona South transmission line project, and the TransWest Express Transmission Project.

TABLE 4-14 SOIL RESOURCES (FARMLAND SOILS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	29,200	4,900	700	300	6,000	23,200
COUT BAX-C	29,200	4,900	700	300	6,000	23,200
COUT BAX-E	32,200	4,900	800	300	6,000	26,200

NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.

Existing Mineral Operations

Active mining claims and producing wells are common along the COUT BAX alternative routes with substantially greater numbers along Alternative COUT BAX-E relative to Alternatives COUT BAX-B and COUT BAX-C. Cumulative effects on active mines and producing wells would be greatest along Alternative COUT BAX-E.

Past and present development that cumulatively would affect active mines and producing wells includes the existing mines, metalliferous mineral, and potash leases on Utah state lands, BLM oil and gas units on the Grand Junction, Moab, Price, Richfield, Vernal, and White River Field Offices; Ferron natural gas

project, and the Enterprise Mid-America pipeline. RFFAs that cumulatively would affect active mines and producing wells include the TransWest Express Transmission Project.

TABLE 4-15 MINERAL RESOURCES (ACTIVE MINES AND PRODUCING WELLS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COU BAX-B	31,400	16,500	400	100	17,100	14,300
COU BAX-C	31,600	16,500	500	100	17,100	14,500
COU BAX-E	69,300	46,200	900	100	47,300	22,000

NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.

Active mining claims are present along the COUT BAX alternative routes with substantially greater numbers along Alternative COUT BAX-E relative to Alternatives COUT BAX-B and COUT BAX-C. Cumulative effects on active mines and producing wells would be greatest along Alternative COUT BAX-E.

Past and present development that cumulatively would affect active mining claims includes existing gravel pits and BLM oil and gas units. RFFAs that cumulatively would affect active mining claims include the TransWest Express Transmission Project.

TABLE 4-16 MINERAL RESOURCES (ACTIVE MINING CLAIMS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COU BAX-B	600	55	36	21	100	500
COU BAX-C	600	55	36	20	100	500
COU BAX-E	1,600	64	49	45	200	1,400

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Permitted mines occur intermittently along the COUT BAX alternative routes. Cumulative effects on permitted mines along the COUT BAX alternative routes would be equal.

Past and present development that cumulatively would affect permitted mines along the COUT BAX alternative routes would include exiting gravel pits, BLM oil and gas units, various mines, the Ferron Natural Gas Project, and the Enterprise Mid-America Pipeline. There are no known RFFAs that would cumulatively affect permitted mines in the area of analysis.

TABLE 4-17
MINERAL RESOURCES (PERMITTED MINES) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES

Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	500	78	0	0	100	400
COUT BAX-C	500	78	0	0	100	400
COUT BAX-E	500	63	0	0	100	400

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Coal and other leases occur frequently along the COUT BAX alternative routes. Cumulative effects on permitted mines along the COUT BAX alternative routes would be greatest along Alternative COUT BAX-C and least along Alternative COUT BAX-E.

Past and present developments that cumulatively would affect coal and other leases along the COUT BAX alternative routes would include existing mines and leases, BLM oil and gas units, the Ferron Natural Gas Project, Liberty Pioneer Gas Exploration project, Utah Department of Oil, Gas, and Mines oil and gas well pads, and the Enterprise Mid-America Pipeline. RFFAs that would cumulatively affect coal and other leases would include the Narrows proposed reservoir site, TransWest Express Transmission Project, and the Green River Industrial project.

TABLE 4-18
MINERAL RESOURCES (COAL AND OTHER LEASES) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES

Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	476,200	85,500	7,400	1,700	94,600	381,600
COUT BAX-C	482,300	85,500	15,300	1,600	102,400	379,900
COUT BAX-E	497,400	68,800	18,200	1,700	88,700	408,700

NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.

Oil and gas leases occur frequently along the COUT BAX alternative routes. Cumulative effects would be greatest along Alternative COUT BAX-C, and would be least along Alternative COUT BAX-E.

Past and present developments that would have cumulative effects on oil and gas leases include the various existing oil and gas well pads on BLM and SITLA-administered lands, potash leases, the Ferron Natural Gas project, and the Enterprise Mid-America Pipeline. RFFAs that would be cumulative effects on oil and gas leases include the TransWest Express Transmission Project, the Green River Industrial project, the proposed Narrows reservoir, and the Woodside power generation project.

TABLE 4-19 MINERAL RESOURCES (OIL AND GAS LEASES) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	371,400	45,500	5,000	1,900	52,400	319,000
COUT BAX-C	380,300	46,600	21,300	1,800	69,600	310,700
COUT BAX-E	400,900	33,500	14,700	2,000	50,200	350,700

NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.

Geothermal leases occur infrequently along the COUT BAX alternative routes and cumulative effects on geothermal leases would only occur along Alternative COUT BAX-E.

Currently, there are no past or present developments that would have cumulative effects on geothermal leases. RFFAs that cumulatively would affect geothermal leases would include the Woodside power generation project and the TransWest Express Transmission Project.

TABLE 4-20 MINERAL RESOURCES (GEOTHERMAL LEASES) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	26	0	0	0	0	26
COUT BAX-C	26	0	0	0	0	26
COUT BAX-E	78	1	27	0	28	50

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Potential mineral resource areas occur frequently along the COUT BAX alternative routes and cumulative effects would be greatest along Alternative COUT BAX-C.

TABLE 4-21 MINERAL RESOURCES (POTENTIAL MINERAL RESOURCE AREAS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	312,900	41,700	5,800	3,000	50,400	262,500
COUT BAX-C	325,900	41,900	18,500	2,700	63,000	262,900
COUT BAX-E	331,200	37,600	19,600	2,800	59,900	271,300

NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.

4.3.2.3.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes

Geologic Hazards

The COUT alternative routes cross nearly equal areas of Quaternary faults that would have potential cumulative effects on the Project and other projects. There are no areas with potential mine subsidence crossed by the COUT alternative routes. Cumulative effects from Quaternary faults on projects would occur only where other projects are sited in the immediate vicinity of the Project.

Soil Resources

The greatest cumulative effects on sensitive soils, moderate or high susceptibility to water or wind erosion, would occur along Alternative COUT-I and the least cumulative effects would occur along Alternative COUT-C and its variants.

Past and present developments that would have cumulative effects on sensitive soils include historic fire perimeters from 2000 to 2011, Roosevelt pipeline, BLM oil and gas units in the Vernal Field Office, oil and gas leases on Colorado state lands, and oil and gas leases and well pads on Utah state lands. RFFAs that would have cumulative effects on sensitive soils would include the Strawberry Highlands project and the TransWest Express Transmission Project.

TABLE 4-22 SOIL RESOURCES (SENSITIVE SOILS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	24,500	5,000	2,400	2,200	9,700	14,800
COUT-A-1	24,400	5,000	2,400	2,200	9,600	14,800
Alternative COUT-B and Route Variations						
COUT-B	25,300	5,300	3,200	1,600	10,100	15,200
COUT-B-1	25,500	5,000	3,000	1,800	9,900	15,600
COUT-B-2	25,100	5,000	3,000	1,800	9,800	15,300
COUT-B-3	25,000	5,000	3,100	1,700	9,800	15,200
COUT-B-4	25,000	5,000	2,900	1,800	9,800	15,200
COUT-B-5	25,000	5,000	3,100	1,800	9,800	15,200
Alternative COUT-C and Route Variations						
COUT-C	23,500	4,600	2,800	1,700	9,200	14,300
COUT-C-1	23,400	4,600	2,600	1,900	9,100	14,300
COUT-C-2	23,000	4,600	2,500	1,900	9,000	14,000
COUT-C-3 (Agency Preferred Alternative)	23,000	4,600	2,600	1,900	9,100	13,900
COUT-C-4	22,800	4,300	2,200	2,100	8,700	14,100
COUT-C-5	22,800	4,300	2,300	2,000	8,600	14,200

TABLE 4-22 SOIL RESOURCES (SENSITIVE SOILS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	22,500	5,600	2,500	1,200	9,400	13,100
COUT-I	27,500	6,200	2,000	2,200	10,400	17,100
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Designated Prime and Unique Farmland soils occur along the COUT alternative routes, and would experience the greatest cumulative effects along Alternative COUT-B, and its variants; whereas, the least cumulative effects would occur along Alternative COUT-C, and its variants.

Past and present developments that would have cumulative effects on designated Prime and Unique Farmland soils would include historic fire perimeters between 2000 and 2011, BLM oil and gas units in the Vernal and Price Field Offices, oil and gas leases on Colorado state lands, and oil and gas leases and well pads on Utah state lands. RFFAs that would have cumulative effects on designated Prime and Unique Farmland soils would include the Narrows proposed East Bench and Oak Creek pipeline, Mona South transmission line project, and TransWest Express Transmission Project.

TABLE 4-23 SOILS RESOURCES (FARMLAND SOILS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	19,400	5,700	400	100	6,200	13,200
COUT-A-1	19,400	5,700	400	100	6,200	13,200
Alternative COUT-B and Route Variations						
COUT-B	21,300	6,900	500	100	7,400	13,900
COUT-B-1	21,300	6,900	500	100	7,400	13,900
COUT-B-2	21,300	6,900	500	100	7,400	13,900
COUT-B-3	21,300	6,900	500	100	7,400	13,900
COUT-B-4	21,300	6,900	500	100	7,400	13,900
COUT-B-5	21,300	6,900	500	100	7,400	13,900

TABLE 4-23 SOILS RESOURCES (FARMLAND SOILS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	9,600	2,600	200	100	2,900	6,700
COUT-C-1	8,700	2,500	200	100	2,800	5,900
COUT-C-2	8,700	2,500	200	100	2,800	5,900
COUT-C-3 (Agency Preferred Alternative)	8,700	2,500	200	100	2,800	5,900
COUT-C-4	9,600	2,600	200	100	2,900	6,700
COUT-C-5	9,600	2,600	200	100	2,900	6,700
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	13,900	3,800	300	100	4,200	9,700
COUT-I	12,600	2,900	300	200	3,400	9,200
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Existing Mineral Operations

Active mines and producing wells occur to varying degrees along the COUT alternative routes. Cumulative effects on active mines and producing wells would be the greatest along Alternatives COUT-H and COUT-I.

Past and present developments that cumulatively would affect active mines and producing wells include existing mines, oil and gas units in the BLM Vernal Field Office, oil and gas leases or well pads on Utah state lands, and the Roosevelt pipeline. RFFAs that cumulatively would affect active mines and producing wells would include the Blacktail Ridge exploratory drilling project and the TransWest Express Transmission Project.

TABLE 4-24 MINERAL RESOURCES (ACTIVE MINES AND PRODUCING WELLS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	32,500	17,500	300	100	17,900	14,600
COUT-A-1	32,500	17,500	300	100	17,900	14,600

TABLE 4-24 MINERAL RESOURCES (ACTIVE MINES AND PRODUCING WELLS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-B and Route Variations						
COUT-B	33,500	17,400	300	100	17,800	15,700
COUT-B-1	32,600	16,900	300	100	17,300	15,300
COUT-B-2	32,600	16,900	300	100	17,300	15,300
COUT-B-3	32,500	16,900	300	100	17,300	15,200
COUT-B-4	32,600	16,900	300	100	17,300	15,300
COUT-B-5	32,500	16,900	300	100	17,300	15,200
Alternative COUT-C and Route Variations						
COUT-C	51,300	25,000	600	100	25,700	25,600
COUT-C-1	50,300	24,500	600	100	25,200	25,100
COUT-C-2	50,300	24,500	600	100	25,200	25,100
COUT-C-3 (Agency Preferred Alternative)	50,300	24,500	600	100	25,200	25,100
COUT-C-4	50,400	24,500	600	100	25,200	25,200
COUT-C-5	50,400	24,500	600	100	25,200	25,200
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	93,800	38,200	1,200	100	39,500	54,300
COUT-I	72,200	39,500	700	200	40,400	31,800
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Active mining claims occur equally along Alternatives COUT-C, COUT-H, and COUT-I.

Past and present developments that cumulatively would affect active mining claims would include special active mineral permits, metalliferous mineral leases, and oil and gas leases on Utah state lands and BLM oil and gas units in the Vernal Field Office. RFFAs that cumulatively would affect active mining claims would include the TransWest Express Transmission Project.

TABLE 4-25 MINERAL RESOURCES (ACTIVE MINING CLAIMS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	0	0	0	0	0	0
COUT-A-1	0	0	0	0	0	0

TABLE 4-25 MINERAL RESOURCES (ACTIVE MINING CLAIMS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-B and Route Variations						
COUT-B	0	0	0	0	0	0
COUT-B-1	0	0	0	0	0	0
COUT-B-2	0	0	0	0	0	0
COUT-B-3	0	0	0	0	0	0
COUT-B-4	0	0	0	0	0	0
COUT-B-5	0	0	0	0	0	0
Alternative COUT-C and Route Variations						
COUT-C	25,700	2,500	100	13	2,600	23,100
COUT-C-1	25,700	2,500	100	13	2,600	23,100
COUT-C-2	25,700	2,500	100	13	2,600	23,100
COUT-C-3 (Agency Preferred Alternative)	25,700	2,500	100	13	2,600	23,100
COUT-C-4	25,700	2,500	100	13	2,600	23,100
COUT-C-5	25,700	2,500	100	13	2,600	23,100
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	25,700	2,500	100	13	2,600	23,100
COUT-I	26,200	2,500	100	18	2,600	23,600
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Permitted mines occur infrequently along the COUT alternative routes and Alternatives COUT-H and COUT-I would have the greatest cumulative effects.

Past and present developments that cumulatively would affect permitted mines along the COUT alternative routes include oil and gas leases on Utah state lands, BLM oil and gas units in the Price Field Office, and the Ferron Natural Gas project. RFFAs that cumulatively would affect permitted mines would include the TransWest Express Transmission Project.

TABLE 4-26 MINERAL RESOURCES (PERMITTED MINES) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	52	12	0	0	12	40
COUT-A-1	52	12	0	0	12	40
Alternative COUT-B and Route Variations						
COUT-B	100	15	0	0	15	85
COUT-B-1	52	12	0	0	12	40
COUT-B-2	52	12	0	0	12	40
COUT-B-3	78	15	0	0	15	63
COUT-B-4	52	12	0	0	12	40
COUT-B-5	78	15	0	0	15	63
Alternative COUT-C and Route Variations						
COUT-C	100	15	0	0	15	85
COUT-C-1	52	12	0	0	12	40
COUT-C-2	52	12	0	0	12	40
COUT-C-3 (Agency Preferred Alternative)	78	15	0	0	15	63
COUT-C-4	52	12	0	0	12	40
COUT-C-5	78	15	0	0	15	63
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	100	17	7	0	24	76
COUT-I	78	28	0	0	28	50
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Coal and other leases would occur frequently along the COUT alternative routes and Alternative COUT-I would have the greatest cumulative effects.

Past and present developments that would have cumulative effects on coal and other leases would include various mines; BLM oil and gas units in the Vernal Field Office; oil and gas leases on Colorado state lands; and oil and gas leases, well pads, metalliferous mineral leases, and active mineral material permits on Utah state lands. RFFAs that cumulatively would affect coal and other leases would include the TransWest Express Transmission Project, Kerr-McGee oil and gas development project, and the Narrows proposed reservoir.

TABLE 4-27 MINERAL RESOURCES (COAL AND OTHER LEASES) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	167,400	28,800	2,600	700	32,200	135,200
COUT-A-1	167,400	28,800	2,600	700	32,200	135,200
Alternative COUT-B and Route Variations						
COUT-B	213,500	37,300	2,200	500	40,100	173,400
COUT-B-1	209,600	37,200	2,100	500	39,900	169,700
COUT-B-2	209,600	37,200	2,100	500	39,900	169,700
COUT-B-3	209,600	37,200	2,100	500	39,900	169,700
COUT-B-4	209,600	37,200	2,100	500	39,900	169,700
COUT-B-5	209,600	37,200	2,100	600	39,900	169,700
Alternative COUT-C and Route Variations						
COUT-C	403,100	72,700	4,200	1,000	77,900	325,200
COUT-C-1	403,800	75,800	4,200	1,000	81,000	322,800
COUT-C-2	403,800	75,800	4,200	1,000	81,000	322,800
COUT-C-3 (Agency Preferred Alternative)	403,800	75,800	4,200	1,000	81,000	322,800
COUT-C-4	399,200	72,600	4,200	1,000	77,800	321,400
COUT-C-5	399,200	72,600	4,200	1,000	77,700	321,500
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	528,300	103,000	16,500	900	120,500	407,800
COUT-I	643,000	139,800	9,200	1,500	150,600	492,400

NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.

Oil and gas leases occur frequently along the COUT alternative routes. Alternative COUT-I would have the greatest cumulative effects and Alternative COUT-A and Route Variation COUT-A-1 would have the least.

Past and present developments that would have cumulative effects on oil and gas leases include various mines, Roosevelt pipeline; BLM oil and gas units in the Vernal, Price, and Richfield Field Offices; oil and gas leases on Colorado state lands; and oil and gas leases and well pads on Utah state lands; and metalliferous mineral on Utah state lands. RFFAs that cumulatively would affect oil and gas leases would include the TransWest Express Transmission Project, and the Kerr-McGee oil and gas development.

TABLE 4-28 MINERAL RESOURCES (OIL AND GAS LEASES) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	167,400	20,100	3,000	800	23,900	143,500
COUT-A-1	167,400	20,100	3,000	800	23,900	143,500
Alternative COUT-B and Route Variations						
COUT-B	199,200	31,000	3,300	700	35,000	164,200
COUT-B-1	191,000	30,800	3,000	700	34,600	156,400
COUT-B-2	193,000	30,900	3,200	700	34,800	158,200
COUT-B-3	193,100	30,500	3,400	700	34,600	158,500
COUT-B-4	193,600	31,000	3,200	700	34,900	158,700
COUT-B-5	192,500	30,500	3,300	700	34,500	158,000
Alternative COUT-C and Route Variations						
COUT-C	277,400	41,400	4,500	1,000	46,900	230,500
COUT-C-1	278,400	46,800	4,400	1,100	52,400	226,000
COUT-C-2	280,400	46,900	4,600	1,100	52,600	227,800
COUT-C-3 (Agency Preferred Alternative)	279,900	46,500	4,700	1,100	52,300	227,600
COUT-C-4	277,100	42,100	4,300	1,200	47,700	229,400
COUT-C-5	276,500	41,700	4,500	1,200	47,300	229,200
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	262,800	39,400	4,200	800	44,500	218,300
COUT-I	370,000	63,700	4,600	1,600	70,000	300,000
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Geothermal leases occur rarely along the COUT alternative routes and Alternative COUT-C, and its variants, Alternatives COUT-H, and COUT-I would have the greatest cumulative effect. No cumulative effects on geothermal leases would occur along Alternatives COUT-B and COUT-C.

Past and present development that would have cumulative effects on geothermal leases would include oil and gas leases and well pads and oil shale leases on Utah state lands. The RFFA that would have cumulative effects on geothermal leases include the Kerr-McGee oil and gas development project.

TABLE 4-29 MINERAL RESOURCE (GEOTHERMAL LEASES) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	26	0	0	0	0	26
COUT-A-1	26	0	0	0	0	26
Alternative COUT-B and Route Variations						
COUT-B	26	0	0	0	0	26
COUT-B-1	26	0	0	0	0	26
COUT-B-2	26	0	0	0	0	26
COUT-B-3	26	0	0	0	0	26
COUT-B-4	26	0	0	0	0	26
COUT-B-5	26	0	0	0	0	26
Alternative COUT-C and Route Variations						
COUT-C	52	14	0	0	14	38
COUT-C-1	52	14	0	0	14	38
COUT-C-2	52	14	0	0	14	38
COUT-C-3 (Agency Preferred Alternative)	52	14	0	0	14	38
COUT-C-4	52	14	0	0	14	38
COUT-C-5	52	14	0	0	14	38
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	52	14	0	0	14	38
COUT-I	104	14	0	1	15	89
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Areas identified as having potential mineral resources are common along the COUT alternative routes and Alternative COUT-I would have the greatest cumulative effect.

TABLE 4-30 MINERAL RESOURCES (POTENTIAL MINERAL RESOURCE AREAS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	224,900	49,300	7,100	2,000	58,400	166,500
COUT-A-1	224,400	49,300	7,100	2,000	58,400	166,000

TABLE 4-30 MINERAL RESOURCES (POTENTIAL MINERAL RESOURCE AREAS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-B and Route Variations						
COUT-B	237,800	49,000	5,400	1,200	55,600	182,200
COUT-B-1	233,400	47,800	5,300	1,400	54,500	178,900
COUT-B-2	235,300	47,700	5,500	1,500	54,600	180,700
COUT-B-3	235,000	47,700	5,400	1,400	54,500	180,500
COUT-B-4	235,300	47,700	5,500	1,500	54,700	180,600
COUT-B-5	235,100	47,700	5,400	1,400	54,500	180,600
Alternative COUT-C and Route Variations						
WYCO-C	229,900	40,400	4,600	1,500	46,400	183,500
COUT-C-1	225,400	42,200	4,600	1,700	48,500	176,900
COUT-C-2	227,200	42,200	4,700	1,700	48,600	178,600
COUT-C-3 (Agency Preferred Alternative)	226,900	42,200	4,600	1,600	48,400	178,500
COUT-C-4	227,400	39,200	4,400	2,000	45,600	181,800
COUT-C-5	227,000	39,100	4,400	1,800	45,300	181,700
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	228,000	43,900	5,600	1,300	50,700	177,300
COUT-I	273,100	54,300	4,700	2,200	61,000	212,100
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

4.3.3 Paleontological Resources

The approach for analysis of cumulative effects on paleontological resources, including the geographic and temporal scopes defined for analysis, is presented in Table 4-3. This analysis relies on the analysis of direct and indirect impacts from the Project (refer to Section 3.2.3) and considers them in conjunction with the past, present, RFFAs listed in Tables 4-1 and 4-2.

4.3.3.1 Potential Impacts on Paleontological Resources

Paleontological resources can be affected directly by disturbance or destruction of buried, in-situ fossils as a result of ground-disturbing activities including, access road creation, leveling of transmission tower sites, pipeline trenching, or mine excavation. Indirect impacts on paleontological resources include increased potential for vandalism or unauthorized collection of fossils due to increased public access into previously difficult to access areas.

4.3.3.2 Existing Condition

Numerous geologic units are present in the CIAA for the Project containing moderate to very high PFYCs (PFYCs 3, 4 and 5). These geologic units range from small exposed areas to very large areas encompassing several states. These geologic units are known to have contained paleontological resources in the past.

The geologic units and their PFYC classifications, crossed by the WYCO alternative routes are shown in Table 4-31.

TABLE 4-31 GEOLOGICAL UNITS CROSSED BY THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES		
Alternative Route	Geological Formations with a Potential Fossil Yield Classification of 4 or 5 (High Sensitivity)	Geological Formations with a Potential Fossil Yield Classification of 3 (Moderate Sensitivity)
Alternative WYCO-B and Route Variations		
WYCO-B (Applicant Preferred Alternative)	Wasatch Formation, Luman Tongue (Green River Formation), Tipton Shale (Green River Formation), Laney Member (Green River Formation, Cathedral Bluffs Tongue (Wasatch Formation), Niobrara Formation, Ferris Formation, Hanna Formation, Mesaverde Group, Lance Formation, Bridger Formation, Browns Park Formation, Iles Formation	Steele Shale, Lewis Shale, Fort Union Formation, Medicine Bow Formation, Miocene Rocks, Mancos, Sego Sandstone/Buck Tongue
WYCO-B-1	Same as WYCO-B	Same as WYCO-B
WYCO-B-2 (Agency Preferred Alternative)	Same as WYCO-B	Same as WYCO-B
WYCO-B-3	Same as WYCO-B	Same as WYCO-B
Alternative WYCO-C and Route Variations		
WYCO-C	Wasatch Formation, Luman Tongue (Green River Formation), Tipton Shale (Green River Formation), Wilkins Peak Member (Green River Formation), Cathedral Bluffs Tongue (Wasatch Formation), Niobrara Formation, Hanna Formation, Ferris Formation, Laney Member (Green River Formation), Washakie Formation, Mesaverde Group, Lance Formation, Bridger Formation, Browns Park, Iles Formation	Steele Shale, Lewis Shale, Fort Union Formation, Medicine Bow Formation, Miocene Rocks, Sego Sandstone/Buck Tongue, Mancos
WYCO-C-1	Same as WYCO-C	Same as WYCO-C
WYCO-C-2	Same as WYCO-C	Same as WYCO-C
WYCO-C-3	Same as WYCO-C	Same as WYCO-C

TABLE 4-31 GEOLOGICAL UNITS CROSSED BY THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES		
Alternative Route	Geological Formations with a Potential Fossil Yield Classification of 4 or 5 (High Sensitivity)	Geological Formations with a Potential Fossil Yield Classification of 3 (Moderate Sensitivity)
Alternative WYCO-D and Route Variation		
WYCO-D	Ferris Formation, Tipton Shale (Green River Formation), Hanna Formation, Lance Formation, Mesaverde Group, Niobrara Formation, Wasatch Formation, Cathedral Bluffs Tongue (Wasatch Formation), Browns Park Formation, Iles Formation, Williams Fork Formation	Fort Union Formation, Lewis Shale, Medicine Bow Formation, Miocene Rocks, Steele Shale, Laramie Formation, Madison Limestone, Mancos, Sego Sandstone/Buck Tongue
WYCO-D-1	Same as WYCO-D	Same as WYCO-D
Alternative WYCO-F and Route Variations		
WYCO-F	Ferris Formation, Luman Tongue (Green River), Tipton Shale (Green River), Hanna Formation, Lance Formation, Mesaverde Group, Niobrara Formation, Wasatch Formation, Cathedral Bluffs Tongue (Wasatch Formation), Bridger Formation, Browns Park Formation, Laney Member (Green River Formation), Iles Formation	Fort Union Formation, Lewis Shale, Medicine Formation, Miocene Rocks, Steele Shale, Mancos, Sego Sandstone/Buck Tongue
WYCO-F-1	Same as WYCO-F	Same as WYCO-F
WYCO-F-2	Same as WYCO-F	Same as WYCO-F
WYCO-F-3	Same as WYCO-F	Same as WYCO-F

The geologic units and their PFYC ratings, crossed by the COUT BAX alternative routes are shown in Table 4-32.

TABLE 4-32 GEOLOGICAL UNITS CROSSED BY THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES		
Alternative Route	Geological Formations with a Potential Fossil Yield Classification of 4 or 5 (High Sensitivity)	Geological Formations with a Potential Fossil Yield Classification of 3 (Moderate Sensitivity)
COUT BAX-B	Dakota Sandstone and Burro Canyon Formations, Green River, Iles Formation, Mesaverde Group, Wasatch Formation, Williams Fork Formation, Duchesne River Formation, Morrison Formation, North Horn Formation	Hunter Canyon, Mancos, Mt. Garfield Formation and Sego Sandstone, Sego Sandstone/Buck Tongue, Arapien Shale and Summerville Formation, Glen Canyon Group, Indianola Formation
COUT BAX-C	Same as COUT BAX-B	Same as COUT BAX-B
COUT BAX-E	Same as COUT BAX-B	Same as COUT BAX-B

The geologic units and their PFYC ratings, crossed by the COUT alternative routes are shown in Table 4-33.

TABLE 4-33 GEOLOGICAL UNITS CROSSED BY THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES		
Alternative Route	Geological Formations with a Potential Fossil Yield Classification of 4 or 5 (High Sensitivity)	Geological Formations with a Potential Fossil Yield Classification of 3 (Moderate Sensitivity)
Alternative COUT-A and Route Variation		
COUT-A	Mesaverde Group, Duchesne River Formation, Green River Formation, North Horn Formation, Wasatch Formation	Mancos, Sego Sandstone/Buck Tongue, Arapien Shale, Summerville Formation, Indianola Formation
COUT-A-1	Same as COUT-A	Same as COUT-A
Alternative COUT-B and Route Variations		
COUT-B	Same as COUT-A	Same as COUT-A
COUT-B-1	Same as COUT-A	Same as COUT-A
COUT-B-2	Same as COUT-A	Same as COUT-A
COUT-B-3	Same as COUT-A	Same as COUT-A
COUT-B-4	Same as COUT-A	Same as COUT-A
COUT-B-5	Same as COUT-A	Same as COUT-A
Alternative COUT-C and Route Variations		
COUT-C	Same as COUT-A	Same as COUT-A
COUT-C-1	Same as COUT-A	Same as COUT-A
COUT-C-2	Same as COUT-A	Same as COUT-A
COUT-C-3 (Agency Preferred Alternative)	Same as COUT-A	Same as COUT-A
COUT-C-4	Same as COUT-A	Same as COUT-A
COUT-C-5	Same as COUT-A	Same as COUT-A
Alternatives COUT-H and COUT-I		
COUT-H (Applicant Preferred Alternative)	Same as COUT-A	Same as COUT-A
COUT-I	Same as COUT-A	Same as COUT-A

4.3.3.3 Results

4.3.3.3.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

The WYCO alternative routes share alignments along Links W15, W30, W32, W35, W36, and C175. The impacts from the Project would contribute cumulatively to the impacts of other present and past projects, and RFFAs on those geologic units with moderate or high sensitivity. However, application of design features of the Proposed Action, including preconstruction surveys for paleontological resources, would be anticipated to minimize the incremental effects.

Projects that could have cumulative effects associated with the implementation of the Project, for the WYCO alternative routes, are shown in Table 4-34.

TABLE 4-34		
PAST, PRESENT, AND OTHER REASONABLY FORESEEABLE FUTURE ACTIONS FOR PALEONTOLOGICAL RESOURCES IN THE CUMULATIVE IMPACTS ANALYSIS AREA OF THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES		
Alternative Route	Past and Present Actions	Reasonably Foreseeable Future Actions
Alternative WYCO-B and Route Variations		
WYCO-B (Applicant Preferred Alternative)	Chokecherry and Sierra Madre Wind Farm, Anadarko Atlantic Rim Natural Gas Project, PacifiCorp Seven Mile Hill Wind Energy Facility, Bureau of Land Management Oil and Gas Leases, Carl Allen 45, Colorado State Oil and Gas Leases, Wyoming State Oil and Gas Leases, Wyoming State Land Uranium Lease	Continental Divide-Creston Junction Oil and Gas Project, Gateway West 500kV, TransWest Express Transmission Project, Hogback Ridge Wind Energy Project
WYCO-B-1	Same as WYCO-B	Same as WYCO-B
WYCO-B-2 (Agency Preferred Alternative)	Same as WYCO-B	Same as WYCO-B
WYCO-B-3	Same as WYCO-B	Same as WYCO-B
Alternative WYCO-B and Route Variations		
WYCO-C	Same as WYCO-B	Same as WYCO-B
WYCO-C-1	Same as WYCO-B	Same as WYCO-B
WYCO-C-2	Same as WYCO-B	Same as WYCO-B
WYVO-C-3	Same as WYCO-B	Same as WYCO-B
Alternative WYCO-B and Route Variations		
WYCO-D	Same as WYCO-B excluding Carl Allen 45	Same as WYCO-B, but with the addition of Trapper Mine Exploratory Coal Mine, and SWEPI LP Oil and Gas Development
WYCO-D-1	Same as WYCO-B excluding Carl Allen 45	Same as WYCO-B, but with the addition of Trapper Mine Exploratory Coal Mine, and SWEPI LP Oil and Gas Development
Alternative WYCO-B and Route Variations		
WYCO-F	Same as WYCO-B	Same as WYCO-B
WYCO-F-1	Same as WYCO-B	Same as WYCO-B
WYCO-F-2	Same as WYCO-B	Same as WYCO-B
WYCO-F-3	Same as WYCO-B	Same as WYCO-B

For the WYCO alternative routes and route variations, development associated with several large past and present actions have contributed to cumulative impacts on paleontological resources, including the Chokecherry and Sierra Madre Wind Farm and oil and gas development on BLM-administered land. In addition to Project impacts, RFFAs, such as the TransWest Express Transmission Project, if implemented would add to the cumulative effects on paleontological resources. For the WYCO alternative routes, the extent of cumulative development would be the same because the same past and other present actions and RFFAs occur in the CIAA, with the exception of the Trapper Exploratory Coal Mine and SWEPI LP Oil and Gas Development, which are exclusive to Alternative WYCO-D and Route Variation WYCO-D-1. Also, Carl Allen 45 oil and gas development would be excluded from cumulative effects associated with Alternative WYCO-D and Route Variation WYCO-D-1. Overall, the cumulative effects associated with the Project along any of the WYCO alternative routes would be similar. Application of selective mitigation measures, including preconstruction surveys for paleontological resources, is anticipated to minimize the incremental Project effects.

4.3.3.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

Projects that could have cumulative effects associated with the implementation of the Project, for the COUT BAX alternative routes, are shown in Table 4-35.

TABLE 4-35 PAST, PRESENT, AND OTHER REASONABLY FORESEEABLE FUTURE ACTIONS FOR PALEONTOLOGICAL RESOURCES IN THE CUMULATIVE EFFECTS STUDY AREA OF THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES		
Alternative	Past and Present Actions	Reasonably Foreseeable Future Actions
COUT BAX-B	Banning Siding Loadout Coal Mine, Bear Canyon Coal Mine, COVOL Site Coal Mine, Deer Creek Coal Lease, Dugout Coal Mine, Hiawatha Complex Coal Mine, Savage Coal Terminal, Star Point Waste Fuel Coal Mine, Sunnyside Refuse/Slurry Coal Mine, Wildcat Loadout Coal Mine, Flatirons Resources #1-4 Compressor Plant and Pipeline, Utah National Guard Engineering Battalion Training Area, abandoned White Sands Missile Launch Facility, Utah State Institutional Trust Lands Administration Active Leaves (shale, mineral, and potash), Bureau of Land Management Oil and Gas Leases, Ferron Natural Gas Project, Colorado State Oil and Gas Leases, Utah Division of Oil, Gas and Mining Oil and Gas Well Pads, Enterprise Mid-America Pipeline, Western Expansion II Pipeline, and Residential Areas	TransWest Express Transmission Project, Price Residential and Annexations, Woodside Power Generation
COUT BAX-C	Same as COUT BAX-B	Same as COUT BAX-B with the addition of Blue Castle Footprint for Proposed Nuclear Power Plant and Twin Bridges Resources, LLC Oil and Gas Development, and Green River Industrial
COUT BAX-E	Same as COUT BAX-B	Same as COUT BAX-B with the addition of Blue Castle Footprint for Proposed Nuclear Power Plant and Twin Bridges Resources, LLC Oil and Gas Development, and Green River Industrial

The COUT BAX alternative routes share alignments along Links C177, C185, C195, C196, C197, C270, U490, U486, and U487. The impacts from the Project would contribute cumulatively to the impacts of present and past projects and RFFAs cumulative effects of the Project, other present and past projects, and RFFAs on those geological units with moderate or high sensitivity. However, application of selective mitigation measures, including preconstruction surveys for paleontological resources, is anticipated to minimize the incremental Project effects.

For the COUT BAX alternative routes, development associated with several large past and present actions have contributed to cumulative impacts on paleontological resources, including activities on SITLA Active Leases and Colorado State Oil and Gas Leases that are large in scope. Several mines also are present. In addition to Project impacts, RFFAs, such as TransWest Express Transmission Project, if implemented, would add to the cumulative effects on paleontological resources. For the COUT BAX alternative routes, the extent of cumulative development would be similar because some of the same past and other present actions and RFFAs occur in the CIAA for alternative routes. However, three additional RFFAs in the CIAA for Alternatives COUT BAX-C and COUT BAX-E, the Blue Castle Nuclear Plant, Green River Industrial, and Twin Ridges Resources, LLC Oil and Gas Development would occur. Thus, the extent of potential cumulative effects associated with cumulative development associated with Alternatives COUT BAX-C and COUT BAX-E would be greater than those for Alternative COUT BAX-B.

4.3.3.3.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

The COUT alternative routes share alignments along Links C186, U460, U621, U638, U639, and U640. The impacts from the Project would contribute cumulatively to the impacts of other present, past projects, and RFFAs cumulative effects of the Project, other present and past projects, and RFFAs on those geological units with moderate or high sensitivity. However, application of selective mitigation measures, including preconstruction surveys for paleontological resources, is anticipated to minimize the incremental Project effects.

Similar past and present actions are in the CIAA for Alternatives COUT-A, COUT-B, COUT-C, and their route variations, as are the past and present actions in the CIAA for Alternatives COUT-H and COUT-I. The RFFAs in the CIAA for all COUT alternative routes are similar. Projects that could have cumulative effects associated with the implementation of the Project for the COUT alternative routes and route variations are shown in Table 4-36.

TABLE 4-36 PAST, PRESENT, AND OTHER REASONABLY FORESEEABLE FUTURE ACTIONS FOR PALEONTOLOGICAL RESOURCES IN THE CUMULATIVE EFFECTS STUDY AREA OF THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES		
Alternative	Past and Present Actions	Reasonably Foreseeable Future Actions
Alternative COUT-A and Route Variation		
COUT-A	BLM Oil and Gas Leases, Colorado State Oil and Gas Leases, Utah State Institutional Trust Lands Administration (SITLA) Oil and Gas Leases	TransWest Express Transmission Project
COUT-A-1	Same as COUT-A	Same as COUT-A
Alternative COUT-B and Route Variations		
COUT-B	Same as COUT-A	Same as COUT-A
COUT-B-1	Same as COUT-A	Same as COUT-A
COUT-B-2	Same as COUT-A	Same as COUT-A
COUT-B-3	Same as COUT-A	Same as COUT-A
COUT-B-4	Same as COUT-A	Same as COUT-A
COUT-B-5	Same as COUT-A	Same as COUT-A

TABLE 4-36 PAST, PRESENT, AND OTHER REASONABLY FORESEEABLE FUTURE ACTIONS FOR PALEONTOLOGICAL RESOURCES IN THE CUMULATIVE EFFECTS STUDY AREA OF THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES		
Alternative	Past and Present Actions	Reasonably Foreseeable Future Actions
Alternative COUT-C and Route Variations		
COUT-C	Same as COUT-A	Same as COUT-A
COUT-C-1	Same as COUT-A	Same as COUT-A
COUT-C-2	Same as COUT-A	Same as COUT-A
COUT-C-3 (Agency Preferred Alternative)	Same as COUT-A	Same as COUT-A
COUT-C-4	Same as COUT-A	Same as COUT-A
COUT-C-5	Same as COUT-A	Same as COUT-A
Alternatives COUT-H and COUT-I		
COUT-H (Applicant Preferred Alternative)	Banning Siding Loadout Coal Mine, Bear Canyon Coal Mine, COVOL Site Coal Mine, Dugout Coal Mine, Hiawatha Complex Coal Mine, Savage Coal Terminal, Star Point Waste Fuel Coal Mine, Sunnyside Refuse/Slurry Coal Mine, Wildcat Loadout Coal Mine, UT National Guard Engineering Battalion Training Area, SITLA Active Oil and Gas Leases, SITLA Active Sand and Gravel Permits, BLM Oil and Gas Leases, Ferron Natural Gas Project, Colorado State Oil and Gas Leases, Utah Division of Oil, Gas and Mining Oil and Gas Well Pads, Enterprise Mid-America Pipeline, and Residential Areas	TransWest Express Transmission Project, Price Residential and Annexations
COUT-I	Same as COUT-H	Same as COUT-H

For Alternatives COUT-A, COUT-B, and COUT-C and their route variations, development associated with several large past and present actions have contributed to cumulative impacts on paleontological resources, including activities on BLM and Colorado State Oil and Gas Leases. In addition to Project impacts, RFFAs, such as TransWest Express Transmission Project, if implemented, would add to the cumulative effects on paleontological resources.

Alternatives COUT-H and COUT-I have the same cumulative effects as Alternatives COUT-A, COUT-B, and COUT-C, with the addition of several coal mines, SITLA leases, well pads, and other facilities. The TransWest Express transmission line is also a RFFA for Alternatives COUT-H and COUT-I, as well as the Price Residential Area and Annexations. Therefore, implementation of these projects could contribute to the cumulative effects on paleontological resources if appropriate mitigation was not applied.

4.3.4 Water Resources

The geographic and temporal scopes defined for analysis of cumulative effects on water resources is presented in Table 4-3. This analysis relies on direct and indirect impacts from the Project detailed in

Section 3.2.4 and considers them in conjunction with the past, present, and RFFAs listed in Tables 4-1 and 4-2.

For this cumulative effects analysis, water-resource categories (specially designated waters, wetlands and riparian areas, lentic and lotic waters) identified in Chapter 3 were grouped to assess potential cumulative impacts on water resources. Water resources in each subbasin consist of line and polygon features from the NHD. Line features such as perennial streams were buffered by 100 feet to create a conservative polygon 200 feet wide. No buffer was applied to polygon features including perennial lakes, reservoirs, ponds, etc.; the area included in the original feature attributes was used in the analysis. These areas were then combined for water resources to calculate the total water resources, in acres, for each subbasin; which when combined with all other subbasins crossed by a Project alternative, represents the CIAA for that proposed route.

Cumulative impacts on wetlands and riparian areas are analyzed in Section 4.3.5 and are referenced where appropriate to support a qualitative discussion of cumulative effects on the functionality of wetlands and riparian areas to maintain and improve water quality.

4.3.4.1 Issues Identified for Analysis

4.3.4.1.1 Potential Impacts on Surface Water Quality

Surface-water quality is an important feature of watershed health that, when maintained, provides long-term, beneficial effects on the environment.

4.3.4.1.2 Potential Impacts on Wetlands, Riparian Areas, and Associated Water Quality

Modification of wetlands and riparian areas can result in direct and indirect impacts on the functional capacity of these vegetation communities to maintain water quality and recharge groundwater systems.

4.3.4.1.3 Potential Impacts on Areas Particularly Susceptible to Erosion

Ground-disturbing activities in areas of fragile or highly erodible soils can contribute to adverse effects on water resources over the short- and long-term. Some impacts can be mitigated by application of design features of the Proposed Action or selective mitigation measures.

4.3.4.2 Existing Condition

Agriculture and residential, commercial, and industrial development have influenced existing water resources throughout the Project area by modification of existing water resources such as: developing water wells; piping existing streams and rivers for redirection and distribution; production and disposal of effluent; and capture/storage and discharge of surface water from manmade reservoirs or other storage facilities such as water towers. As with this Project, commercial and industrial projects are required to follow federal and state regulations requiring design features of the Proposed Action and selective mitigation measures to maintain compliance with regulations (referenced in Chapter 3) to minimize or reduce impacts on water resources. Incremental effects on water resources can include, but are not limited to, decreases in water quality as a result of sedimentation from construction of stream crossings, vegetation clearing including upland, riparian and wetland areas, modification of existing stream channels, and introduction of contaminants into or surface water through accidental spills, if design features of the Proposed Action and selective mitigation measures are not met.

In Wyoming, industrial development primarily associated with oil and gas production constitutes the greatest impact on water resources; in particular, the area between the I-80 corridor and the Wyoming-

Colorado border. These developments require ground disturbance that can alter natural hydrology as well as destabilize soil leading to increased erosion and sediment transport to receiving waters.

In Colorado, existing development is located primarily along Colorado State Highway 13 and U.S. Highway 40, and is associated with dispersed rural residences and agricultural development. South of Rangely toward Baxter Pass, areas of oil and gas development are located along Moffat County Road 23 and along the floor of West Salt Creek Canyon south of Baxter Pass. Several existing transmission lines run from the Craig Power Station adjacent to U.S. Highway 40 to the Colorado-Utah border south of the community of Dinosaur. Similar to Wyoming, these developments require ground disturbance that can alter natural hydrology as well as destabilize soil leading to increased erosion and sediment transport to receiving waters.

In Utah, existing oil and gas development in several areas including the Uinta Basin, Castle Valley, and northwest of Cisco and dispersed residences and agricultural developments in the Uinta Basin, Castle Valley, Sanpete Valley, and Juab Valley have modified existing water resources through ground disturbance and increased sedimentation from development of roads, facilities such as well pads, residences, and rights-of-way.

Not all modification of hydrology results in adverse effects on water resources. Development of springs, reclamation of damaged streams, construction, rehabilitation, and conservation of wetlands and riparian areas, and effluent treatment facilities can lead to beneficial effects on water resources by maintaining water quality.

4.3.4.3 Results

4.3.4.3.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

Results of the analysis of cumulative effects on water resources are summarized in Table 4-37.

TABLE 4-37 WATER RESOURCES CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	1,130,379	153,715	15,058	494	169,268	961,111
WYCO-B-1	1,130,379	153,715	15,058	472	169,246	961,133
WYCO-B-2 (Agency Preferred Alternative)	1,130,379	153,715	15,058	500	169,274	961,105
WYCO-B-3	1,130,379	153,715	15,058	542	169,316	961,063
Alternative WYCO-C and Route Variations						
WYCO-C	1,130,379	153,715	15,058	774	169,548	960,831
WYCO-C-1	1,130,379	153,715	15,058	751	169,525	960,854
WYCO-C-2	1,130,379	153,715	15,058	779	169,553	960,826
WYCO-C-3	1,130,379	153,715	15,058	821	169,595	960,784

TABLE 4-37 WATER RESOURCES CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-D and Route Variation						
WYCO-D	1,387,388	195,895	23,496	1,329	220,720	1,166,668
WYCO-D-1	1,387,388	195,895	23,496	1,380	220,770	1,166,618
Alternative WYCO-F and Route Variations						
WYCO-F	1,130,379	153,715	15,058	657	169,431	960,948
WYCO-F-1	1,130,379	153,715	15,058	635	169,409	960,970
WYCO-F-2	1,130,379	153,715	15,058	663	169,437	960,942
WYCO-F-3	1,130,379	153,715	15,058	705	169,478	960,901
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Water resources in the CIAA for the WYCO route grouping are distributed throughout nine subbasins (refer to Section 3.2.4) and range between 1,130,379 and 1,387,388 acres depending on the route. Major perennial and intermittent systems in the area, detailed in Section 3.2.4.3.2 include, but are not limited to, the Medicine Bow, Upper North Platte, Little Snake, and White rivers, as well as Muddy Creek.

Ground-disturbing activities associated with past and present activities in the CIAA for the WYCO route group, which could currently be affecting water resources, include coal mines, historic fires since the year 2000, noncoal mines including the Sweetwater and Terry Hankins mines; oil and gas development, oil shale and tar sands development, pipelines including the Enterprise Mid-America and Western Expansion II pipelines; residential developments, vegetation management including fuel treatments, prescribed fires, habitat improvement projects, spike treatments, and mechanical treatments; and wind-energy facilities.

Past and present development has contributed to some level of ground disturbance which, over time, is expected to be compliant with federal and state reclamation requirements. Where past and present development are not meeting reclamation requirements, water resources could be affected by increased sediment loading in the intermittent and perennial systems located in proximity to the CIAA for the WYCO route grouping, especially in the watersheds feeding Muddy Creek and the Little Snake River in the Rawlins and Little Snake Field Offices where sensitive soils are highly prone to erosion and subsequent sedimentation. Refer to Section 3.2.2 for a description and location of fragile soils in the WYCO route area.

The WYCO route grouping RFFAs in the CIAA include the proposed Project, the Rosebud coal mine, the Continental Divide-Creston Junction and Kerr-McGee oil and gas projects; the Gateway West and TransWest Express transmission projects, and the Hogback Ridge wind energy project.

Ground disturbance from implementation of RFFAs, including the Project, has the potential for localized short-term, adverse cumulative effects on water resources in the CIAA. Short-term impacts could include degradation of the quality of waters from sedimentation as a result of destabilization of fragile soils and modification of upland, riparian, and wetland vegetation. However, implementation of design features of the Proposed Action and selective mitigation measures, including reclamation of disturbed areas, would minimize cumulative effects on water resources.

The incremental effect of Project development estimated for the alternative routes in the WYCO route grouping differ only slightly between alternative routes. The Project development would account for approximately 472 to 1,380 acres (0.1 to 0.7 percent) of the total estimated cumulative effect on water resources in the CIAA. Development of the Project when added to the past, present, and RFFAs could result in potential cumulative effects on 169,246 to 220,720 acres (15 to 19 percent) of the total available water resources in the CIAA. However, implementation of design features of the Proposed Action and selective mitigation measures, including reclamation of disturbed areas, would minimize cumulative impacts on water resources.

4.3.4.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

Results of the analysis of cumulative effects on water resources are summarized in Table 4-38.

TABLE 4-38 WATER RESOURCES CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	1,503,678	86,302	18,640	1,568	106,510	1,397,168
COUT BAX-C	1,709,251	96,689	20,952	1,962	119,603	1,589,649
COUT BAX-E	1,709,251	96,689	20,952	1,761	119,402	1,589,850

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Water resources in the CIAA for the COUT BAX route grouping are distributed throughout nine subbasins (refer to Section 3.2.4) and range between 1,503,678 and 1,709,251 acres depending on the route. Major perennial systems in the area detailed in Section 3.2.4.3.2 include, but are not limited, to the Green, White, and San Pitch rivers as well as Currant, Huntington, Douglas, Salt, and West creeks.

Ground-disturbing activities associated with past and present activities in the CIAA for the COUT BAX route group, which could currently be affecting water resources, include coal mines, historic fires since the year 2000, noncoal mines, oil and gas developments, oil shale and tar sands development, pipelines including the Enterprise Mid-America and Western Expansion II projects; the Clear Creek residential development, and vegetation treatments ranging from fuels management projects to habitat improvement projects.

Past and present development has contributed to some level of ground disturbance which, over time, is expected to be compliant with federal and state reclamation requirements. Where past and present development are not meeting reclamation requirements, water resources could be affected by increased sediment loading in the intermittent and perennial systems proximal to the CIAA of the COUT BAX route grouping.

Beneficial effects of other past and present projects also could be affecting water resources. Such effects would be attributed to habitat improvement projects where management of upland, riparian, wetland, and aquatic habitats could indirectly improve water quality.

Cumulative effects related to past and present actions in the CIAA of the COUT BAX route grouping also could be affecting wetlands and riparian areas. Adverse impacts from developments, which compromise the functional capacity of wetlands and riparian areas, has or is currently affecting water quality in those areas.

RFFAs in the CIAA for the COUT BAX route grouping include the proposed Project, the Flat Canyon Coal tracts, the Narrows East Bench Diversion Dam and associated pipelines, proposed oil and gas developments, the TransWest Express Transmission Project, the Narrows Tunnel Project, and the Shalom Electric Boulger timber salvage project.

Ground disturbance from implementation of RFFAs, including the Project would have the potential for localized short-term, adverse cumulative effects on water resources in the CIAA. Short-term impacts could include degrading the quality of waters from sedimentation as a result of destabilization of sensitive soils and modification of upland, riparian, and wetland vegetation. However, implementation of design features for environmental protection and selective mitigation measures, including reclamation of disturbed areas, would minimize cumulative effects on water resources.

Impaired and outstanding waters in Colorado and Utah in the CIAA of the COUT BAX route grouping (refer to Section 3.2.4.3.2) are especially susceptible to effects from past, present, and RFFAs. Protective measures mandated through the NPDES largely would mitigate any adverse impacts on impaired waters from those projects but given these waters have already been identified as impaired waters, limitations on allowable TMDLs of source pollutants contributing some level of impairment for 303(d) listed waterbodies are likely already incorporated into the TMDL. These limitations restrict any new sources of impairment thus; levels of impairment should be either constant or declining as a result of the NPDES program.

In Colorado, the risk of erosion and sedimentation is not as severe as what is expected in Utah. This can be attributed to topography and soil characteristics. Where the CIAA crosses Colorado, slopes are not especially steep and soils are not characterized as highly erodible or otherwise fragile. However, where the CIAA crosses waterbodies and especially perennial systems, the inherent potential for sediment to be discharged into the adjacent waterbody is still relatively high. Where the Project, along with other past, present, and RFFAs cross water bodies near the Garfield and Rio Blanco county line; there is a greater risk of erosion and sedimentation to adjacent waters.

In Utah, steep topography and the Green River shale formation has resulted in areas of highly erodible soils, particularly susceptible to adverse impacts from ground disturbance, which could result in transport of sediment to downstream waterbodies. Specifically, where the CIAA crosses the Ashley National Forest near Strawberry Reservoir, the southeast portion of the Uinta National Forest, the canyons throughout the Manti-La Sal National Forest and the mountainous region west-southwest of Huntington, Utah, are areas of greatest concern for erosion.

As a general rule, any areas with steep slopes in proximity to water resources raise the potential that ground disturbance resulting from the Project as well as past, present, and RFFAs would result in sediment being discharged to waterbodies, subsequently decreasing water quality in those systems. For a detailed discussion of areas particularly susceptible to erosion, refer to Section 3.2.2.

The incremental effect of Project development estimated for alternative routes within the COUT BAX route grouping differ only slightly between alternative routes. The incremental project development would account for approximately 1,586 to 1,962 acres (1.5 to 1.6 percent) of the total estimated cumulative effects on water resources in the CIAA. Development of the Project when added to the past, present, and RFFAs could result in potential cumulative effects on 106,510 to 119,603 acres (0.1 to 7.0 percent) of the total water resources in the CIAA. However, implementation of design features for environmental protection and selective mitigation measures, including reclamation of disturbed areas, would minimize cumulative impacts on water resources.

4.3.4.3.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

Results of the analysis of cumulative effects on water resources are summarized in Table 4-39

TABLE 4-39 WATER RESOURCES CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	1,177,021	77,538	13,240	1,375	92,153	1,084,868
COUT-A-1	1,177,021	77,538	13,240	1,362	92,140	1,084,881
Alternative COUT-B and Route Variations						
COUT-B	1,393,697	88,068	15,484	2,177	105,729	1,287,968
COUT-B-1	1,476,955	103,446	17,032	1,982	122,460	1,354,495
COUT-B-2	1,476,955	103,446	17,032	1,946	122,425	1,354,530
COUT-B-3	1,393,697	88,068	15,484	1,998	105,550	1,288,147
COUT-B-4	1,476,955	103,446	17,032	1,910	122,389	1,354,566
COUT-B-5	1,393,697	88,068	15,484	2,080	105,632	1,288,065
Alternative COUT-C and Route Variations						
COUT-C	1,443,532	87,949	16,909	2,079	106,937	1,336,595
COUT-C-1	1,526,790	103,328	18,457	1,836	123,620	1,403,169
COUT-C-2	1,526,790	103,328	18,457	1,797	123,581	1,403,208
COUT-C-3 (Agency Preferred Alternative)	1,443,532	87,949	16,909	1,905	106,763	1,336,769
COUT-C-4	1,526,790	103,328	18,457	1,582	123,366	1,403,423
COUT-C-5	1,443,532	87,949	16,909	1,620	106,478	1,337,054
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	1,642,154	95,529	20,090	2,237	117,856	1,524,298
COUT-I	1,642,154	95,529	20,090	1,926	117,545	1,524,609

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Water resources in the CIAA for the COUT route grouping are distributed throughout nine subbasins (refer to Section 3.2.4) and range between 1,393,697 and 1,642,154 acres depending on the route. Many perennial systems occur in the CIAA and include but are not limited to the Duchesne, Green, Lake Fork, Price, Strawberry, Uinta, and White rivers as well as Argyle, Hop, Indian, Red, Salt, Soldier, Sowers, Thistle, Tie Fork, and Willow creeks.

Ground-disturbing activities associated with past and present activities in the CIAA for the COUT route grouping, which currently could be affecting water resources include active coal mines, Central Utah Telephone Fiber Optic communication lines, the lower Duchesne River Wetlands Project, historic fires since the year 2000, noncoal mine leases on SITLA lands, oil and gas development on BLM-administered land as well as SITLA and private holdings; oil shale and tar sands projects, pipelines including the Roosevelt, Enterprise Mid-America, Western Expansion-II and the Magnum Gas Storage project; the Carbon County proposed ATV trail, a number of residential developments, and vegetation management

projects including fuel, weed, and habitat treatment projects on BLM-administered land along the Vernal and White River field office boundaries.

Past and present development has contributed to some level of ground disturbance which, over time, is expected to be compliant with federal and state reclamation requirements. Where past and present development are not meeting reclamation requirements, water resources could be affected by increased sediment loading in the intermittent and perennial systems proximal to the CIAA of the COUT BAX route grouping.

RFFAs in the CIAA for the COUT route grouping include the proposed Project, the Flat Canyon and Long Canyon coal mine leases, the Narrows Reservoir, East Bench diversion dam, Narrows tunnel and associated Upper Cottonwood and Oak Creek pipelines; the Price industrial complex, oil and gas development from the Kerr-McGee and Monument Butte projects, the Woodside power generation facility, the Narrows highway relocation project, the Shalom Electric Boulder timber salvage project, the Victory Pipeline project, and the TransWest Express Transmission Project.

Ground disturbance from implementation of RFFAs including the Project, has the potential for localized short-term, adverse cumulative effects on water resources in the CIAA. Short-term impacts could be attributed to degrading the quality of waters from sedimentation as a result of destabilization of sensitive soils and modification of upland, riparian, and wetland vegetation. However, implementation of design features of the Proposed Action and selective mitigation measures, including reclamation of disturbed areas would minimize cumulative effects on water resources.

Impaired and outstanding waters in Colorado and Utah in the CIAA of the COUT route grouping (refer to Section 3.2.4.3.2) are especially susceptible to past, present, and RFFAs. Protective measures mandated through the NPDES would largely mitigate any adverse impacts on impaired waters from those projects but given these waters have already been identified as impaired waters, limitations on allowable TMDLs of source pollutants contributing some level of impairment for 303(d) listed waters are already incorporated into the TMDL. These limitations restrict any new sources of impairment; levels of impairment should be either constant or declining as a result of the NPDES program.

In Colorado, the risk of erosion and sedimentation is not as severe as what is expected in Utah. This can be attributed to topography and soil type. Where the CIAA crosses Colorado, slopes are not especially steep and soils are not characterized as highly erodible or otherwise fragile. However, where the CIAA crosses waterbodies and especially perennial systems, the inherent potential for sediment to be discharged into the adjacent waterbody is still relatively high. It should be noted that where the Project, along with other past, present, and RFFAs cross water bodies near the Garfield and Rio Blanco county line; there is a greater risk of erosion and sedimentation to adjacent waters.

In Utah, steep topography and the Green River shale formation has resulted in areas of highly erodible soils, particularly susceptible to adverse impacts from ground disturbance, which could result in transport of sediment to downstream waterbodies. Specifically, where the CIAA crosses the Ashley National Forest near Strawberry Reservoir, the southeast portion of the Uinta National Forest, the canyons throughout the Manti-La Sal National Forest and the mountainous region west-southwest of Huntington, Utah, are areas of greatest concern for erosion.

As a general rule, any areas with steep slopes in proximity to water resources raises the potential that ground disturbance resulting from the Project as well as past, present, and RFFAs would result in sediment being discharged to waterbodies, subsequently decreasing water quality.

The incremental project development estimated for alternative routes within the COUT route grouping would account from approximately 1,362 to 2,177 acres (1.5 to 2 percent) of the total estimated

cumulative development in the CIAA. Development of the Project when added to the past, present, and RFFAs could result in potential cumulative effects on 92,140 to 123,620 acres (1.5 to 8 percent) of the total water resources in the CIAA. However, implementation of design features for environmental protection and selective mitigation measures, including reclamation of disturbed areas, would minimize cumulative impacts on water resources.

4.3.5 Vegetation

This section addresses cumulative effects on vegetation resources resulting from the Project in addition to other past, present, and RFFAs. Resources addressed in this section are the same as those described in Section 3.2.5.

The approach for analysis of cumulative effects on vegetation, including the geographic and temporal scopes of analysis, is presented in Table 4-3. The cumulative effects analysis for vegetation considers past, present, and RFFAs (Tables 4-1 and 4-2) in conjunction with direct and indirect impacts from the Project (described in Section 3.2.5.4.3).

Most direct cumulative impacts on vegetation associated with construction of the Proposed Action would occur in the immediate vicinity of access road, transmission line tower, and Project facility construction. However, some anticipated direct and indirect cumulative effects (described in Section 3.2.5.4), such as introduction and spread of noxious weeds, may occur in the immediate vicinity of Project-related construction as well as in a larger geographical context. The geographic scope of the CIAA for vegetation is all subwatersheds (12-digit HUCs) crossed by alternative routes considered. The analysis area is sufficient to analyze all potential cumulative effects of the Project on vegetation.

The temporal scope of the analysis includes 5 years for impacts associated with Project construction and site stabilization. The Proposed Action does not include plans to decommission the Project; therefore, the temporal scope of analysis for impacts associated with operation and maintenance of the Project is based on the assumption that the effects of operating and maintaining the transmission line would persist for the life of the Project (50 years or longer). Because the Proposed Action does not include decommissioning (refer to Section 2.4.9), long-term impacts associated with the presence of the transmission line (e.g., tower foundations) may be permanent.

4.3.5.1 Issues Identified for Analysis

4.3.5.1.1 Potential for Spread of Noxious Weeds

The potential spread of noxious weeds was identified by the agencies and public during scoping as an issue relating to vegetation resources (Table 4-3). The susceptibility of an area to colonization by invasive species increases with vegetation removal and soil disturbance (Hobbs and Huenneke 1992), both of which would occur with Project implementation. Cumulative impacts on vegetation resulting from increased potential for spread of noxious weeds are discussed qualitatively in the results section (Section 4.3.5.4).

4.3.5.1.2 Loss of Native Vegetation Communities

Loss of native upland vegetation communities (this excludes agriculture, developed/disturbed, and invasive vegetation), wetlands, and riparian areas was identified by the agencies and public during scoping as issues relating to vegetation resources (Table 4-3). Removal of vegetation would occur with construction of access roads, transmission towers, and other permanent Project structures. Cumulative impacts on these vegetation types are analyzed quantitatively and discussed quantitatively in the results section (Section 4.3.5.5).

4.3.5.2 Existing Condition

Conversion of native vegetation to agricultural use since settlement of European peoples in the area in the middle of the 19th century has significantly affected the character of landscapes and the quantity and quality of vegetation resources in the CIAA. Construction of settlements, transportation systems, and human population growth also has resulted in further conversion of vegetation resources of the area. Drought, wildfire, and climate change have likewise resulted in changes in vegetation resources in more recent times. Incremental modification of the landscape by more recent projects and actions, as described in the previous section, also has occurred in this area, further contributing to its departure from pre-settlement ecological conditions.

Descriptions of vegetation communities that are crossed by alternatives routes considered for the Project are provided in Section 3.2.5.5. Descriptions of vegetation communities and information on how they relate to GAP landcover types are provided in Appendix E.

4.3.5.3 Results

4.3.5.3.1 Potential for Spread of Noxious Weeds

The removal of vegetation, disturbance of soils, and transportation of seeds by humans and/or livestock increase the likelihood of noxious weed invasion and spread in an area (refer to Section 3.2.5.4.3). Past actions that required the removal of vegetation and disturbance of soil likely resulted in the introduction of some noxious weeds in the CIAA. Present actions that require the removal of vegetation and disturbance of soils also may contribute to the introduction and spread of noxious weeds; however, actions on public lands are required to implement practices to prevent, treat, and monitor noxious weed invasions and, therefore, their impacts are likely to be minimal. Continuing maintenance of these projects is assumed to involve some degree of noxious weed surveying, treatment, and monitoring, which would further reduce the potential for noxious weed invasion due to these actions.

Implementation of the Project would require the removal of vegetation and the disturbance of soils, which would increase the susceptibility of the Project area to noxious weed invasion. A noxious weed management plan would be prepared for the Project based on the principles and procedures outlined in the BLM Integrated Weed Management Manual 9015 and Forest Service Noxious Weed Management Manual 2080 (refer to Table 2-8, Design Feature 5). Implementation of this plan would minimize the spread and introduction of noxious weeds, though some degree of weed invasion and spread is still likely due to large areas of ground disturbance, increased vehicle use, and increased public access that would accompany Project implementation.

Many RFFAs in the CIAA are likely to require the removal of vegetation and the disturbance of soils, further increasing the susceptibility of the Project area to noxious weed invasion. However, RFFAs are also assumed to be required to implement practices to prevent, treat, and monitor noxious weed invasions, thereby minimizing the invasion of noxious weeds due to these projects or activities. For these reasons, the Project and other RFFAs would not be expected to substantially alter the existing effects of noxious weeds on vegetation resources that have occurred as a result of past actions in the CIAA.

4.3.5.3.2 Loss of Native Vegetation Community Types

Permanent loss of vegetation occurs with the construction of features such as roads, well pads, and buildings. Temporary removal or crushing of vegetation does not result in a total loss of vegetation; however, revegetation of these areas, if undertaken, often results in vegetation communities that differ from those that occurred pre-disturbance. Vegetation communities adjacent to disturbed areas also may differ in structure and composition from those that occurred pre-disturbance, as soil disturbance and the transportation of seeds of non-native or invasive species by humans and/or livestock may have increased

the likelihood of these areas being invaded by non-native species (refer to Section 3.2.5.4.3, for more detail).

Past actions in the CIAA likely involved the removal of vegetation and the alteration of vegetation community composition and structure. Improper grazing practices and other soil-disturbing activities, as well as transport of weed seeds via human and livestock movement, have resulted in large-scale invasion of this area by noxious and invasive weeds.

Present actions also are likely to result in changes to vegetation communities by these same mechanisms, though it is assumed that selective mitigation measures or other conditions of approval would be required for actions on public lands to minimize losses of native or desirable vegetation.

Construction of Project features such as access roads, transmission towers, and operations facilities would require the permanent removal of vegetation. Safe operation of the transmission line would require the clearing of tall vegetation in the wire and border zones, which would alter the structure and composition of certain vegetation communities. Non-native plant species are likely to colonize new areas through the transport of seeds by construction and maintenance equipment. Revegetation of disturbed areas is a project design feature for environmental protection (refer to Table 2-8, Design Feature 2); however, it would be unlikely that disturbed areas would be restored to pre-disturbance conditions.

RFFAs that require the construction of permanent project features or introduce non-native plant species also would be likely to result in changes to vegetation community structure. RFFAs would further change composition and structure of some vegetation communities, contributing incrementally to changes in vegetation community composition that have occurred and are projected to occur in the CIAA.

Quantitative analysis of cumulative effects of the loss of vegetation resources was completed through an inventory of each native vegetation community and an estimation of impacts in these communities by past and present actions and the Proposed Action and other RFFAs. Existing quantities of vegetation cover by community (in acres) in the CIAA was determined using reclassified GAP data. Wetland and riparian vegetation communities incorporate NWI data in addition to GAP data. Development associated with past, present, and RFFAs was estimated using shapefiles of specific projects received from agencies and local governments. Incremental project development was estimated using assumptions of extent of access road and transmission line tower disturbance for mile of alternative as described in Section 2.5.1.2.

Predicted cumulative effects on each vegetation community are described in this section. Detailed lists of activities in the CIAAs of each alternative route have been included in the Project administrative record for this Project (BLM n.d.).

Alpine

The incremental loss of alpine vegetation communities predicted under Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E would contribute to the cumulative loss of alpine vegetation communities in the CIAA. The extent of cumulative development on alpine vegetation communities for all relevant alternative routes is summarized in Table 4-40.

TABLE 4-40 ALPINE VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	2	0	0	0	0	2
WYCO-B-1	2	0	0	0	0	2
WYCO-B-2 (Agency Preferred Alternative)	2	0	0	0	0	2
WYCO-B-3	2	0	0	0	0	2
Alternative WYCO-C and Route Variations						
WYCO-C	2	0	0	0	0	2
WYCO-C-1	2	0	0	0	0	2
WYCO-C-2	2	0	0	0	0	2
WYCO-C-3	2	0	0	0	0	2
Alternative WYCO-D and Route Variation						
WYCO-D	20	2	0	0	2	18
WYCO-D-1	20	2	0	0	2	18
Alternative WYCO-F and Route Variations						
WYCO-F	2	0	0	0	0	2
WYCO-F-1	2	0	0	0	0	2
WYCO-F-2	2	0	0	0	0	2
WYCO-F-3	2	0	0	0	0	2
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	4,775	1,310	5	2	1,317	3,458
COUT BAX-C	4,775	1,310	5	2	1,317	3,458
COUT BAX-E	1,637	392	78	1	471	1,166
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
Alternative COUT-A and Route Variation						
COUT-A	3,950	1,148	30	6	1,184	2,766
COUT-A-1	3,950	1,148	30	4	1,182	2,768
Alternative COUT-B and Route Variations						
COUT-B	4,962	1,737	101	0	1,838	3,124
COUT-B-1	4,060	1,673	33	0	1,706	2,354
COUT-B-2	4,169	1,676	33	0	1,709	2,459
COUT-B-3	4,546	1,709	40	0	1,750	2,796
COUT-B-4	4,559	1,710	40	0	1,750	2,809
COUT-B-5	4,155	1,676	33	0	1,709	2,446

TABLE 4-40 ALPINE VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	3,721	678	79	1	758	2,963
COUT-C-1	2,106	235	17	1	253	1,853
COUT-C-2	2,215	238	17	1	256	1,959
COUT-C-3 (Agency Preferred Alternative)	2,201	237	17	1	255	1,946
COUT-C-4	2,439	268	19	3	290	2,149
COUT-C-5	2,425	268	19	3	289	2,136
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	3,494	692	87	1	780	2,714
COUT-I	5,847	1,633	14	11	1,658	4,190

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA that would affect alpine vegetation communities are coal mining operations, habitat and rangeland management activities for the BLM Vernal Field Office, fuel treatments for the BLM Vernal Field Office, the Sheep Creek Vegetation Management Area, Miller’s Flat vegetation maintenance activities, historic wildland fires, pipelines, oil and gas development, residential development, and Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines). RFFAs in the CIAA for alpine vegetation communities are coal mining operations, residential development, the TransWest Express Transmission Project, a timber salvage project, and Utah Department of Wildlife Resources watershed restoration focus areas.

The extent of Project-related development in alpine vegetation communities would account for a very small portion of total cumulative effects in areas with past and present activities in the CIAA (Table 4-41). Total cumulative effects, including those from the Project, affect a considerable amount of the total extent of these vegetation communities in the CIAA, though these impacts are mainly due to past and present activities (Table 4-1).

Aspen

The loss of aspen vegetation communities under Alternatives COUT BAX and COUT route groupings would contribute to the cumulative loss of alpine vegetation communities in the CIAA. The extent of cumulative development on alpine vegetation communities for all relevant alternative routes is summarized in Table 4-41.

TABLE 4-41 ASPEN VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	444	10	2	0	12	433
WYCO-B-1	444	10	2	0	12	433
WYCO-B-2 (Agency Preferred Alternative)	444	10	2	0	12	433
WYCO-B-3	444	10	2	0	12	433
Alternative WYCO-C and Route Variations						
WYCO-C	444	10	2	0	12	433
WYCO-C-1	444	10	2	0	12	433
WYCO-C-2	444	10	2	0	12	433
WYCO-C-3	444	10	2	0	12	433
Alternative WYCO-D and Route Variation						
WYCO-D	20,711	1,344	1,260	0	2,604	18,107
WYCO-D-1	20,711	1,344	1,260	0	2,604	18,107
Alternative WYCO-F and Route Variations						
WYCO-F	444	10	2	0	12	433
WYCO-F-1	444	10	2	0	12	433
WYCO-F-2	444	10	2	0	12	433
WYCO-F-3	444	10	2	0	12	433
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	52,040	13,170	189	88	13,447	38,593
COUT BAX-C	52,040	13,170	189	86	13,446	38,594
COUT BAX-E	72,927	23,830	3,639	48	27,518	45,409
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
Alternative COUT-A and Route Variation						
COUT-A	56,096	1,469	2,032	96	3,596	52,500
COUT-A-1	56,096	1,469	2,032	112	3,613	52,483
Alternative COUT-B and Route Variations						
COUT-B	66,386	5,020	2,532	30	7,582	58,805
COUT-B-1	51,079	3,769	484	48	4,300	46,779
COUT-B-2	51,598	3,779	496	84	4,359	47,239
COUT-B-3	55,609	4,140	716	69	4,925	50,684
COUT-B-4	60,958	4,513	717	94	5,324	55,634
COUT-B-5	46,249	3,406	495	61	3,962	42,287

TABLE 4-41 ASPEN VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	67,700	4,921	2,460	31	7,412	60,287
COUT-C-1	60,933	3,932	699	55	4,686	56,247
COUT-C-2	61,451	3,943	711	93	4,747	56,704
COUT-C-3 (Agency Preferred Alternative)	56,102	3,570	710	68	4,347	51,755
COUT-C-4	59,220	3,151	638	158	3,947	55,274
COUT-C-5	53,871	2,777	638	127	3,542	50,329
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	78,841	20,251	3,856	38	24,145	54,696
COUT-I	61,224	16,014	405	84	16,503	44,721

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA that would affect aspen vegetation communities are coal mining operations, a communication facility, habitat and rangeland management activities for the BLM Vernal Field Office, fuel treatments for the BLM Vernal Field Office, the Sheep Creek Vegetation Management Area, Miller’s Flat vegetation maintenance activities, BLM White River Field Office prescribed fires, historical wildland fires, oil and gas development, pipelines, residential development, Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines), and BLM White River Field Office range improvement lines. RFFAs in the CIAA that would affect aspen vegetation communities are coal mining operations, a pipeline, recreation management activities, a reservoir, residential development, sand and gravel mining, the TransWest Express Transmission Project, transportation projects, a transportation tunnel, a timber salvage project, and Utah Department of Wildlife Resources watershed restoration focus areas.

The extent of Project-related development in aspen vegetation communities would account for a small portion of total cumulative effects in areas with past and present activities in the CIAA (Table 4-41). All cumulative effects, including those from the Project, affect a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-41).

Barren/Sparsely Vegetated

The loss of barren/sparsely vegetated vegetation communities under all alternative routes would contribute to the cumulative loss of barren/sparsely vegetated vegetation communities in the CIAA. The extent of cumulative development on barren/sparsely vegetated vegetation communities for all relevant alternative routes is summarized in Table 4-42.

TABLE 4-42 BARREN/SPARSELY VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	24,329	492	689	69	1,251	23,078
WYCO-B-1	24,329	492	689	69	1,250	23,079
WYCO-B-2 (Agency Preferred Alternative)	24,329	492	689	69	1,250	23,079
WYCO-B-3	24,329	492	689	69	1,251	23,078
Alternative WYCO-C and Route Variations						
WYCO-C	33,104	557	818	37	1,412	31,693
WYCO-C-1	33,104	557	818	36	1,412	31,693
WYCO-C-2	33,104	557	818	36	1,412	31,693
WYCO-C-3	33,104	557	818	37	1,412	31,693
Alternative WYCO-D and Route Variation						
WYCO-D	11,819	1,099	235	3	1,337	10,481
WYCO-D-1	11,819	1,099	235	3	1,337	10,481
Alternative WYCO-F and Route Variations						
WYCO-F	25,057	1,016	587	27	1,631	23,427
WYCO-F-1	25,057	1,016	587	27	1,631	23,427
WYCO-F-2	25,057	1,016	587	27	1,631	23,427
WYCO-F-3	25,057	1,016	587	27	1,631	23,427
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	131,558	4,846	5,488	271	10,606	120,952
COUT BAX-C	132,742	4,936	8,999	199	14,134	118,609
COUT BAX-E	122,555	5,163	5,933	245	11,341	111,214
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
Alternative COUT-A and Route Variation						
COUT-A	51,617	3,531	516	82	4,129	47,488
COUT-A-1	51,617	3,531	516	83	4,130	47,487
Alternative COUT-B and Route Variations						
COUT-B	60,591	4,079	306	72	4,456	56,134
COUT-B-1	60,480	4,101	294	72	4,466	56,014
COUT-B-2	60,702	4,103	294	72	4,469	56,233
COUT-B-3	59,794	4,054	298	73	4,425	55,368
COUT-B-4	62,132	4,120	298	73	4,491	57,640
COUT-B-5	58,364	4,037	294	74	4,405	53,959

TABLE 4-42 BARREN/SPARSELY VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	75,100	7,726	509	44	8,278	66,822
COUT-C-1	77,339	7,826	508	44	8,378	68,961
COUT-C-2	77,561	7,828	509	44	8,381	69,180
COUT-C-3 (Agency Preferred Alternative)	75,223	7,762	509	44	8,315	66,907
COUT-C-4	75,793	7,623	501	55	8,179	67,615
COUT-C-5	73,456	7,557	501	53	8,111	65,344
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	76,184	7,797	485	43	8,326	67,858
COUT-I	86,395	8,936	601	64	9,602	76,793
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Past and present activities in the CIAA that would affect barren/sparsely vegetated vegetation communities are coal mining operations, habitat and range management activities for the BLM Vernal Field Office, Miller’s Flat vegetation maintenance activities, BLM Rawlins Field Office prescribed fires and spike treatments, the Sheep Creek Vegetation Management Area, BLM Little Snake Field Office vegetation management treatments, historical wildland fires, pipelines, a missile launch facility, noncoal mining operations, oil and gas development, oil shale development, recreation management activities, residential development, the Seep Ridge road paving project, two wind energy facilities, Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines), and BLM White River Field Office range improvement lines. RFFAs in the CIAA that would affect barren/sparsely vegetated vegetation communities are a land annexation, coal-mining operations, a land division, oil and gas development, a power-generation facility, recreation management activities, residential development, the Gateway West and TransWest Express transmission projects, a timber salvage project, two wind-energy facilities, and Utah Department of Wildlife Resources watershed restoration focus areas.

The extent of Project-related development in barren/sparsely vegetated vegetation communities would account for a small portion of total cumulative effects on these areas in the CIAA (Table 4-42). All cumulative effects, including those from the Project, affect a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-42).

Big Sagebrush

The loss of big sagebrush vegetation communities under all alternative routes would contribute to the cumulative loss of big sagebrush vegetation communities in the CIAA. The extent of cumulative development on big sagebrush vegetation communities for all relevant alternative routes is summarized in Table 4-43.

TABLE 4-43 BIG SAGEBRUSH VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	690,168	30,826	21,118	1,515	53,460	636,708
WYCO-B-1	690,168	30,826	21,118	1,531	53,475	636,693
WYCO-B-2 (Agency Preferred Alternative)	690,168	30,826	21,118	1,525	53,469	636,699
WYCO-B-3	690,168	30,826	21,118	1,486	53,431	636,737
Alternative WYCO-C and Route Variations						
WYCO-C	681,175	30,055	20,647	1,445	52,147	629,029
WYCO-C-1	681,175	30,055	20,647	1,461	52,162	629,013
WYCO-C-2	681,175	30,055	20,647	1,454	52,156	629,019
WYCO-C-3	681,175	30,055	20,647	1,416	52,118	629,058
Alternative WYCO-D and Route Variation						
WYCO-D	869,397	48,451	24,081	1,884	74,415	794,982
WYCO-D-1	869,397	48,451	24,081	1,860	74,391	795,006
Alternative WYCO-F and Route Variations						
WYCO-F	772,152	35,698	24,779	1,702	62,180	709,973
WYCO-F-1	772,152	35,698	24,779	1,717	62,195	709,958
WYCO-F-2	772,152	35,698	24,779	1,711	62,188	709,964
WYCO-F-3	772,152	35,698	24,779	1,674	62,151	710,001
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	226,333	42,732	1,886	537	45,156	181,177
COUT BAX-C	225,446	42,729	1,934	493	45,156	180,291
COUT BAX-E	233,330	36,651	3,840	411	40,902	192,428
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
Alternative COUT-A and Route Variation						
COUT-A	290,455	34,832	5,707	984	41,522	248,932
COUT-A-1	290,455	34,832	5,707	956	41,495	248,960
Alternative COUT-B and Route Variations						
COUT-B	296,623	34,546	4,603	661	39,809	256,814
COUT-B-1	269,266	32,566	3,333	726	36,625	232,641
COUT-B-2	276,843	32,909	3,457	752	37,118	239,725
COUT-B-3	278,085	33,206	3,770	738	37,713	240,371
COUT-B-4	296,866	34,276	3,790	772	38,838	258,028
COUT-B-5	258,061	31,840	3,436	733	36,009	222,052

TABLE 4-43 BIG SAGEBRUSH VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	314,896	42,246	3,729	608	46,584	268,312
COUT-C-1	284,005	40,289	2,665	694	43,648	240,357
COUT-C-2	291,582	40,632	2,789	720	44,141	247,442
COUT-C-3 (Agency Preferred Alternative)	272,801	39,563	2,768	689	43,020	229,780
COUT-C-4	298,327	40,068	2,912	796	43,775	254,552
COUT-C-5	279,546	38,998	2,891	735	42,624	236,922
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	278,383	46,570	3,753	448	50,771	227,612
COUT-I	295,585	58,419	1,869	683	60,971	234,614

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA that would affect big sagebrush vegetation communities are coal-mining operations, communication facilities, habitat and rangeland management activities for the BLM Vernal Field Office, fuel treatments for the BLM Vernal Field Office, prescribed fires and spike treatments for the BLM Rawlins Field Office, Miller’s Flat vegetation maintenance activities, the Sheep Creek Vegetation Management Area, vegetation treatments for the BLM Little Snake Field Office, weed management treatments and prescribed fires for the BLM White River Field Office, historical wildland fires, pipelines, a military training area, non-coal mining operations, oil and gas development, oil shale development, a power generation station, an ATV trail, residential development, a transportation project, three wind energy facilities, Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines), and BLM White River Field Office range improvement lines. RFFAs in the CIAA that would affect big sagebrush vegetation communities are a land annexation, coal mining operations, industrial development, oil and gas development, pipelines, power generation facilities and storage, recreation management activities, a reservoir, residential development, the TransWest Express Transmission Project, the Mona South transmission project, the Gateway West 500kV Transmission Project, transportation projects, a transportation tunnel, a timber salvage project, wind energy facilities, and Utah Department of Wildlife Resources restoration focus areas.

The extent of Project-related development in big sagebrush vegetation communities accounts for a small proportion of total cumulative effects in areas with past and present activities in the CIAA (Table 4-43). All cumulative effects, including those from the Project, affect a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-43).

Grassland

The loss of grassland vegetation communities under all alternative routes would contribute to the cumulative loss of grassland vegetation communities in the CIAA. The extent of cumulative development on grassland vegetation communities for all relevant alternative routes is summarized in Table 4-44.

TABLE 4-44 GRASSLAND VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	11,724	1,443	217	31	1,692	10,032
WYCO-B-1	11,724	1,443	217	31	1,692	10,032
WYCO-B-2 (Agency Preferred Alternative)	11,724	1,443	217	24	1,685	10,039
WYCO-B-3	11,724	1,443	217	27	1,688	10,036
Alternative WYCO-C and Route Variations						
WYCO-C	11,742	1,443	217	31	1,692	10,050
WYCO-C-1	11,742	1,443	217	31	1,692	10,050
WYCO-C-2	11,742	1,443	217	24	1,685	10,057
WYCO-C-3	11,742	1,443	217	27	1,687	10,054
Alternative WYCO-D and Route Variation						
WYCO-D	35,120	2,576	372	42	2,989	32,131
WYCO-D-1	35,120	2,576	372	38	2,985	32,135
Alternative WYCO-F and Route Variations						
WYCO-F	12,354	1,478	217	31	1,726	10,628
WYCO-F-1	12,354	1,478	217	31	1,726	10,628
WYCO-F-2	12,354	1,478	217	24	1,719	10,635
WYCO-F-3	12,354	1,478	217	27	1,722	10,632
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	41,473	5,105	423	63	5,591	35,882
COUT BAX-C	42,703	5,196	906	58	6,160	36,543
COUT BAX-E	37,348	3,411	1,011	66	4,488	32,860
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
Alternative COUT-A and Route Variation						
COUT-A	7,798	553	88	9	650	7,148
COUT-A-1	7,798	553	88	9	650	7,148
Alternative COUT-B and Route Variations						
COUT-B	11,747	1,064	204	7	1,275	10,472
COUT-B-1	11,893	1,041	124	11	1,175	10,718
COUT-B-2	12,023	1,043	130	11	1,183	10,840
COUT-B-3	11,319	1,001	130	8	1,138	10,181
COUT-B-4	12,274	1,048	132	11	1,191	11,083
COUT-B-5	11,069	996	127	8	1,131	9,938

TABLE 4-44 GRASSLAND VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	13,553	1,756	240	35	2,032	11,521
COUT-C-1	13,922	1,622	164	39	1,825	12,097
COUT-C-2	14,052	1,623	170	39	1,833	12,220
COUT-C-3 (Agency Preferred Alternative)	13,098	1,576	167	36	1,780	11,318
COUT-C-4	13,651	1,519	168	40	1,727	11,925
COUT-C-5	12,697	1,472	166	35	1,673	11,024
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	13,503	2,334	352	32	2,718	10,784
COUT-I	19,393	4,341	184	50	4,575	14,818

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA that would affect grassland vegetation communities are coal mining operations, habitat and rangeland management activities for the BLM Vernal Field Office, fuel treatments for the BLM Vernal Field Office, Miller’s Flat vegetation maintenance activities, prescribed fires and spike treatments for the BLM Rawlins Field Office, the Sheep Creek Vegetation Management Area, vegetation treatments for the BLM Little Snake Field Office, prescribed fires for the BLM White River Field Office, historical wildland fires, pipelines, a military training area, a missile launch facility, non-coal mining operations, oil and gas development, oil shale development, an ATV trail, residential development, transportation projects, two wind energy facilities, Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines), and BLM White River Field Office range improvement lines. RFFAs in the CIAA that would affect grassland vegetation communities are a land annexation, coal mining operations, industrial development, a land division, oil and gas development, power generation facilities including a nuclear power plant, recreation management activities, residential development, the Gateway West 500kV Transmission Project, the Mona South transmission project, a timber salvage project, a wind-energy facility, and Utah Department of Wildlife Resources watershed restoration focus areas.

The extent of Project-related development in grassland vegetation communities would account for a very small portion of total cumulative effects in areas with past and present activities in the CIAA (Table 4-44). All cumulative effects, including those from the Project, impact a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-44).

Montane Forest

The loss of montane forest vegetation communities under COUT BAX and COUT route groupings would contribute to the cumulative loss of montane forest vegetation communities in the CIAA. The extent of cumulative development on montane forest vegetation communities for all relevant alternative routes is summarized in Table 4-45.

TABLE 4-45 MONTANE FOREST VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	190	0	0	0	0	190
WYCO-B-1	190	0	0	0	0	190
WYCO-B-2 (Agency Preferred Alternative)	190	0	0	0	0	190
WYCO-B-3	190	0	0	0	0	190
Alternative WYCO-C and Route Variations						
WYCO-C	190	0	0	0	0	190
WYCO-C-1	190	0	0	0	0	190
WYCO-C-2	190	0	0	0	0	190
WYCO-C-3	190	0	0	0	0	190
Alternative WYCO-D and Route Variation						
WYCO-D	5,655	29	3	0	32	5,624
WYCO-D-1	5,655	29	3	0	32	5,624
Alternative COUT-F and Route Variations						
WYCO-F	190	0	0	0	0	190
WYCO-F-1	190	0	0	0	0	190
WYCO-F-2	190	0	0	0	0	190
WYCO-F-3	190	0	0	0	0	190
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	63,615	15,228	188	55	15,470	48,145
COUT BAX-C	63,627	15,228	188	54	15,469	48,158
COUT BAX-E	59,350	23,261	2,404	8	25,673	33,676
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
Alternative COUT-A and Route Variation						
COUT-A	38,426	2,046	1,514	59	3,618	34,808
COUT-A-1	38,426	2,046	1,514	67	3,626	34,800
Alternative COUT-B and Route Variations						
COUT-B	60,686	7,078	897	15	7,990	52,696
COUT-B-1	59,358	6,526	353	44	6,923	52,435
COUT-B-2	59,770	6,526	366	25	6,917	52,853
COUT-B-3	54,340	6,173	408	22	6,602	47,738
COUT-B-4	65,574	6,933	428	31	7,392	58,182
COUT-B-5	48,537	5,766	345	16	6,128	42,409

TABLE 4-45 MONTANE FOREST VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	60,162	5,949	807	22	6,777	53,385
COUT-C-1	68,343	6,812	416	67	7,295	61,048
COUT-C-2	68,755	6,812	429	47	7,288	61,467
COUT-C-3 (Agency Preferred Alternative)	57,521	6,052	408	38	6,498	51,023
COUT-C-4	61,602	3,827	338	74	4,239	57,363
COUT-C-5	50,368	3,067	317	62	3,446	46,922
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	58,070	18,173	2,558	10	20,740	37,329
COUT-I	66,080	18,269	277	68	18,614	47,466
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Past and present activities in the CIAA that would affect montane forest vegetation communities are coal mining operations, habitat and rangeland management activities for the BLM Vernal Field Office, fuel treatments for the BLM Vernal Field Office, Miller’s Flat vegetation maintenance activities, the Sheep Creek Vegetation Management Area, historical wildland fires, noncoal mining operations, prescribed fires for the BLM White River Field Office, oil and gas development, oil shale development, a pipeline, residential development, Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines), and BLM White River Field Office range improvement lines. RFFAs in the CIAA that would affect montane forest vegetation communities are coal mining, oil and gas development, a pipeline, a reservoir, residential development, the TransWest Express Transmission Project, transportation projects, a timber salvage project, a wind energy facility, and Utah Department of Wildlife Resources watershed restoration focus areas.

All impacts on montane forest vegetation communities from Project activities would co-occur with past and present actions or RFFAs to some degree, though Project-related impacts also would occur outside these areas with all alternative routes (Table 4-45). The extent of Project-related development in montane forest vegetation communities would account for a very small portion of total cumulative effects in areas with past and present activities in the CIAA (Table 4-45). All cumulative effects, including those from the Project, affect a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-45).

Mountain Shrub

The loss of mountain shrub vegetation communities under COUT BAX and COUT route groupings would contribute to the cumulative loss of mountain shrub vegetation communities in the CIAA. The extent of cumulative development on mountain shrub vegetation communities for all relevant alternative routes is summarized in Table 4-46.

TABLE 4-46 MOUNTAIN SHRUB VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	699	10	0	0	10	689
WYCO-B-1	699	10	0	0	10	689
WYCO-B-2 (Agency Preferred Alternative)	699	10	0	0	10	689
WYCO-B-3	699	10	0	0	10	689
Alternative WYCO-C and Route Variations						
WYCO-C	699	10	0	0	10	689
WYCO-C-1	699	10	0	0	10	689
WYCO-C-2	699	10	0	0	10	689
WYCO-C-3	699	10	0	0	10	689
Alternative WYCO-D and Route Variation						
WYCO-D	19,495	1,855	2,869	3	4,727	14,768
WYCO-D-1	19,495	1,855	2,869	3	4,727	14,768
Alternative WYCO-F and Route Variations						
WYCO-F	700	11	0	0	11	689
WYCO-F-1	700	11	0	0	11	689
WYCO-F-2	700	11	0	0	11	689
WYCO-F-3	700	11	0	0	11	689
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	91,534	20,447	401	132	20,979	70,555
COUT BAX-C	91,524	20,447	401	129	20,977	70,547
COUT BAX-E	95,525	24,319	707	129	25,156	70,369
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
Alternative COUT-A and Route Variation						
COUT-A	91,969	13,043	790	171	14,004	77,965
COUT-A-1	91,969	13,043	790	171	14,004	77,965
Alternative COUT-B and Route Variations						
COUT-B	112,987	15,848	1,089	182	17,119	95,869
COUT-B-1	106,373	15,116	1,023	223	16,362	90,011
COUT-B-2	107,178	15,128	1,031	227	16,385	90,792
COUT-B-3	108,409	15,358	1,061	201	16,620	91,789
COUT-B-4	110,254	15,410	1,061	228	16,699	93,555
COUT-B-5	105,333	15,075	1,031	205	16,311	89,022

TABLE 4-46 MOUNTAIN SHRUB VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	118,993	17,392	1,086	190	18,669	100,324
COUT-C-1	109,727	15,127	1,048	235	16,409	93,318
COUT-C-2	110,531	15,139	1,055	239	16,432	94,099
COUT-C-3 (Agency Preferred Alternative)	108,687	15,087	1,055	213	16,354	92,333
COUT-C-4	111,112	15,353	1,058	254	16,664	94,447
COUT-C-5	109,267	15,300	1,058	219	16,577	92,690
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	63,271	21,310	613	57	21,980	41,291
COUT-I	56,671	19,941	282	73	20,296	36,375
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Past and present activities in the CIAA that would affect mountain shrub vegetation communities are coal mining, a communication facility, habitat and rangeland management activities for the BLM Vernal Field Office, fuel treatments for the BLM Vernal Field Office, Miller’s Flat vegetation maintenance activities, prescribed fires for the BLM Rawlins Field Office, the Sheep Creek Vegetation Management Area, prescribed fires for the BLM White River Field Office, historical wildland fires, noncoal mining operations, oil and gas development, oil shale development, pipelines, residential development, Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines), and BLM White River Field Office range improvement lines. RFFAs in the CIAA that would affect mountain shrub vegetation communities are coal mining, oil and gas development, pipelines, recreation management activities, a reservoir, residential development, the TransWest Express Transmission Project, a transportation project, a timber salvage project, a wind energy facility, and Utah Department of Wildlife Resources watershed restoration focus areas.

Impacts from Alternative WYCO-D would all occur outside areas where past and present actions or RFFAs occur. The extent of Project-related development in mountain shrub vegetation communities would account for a very small portion of total cumulative effects in areas with past and present activities in the CIAA (Table 4-46). All cumulative effects, including those from the Project, affect a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-46).

Pinyon-Juniper

The loss of pinyon-juniper vegetation communities under all alternative routes would contribute to the cumulative loss of pinyon-juniper vegetation communities in the CIAA. The extent of cumulative development on pinyon-juniper vegetation communities for all relevant alternative routes is summarized in Table 4-47.

TABLE 4-47 PINYON-JUNIPER VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	73,325	2,167	582	132	2,882	70,443
WYCO-B-1	73,325	2,167	582	132	2,882	70,444
WYCO-B-2 (Agency Preferred Alternative)	73,325	2,167	582	119	2,869	70,456
WYCO-B-3	73,325	2,167	582	121	2,871	70,454
Alternative WYCO-C and Route Variations						
WYCO-C	73,327	2,167	582	129	2,879	70,449
WYCO-C-1	73,327	2,167	582	129	2,878	70,449
WYCO-C-2	73,327	2,167	582	116	2,866	70,462
WYCO-C-3	73,327	2,167	582	118	2,867	70,460
Alternative WYCO-D and Route Variation						
WYCO-D	68,031	2,738	285	43	3,066	64,965
WYCO-D-1	68,031	2,738	285	33	3,056	64,976
Alternative WYCO-F and Route Variations						
WYCO-F	74,100	2,369	594	129	3,092	71,008
WYCO-F-1	74,100	2,369	594	128	3,091	71,009
WYCO-F-2	74,100	2,369	594	116	3,079	71,021
WYCO-F-3	74,100	2,369	594	118	3,081	71,019
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	385,582	38,604	2,871	583	42,058	343,524
COUT BAX-C	382,924	38,550	3,737	505	42,792	340,132
COUT BAX-E	365,072	35,785	1,826	415	38,025	327,046
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
Alternative COUT-A and Route Variation						
COUT-A	183,908	18,988	1,276	330	20,594	163,314
COUT-A-1	183,908	18,988	1,276	330	20,594	163,314
Alternative COUT-B and Route Variations						
COUT-B	166,628	13,921	1,674	228	15,823	150,805
COUT-B-1	162,945	13,837	1,528	235	15,600	147,345
COUT-B-2	163,584	13,847	1,539	238	15,624	147,960
COUT-B-3	161,864	13,666	1,583	234	15,483	146,381
COUT-B-4	167,745	13,904	1,583	239	15,726	152,019
COUT-B-5	157,704	13,609	1,539	239	15,387	142,317

TABLE 4-47 PINYON-JUNIPER VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	214,685	19,362	1,534	372	21,268	193,418
COUT-C-1	202,757	16,116	1,424	381	17,921	184,835
COUT-C-2	203,396	16,126	1,435	384	17,945	185,451
COUT-C-3 (Agency Preferred Alternative)	197,516	15,888	1,435	382	17,706	179,810
COUT-C-4	199,953	15,694	1,443	439	17,577	182,376
COUT-C-5	194,073	15,457	1,443	421	17,321	176,753
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	213,367	24,610	880	208	25,698	187,670
COUT-I	230,570	33,210	904	366	34,480	196,091

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA that would affect pinyon-juniper vegetation communities are coal mining, a communication facility, habitat and rangeland management activities for the BLM Vernal Field Office, fuel treatments for the BLM Vernal Field Office, Miller’s Flat vegetation maintenance activities, prescribed fires and spike treatments for the BLM Rawlins Field Office, the Sheep Creek Vegetation Management Area, vegetation treatments for the BLM Little Snake Field Office, prescribed fires for the BLM White River Field Office, historical wildland fires, pipelines, noncoal mining operations, oil and gas development, oil shale development, an ATV trail, residential development, transportation projects, two wind energy facilities, Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines), and BLM White River Field Office range improvement lines. RFFAs in the CIAA that would affect pinyon-juniper vegetation communities are a land annexation, coal mining, industrial development, oil and gas development, a pipeline, a power generation facility, recreation management activities, the TransWest Express Transmission Project, the Gateway West 500kV Transmission Project, the Mona South Transmission Project, two wind energy facilities, and Utah Department of Wildlife Resources watershed restoration focus areas.

All impacts on pinyon-juniper vegetation communities from Project activities would co-occur with past and present actions or RFFAs to some degree, though Project-related impacts also would occur outside these areas with all alternative routes (Table 4-47). The extent of Project-related development in pinyon-juniper vegetation communities would account for a small portion of total cumulative effects in areas with past and present activities in the CIAA (Table 4-47). All cumulative effects, including those from the Project, impact a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-47).

Riparian

The loss of riparian vegetation communities under all alternative routes would contribute to the cumulative loss of riparian vegetation communities in the CIAA. The extent of cumulative development on riparian vegetation communities for all relevant alternative routes is summarized in Table 4-48.

TABLE 4-48 RIPARIAN VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	10,593	951	465	30	1,446	9,147
WYCO-B-1	10,593	951	465	30	1,446	9,147
WYCO-B-2 (Agency Preferred Alternative)	10,593	951	465	30	1,446	9,147
WYCO-B-3	10,593	951	465	30	1,446	9,147
Alternative WYCO-C and Route Variations						
WYCO-C	12,032	1,007	545	23	1,575	10,457
WYCO-C-1	12,032	1,007	545	23	1,575	10,457
WYCO-C-2	12,032	1,007	545	23	1,575	10,457
WYCO-C-3	12,032	1,007	545	23	1,575	10,457
Alternative WYCO-D and Route Variation						
WYCO-D	15,474	2,732	488	43	3,263	12,211
WYCO-D-1	15,474	2,732	488	43	3,263	12,211
Alternative WYCO-F and Route Variations						
WYCO-F	11,820	1,005	524	29	1,559	10,261
WYCO-F-1	11,820	1,005	524	29	1,559	10,262
WYCO-F-2	11,820	1,005	524	29	1,559	10,262
WYCO-F-3	11,820	1,005	524	29	1,559	10,261
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	12,117	4,887	61	10	4,958	7,159
COUT BAX-C	11,835	4,617	506	10	5,133	6,702
COUT BAX-E	11,646	2,421	601	11	3,032	8,615
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
Alternative COUT-A and Route Variation						
COUT-A	21,252	4,295	701	59	5,055	16,197
COUT-A-1	21,252	4,295	701	67	5,063	16,190
Alternative COUT-B and Route Variations						
COUT-B	12,703	3,038	122	16	3,177	9,526
COUT-B-1	12,575	3,016	118	17	3,150	9,425
COUT-B-2	12,576	3,016	118	17	3,150	9,426
COUT-B-3	12,520	3,007	118	17	3,141	9,379
COUT-B-4	12,600	3,017	118	17	3,151	9,449
COUT-B-5	12,496	3,006	118	17	3,141	9,356

TABLE 4-48 RIPARIAN VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	12,578	1,847	73	10	1,929	10,649
COUT-C-1	12,299	1,773	68	11	1,851	10,448
COUT-C-2	12,300	1,773	68	11	1,851	10,449
COUT-C-3 (Agency Preferred Alternative)	12,220	1,763	68	11	1,841	10,379
COUT-C-4	12,283	1,772	68	11	1,851	10,432
COUT-C-5	12,203	1,762	68	10	1,840	10,363
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	9,920	1,806	41	1	1,848	8,071
COUT-I	14,311	4,818	66	5	4,890	9,421

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA that would affect riparian vegetation communities are coal mining, a communication facility, habitat and rangeland management activities for the BLM Vernal Field Office, prescribed fires and spike treatments for the BLM Rawlins Field Office, the Sheep Creek Vegetation Management Area, vegetation mechanical treatments, weed treatments, and prescribed fires for the BLM White River Field Office, vegetation treatments for the BLM Little Snake Field Office, historical wildland fires, pipelines, noncoal mining operations, oil and gas development, oil shale development, an ATV trail, residential development, two wind energy facilities, Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines), and BLM White River Field Office range improvement lines. RFFAs in the CIAA that would affect riparian vegetation communities are coal mining, industrial development, a diversion dam, oil and gas development, a pipeline, a power generation station, residential development, the TransWest Express Transmission Project, the Gateway West 500kV Transmission Project, transportation projects, a wind energy facility, and a Utah Department of Wildlife Resources watershed restoration focus area.

All impacts on riparian vegetation communities from Project activities would co-occur with past and present actions or RFFAs to some degree, though Project-related impacts also would occur outside these areas with all alternative routes (Table 4-48). The extent of Project-related development in riparian vegetation communities would account for a very small portion of total cumulative effects in areas with past and present activities in the CIAA (Table 4-48). All cumulative effects, including those from the Project, impact a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-48).

Shrub/Shrub Steppe

The loss of shrub/shrub steppe vegetation communities under all alternative routes would contribute to the cumulative loss of shrub/shrub steppe vegetation communities in the CIAA. The extent of cumulative development on shrub/shrub steppe vegetation communities for all relevant alternative routes is summarized in Table 4-49.

TABLE 4-49 SHRUB/SHRUB STEPPE VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	360,242	14,242	14,646	1,003	29,891	330,351
WYCO-B-1	360,242	14,242	14,646	1,003	29,891	330,351
WYCO-B-2 (Agency Preferred Alternative)	360,242	14,242	14,646	1,000	29,888	330,354
WYCO-B-3	360,242	14,242	14,646	1,002	29,890	330,352
Alternative WYCO-C and Route Variations						
WYCO-C	427,124	16,065	17,355	908	34,329	392,795
WYCO-C-1	427,124	16,065	17,355	909	34,329	392,795
WYCO-C-2	427,124	16,065	17,355	906	34,326	392,798
WYCO-C-3	427,124	16,065	17,355	908	34,328	392,796
Alternative WYCO-D and Route Variation						
WYCO-D	245,575	15,471	10,968	479	26,918	218,658
WYCO-D-1	245,575	15,471	10,968	480	26,919	218,657
Alternative WYCO-F and Route Variations						
WYCO-F	377,763	15,829	15,913	897	32,639	345,124
WYCO-F-1	377,763	15,829	15,913	897	32,639	345,124
WYCO-F-2	377,763	15,829	15,913	894	32,636	345,127
WYCO-F-3	377,763	15,829	15,913	896	32,638	345,125
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	522,635	34,106	14,341	1,319	49,767	472,869
COUT BAX-C	556,949	35,074	25,665	1,234	61,973	494,976
COUT BAX-E	532,359	33,638	22,029	1,531	57,198	475,161
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
Alternative COUT-A and Route Variation						
COUT-A	131,757	13,299	952	352	14,603	117,154
COUT-A-1	131,757	13,299	952	352	14,603	117,154
Alternative COUT-B and Route Variations						
COUT-B	156,572	19,785	1,078	235	21,098	135,475
COUT-B-1	156,344	19,779	1,072	235	21,086	135,258
COUT-B-2	156,355	19,779	1,075	235	21,089	135,266
COUT-B-3	156,366	19,779	1,075	235	21,089	135,277
COUT-B-4	156,393	19,779	1,075	235	21,089	135,304
COUT-B-5	156,328	19,778	1,075	240	21,094	135,234

TABLE 4-49 SHRUB/SHRUB STEPPE VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	251,082	36,822	3,407	430	40,660	210,422
COUT-C-1	246,953	36,683	3,401	433	40,517	206,436
COUT-C-2	246,964	36,683	3,403	432	40,518	206,445
COUT-C-3 (Agency Preferred Alternative)	246,937	36,682	3,403	436	40,522	206,415
COUT-C-4	246,983	36,682	3,403	436	40,521	206,462
COUT-C-5	246,956	36,682	3,403	422	40,507	206,449
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	253,017	37,111	3,412	413	40,936	212,081
COUT-I	339,386	45,263	5,122	809	51,195	288,191
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Past and present activities in the CIAA that would affect shrub/shrub steppe vegetation communities are coal mining, a communication facility, habitat and rangeland management activities for the BLM Vernal Field Office, fuel treatments for the BLM Vernal Field Office, prescribed fires and spike treatments for the BLM Rawlins Field Office, the Sheep Creek Vegetation Management Area, vegetation treatments for the BLM Little Snake Field Office, prescribed fires for the BLM White River Field Office, historical wildland fires, pipelines, industrial development, a military training area, a missile launch facility, non-coal mining operations, oil and gas development, oil shale development, a power generation, an ATV trail, residential development, transportation projects, three wind-energy facilities, Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines), and BLM White River Field Office range improvement lines. RFFAs in the CIAA that would affect shrub/shrub steppe vegetation communities are a land annexation, coal mining, industrial development, a land division, oil and gas development, power generation projects, the TransWest Express Transmission Project, the Mona South transmission project, the Gateway West 500kV Transmission Project, a wind energy facility, and a Utah Department of Wildlife Resources watershed restoration focus area.

All impacts on shrub/shrub steppe vegetation communities from Project activities would co-occur with past and present actions or RFFAs to some degree, though Project-related impacts also occur would outside these areas with all alternative routes (Table 4-49). The extent of Project-related development in shrub/shrub steppe vegetation communities would account for a very small portion of total cumulative effects in areas with past and present activities in the CIAA (Table 4-49). All cumulative effects, including those from the Project, affect a moderate amount of the total extent of these vegetation communities in the CIAA (Table 4-49).

Water

The loss of water vegetation communities under Alternatives WYCO-B, WYCO-C, WYCO-D, WYCO-F, COUT BAX-B, COUT BAX-C, COUT BAX-E, COUT-A, COUT-B, and COUT-C would

contribute to the cumulative loss of water vegetation communities in the CIAA. The extent of cumulative development on water vegetation communities for all relevant alternative routes is summarized in Table 4-50.

TABLE 4-50 WATER VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	6,559	223	53	7	283	6,276
WYCO-B-1	6,559	223	53	7	284	6,275
WYCO-B-2 (Agency Preferred Alternative)	6,559	223	53	7	283	6,276
WYCO-B-3	6,559	223	53	7	283	6,276
Alternative WYCO-C and Route Variations						
WYCO-C	6,892	227	48	5	279	6,613
WYCO-C-1	6,892	227	48	5	280	6,613
WYCO-C-2	6,892	227	48	5	279	6,613
WYCO-C-3	6,892	227	48	5	279	6,613
Alternative WYCO-D and Route Variation						
WYCO-D	6,831	620	53	4	676	6,155
WYCO-D-1	6,831	620	53	4	676	6,155
Alternative WYCO-F and Route Variations						
WYCO-F	6,786	289	59	5	353	6,434
WYCO-F-1	6,786	289	59	5	353	6,433
WYCO-F-2	6,786	289	59	5	353	6,434
WYCO-F-3	6,786	289	59	5	353	6,434
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	4,098	845	74	4	922	3,176
COUT BAX-C	4,185	847	83	2	932	3,253
COUT BAX-E	4,570	745	70	2	817	3,753
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
Alternative COUT-A and Route Variation						
COUT-A	10,492	1,366	6	6	1,379	9,113
COUT-A-1	10,492	1,366	6	6	1,379	9,113
Alternative COUT-B and Route Variations						
COUT-B	4,044	816	10	5	831	3,214
COUT-B-1	3,593	810	9	5	823	2,769
COUT-B-2	3,593	810	9	5	823	2,770
COUT-B-3	3,621	811	10	5	825	2,796
COUT-B-4	3,633	812	10	5	826	2,807
COUT-B-5	3,581	809	9	5	822	2,759

TABLE 4-50 WATER VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	3,720	232	22	2	256	3,464
COUT-C-1	3,238	220	22	2	244	2,994
COUT-C-2	3,238	220	22	2	244	2,994
COUT-C-3 (Agency Preferred Alternative)	3,226	219	22	2	243	2,984
COUT-C-4	3,255	221	22	2	245	3,010
COUT-C-5	3,243	220	22	2	244	2,999
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	5,176	328	24	1	353	4,823
COUT-I	5,358	735	24	1	760	4,597

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA that would affect water vegetation communities are coal-mining operations, historical wildland fires, pipelines, noncoal mining operations, oil and gas development, oil shale development, residential development, residential development, Miller’s Flat vegetation maintenance activities, prescribed fires for the BLM Rawlins Field Office, vegetation mechanical treatments and weed treatments for the BLM White River Field Office, two wind-energy facilities, and fences and water range improvement projects for the BLM White River Field Office. RFFAs in the CIAA that would affect water vegetation communities are coal mining, oil and gas development, a pipeline, power generation facilities, the TransWest Express Transmission Project, the Gateway West 500kV Transmission Project, a timber salvage project, a wind-energy facility, and Utah Department of Wildlife Resources watershed restoration focus areas.

All impacts on water vegetation communities from Project activities would co-occur with past and present actions or RFFAs to some degree, though Project-related impacts also would occur outside these areas with all alternative routes (Table 4-50). The extent of Project-related development in water vegetation communities would account for a very small portion of total cumulative effects in areas with past and present activities in the CIAA (Table 4-50). All cumulative effects, including those from the Project, impact a moderate portion of the total extent of these vegetation communities in the CIAA (Table 4-50).

Wetland

The loss of wetland vegetation communities under Alternatives WYCO-B, WYCO-C, WYCO-D, and WYCO-F would contribute to the cumulative loss of water vegetation communities in the CIAA. The extent of cumulative development on water vegetation communities for all relevant alternative routes is summarized in Table 4-51.

TABLE 4-51 WETLAND VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	10,862	1,031	483	26	1,540	9,322
WYCO-B-1	10,862	1,031	483	26	1,540	9,322
WYCO-B-2 (Agency Preferred Alternative)	10,862	1,031	483	26	1,540	9,322
WYCO-B-3	10,862	1,031	483	26	1,540	9,322
Alternative WYCO-C and Route Variations						
WYCO-C	11,358	1,010	461	31	1,502	9,855
WYCO-C-1	11,358	1,010	461	31	1,502	9,855
WYCO-C-2	11,358	1,010	461	31	1,502	9,855
WYCO-C-3	11,358	1,010	461	31	1,502	9,855
Alternative WYCO-D and Route Variation						
WYCO-D	15,126	5,514	404	22	5,940	9,186
WYCO-D-1	15,126	5,514	404	22	5,940	9,186
Alternative WYCO-F and Route Variations						
WYCO-F	12,003	1,119	538	26	1,682	10,321
WYCO-F-1	12,003	1,119	538	26	1,682	10,321
WYCO-F-2	12,003	1,119	538	26	1,682	10,321
WYCO-F-3	12,003	1,119	538	26	1,682	10,321
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	546	180	9	1	189	357
COUT BAX-C	553	182	8	1	192	362
COUT BAX-E	660	190	14	1	204	456
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
Alternative COUT-A and Route Variation						
COUT-A	7,688	6,174	14	4	6,192	1,496
COUT-A-1	7,688	6,174	14	4	6,192	1,496
Alternative COUT-B and Route Variations						
COUT-B	7,137	5,232	40	10	5,283	1,855
COUT-B-1	7,010	5,228	40	10	5,279	1,731
COUT-B-2	7,059	5,228	40	10	5,279	1,780
COUT-B-3	7,091	5,229	40	10	5,280	1,811
COUT-B-4	7,092	5,229	40	10	5,280	1,812
COUT-B-5	7,058	5,228	40	11	5,279	1,778

TABLE 4-51 WETLAND VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	306	46	1	0	47	259
COUT-C-1	168	37	1	0	38	130
COUT-C-2	217	37	1	0	38	179
COUT-C-3 (Agency Preferred Alternative)	216	37	1	0	38	178
COUT-C-4	240	37	1	0	38	201
COUT-C-5	238	37	1	0	38	200
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	273	61	1	0	62	211
COUT-I	272	91	3	0	94	178

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA that would affect wetland vegetation communities are coal mining, historical wildland fires, oil and gas development, prescribed fires and spike treatments for the BLM Rawlins Field Office, and two wind-energy facilities. RFFAs in the CIAA that would affect wetland vegetation communities are coal mining, oil and gas development, the TransWest Express Transmission Project, the Gateway West 500kV Transmission Project, and a wind-energy facility.

All impacts on wetland vegetation communities from Project activities would co-occur with past and present actions or RFFAs to some degree, though Project-related impacts also would occur outside these areas with all alternative routes (Table 4-51). The extent of Project-related development in wetland vegetation communities would account for a very small portion of total cumulative effects in areas with past and present activities in the CIAA (Table 4-51). All cumulative effects, including those from the Project, impact a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-51).

4.3.6 Special Status Plants

This section addresses cumulative effects on special status plant resources resulting from the Project in addition to other past and present actions and RFFAs. Resources addressed in this section are the same as those described in Section 3.2.6.

The approach for analysis of cumulative effects on special status plants, including the geographic and temporal scopes of analysis, is presented in Table 4-3. The cumulative effects analysis for special status plants considers past and present actions and RFFAs (Tables 4-1 and 4-2) in conjunction with direct and indirect impacts from the Project (described in Section 3.2.6.4.3).

The geographic scope of the CIAA for an alternative that crosses special status plant habitat is the extent of subwatersheds (12-digit HUCs) crossed by the alternative routes considered. The analysis area is

sufficient to analyze all potential cumulative effects of the Project on federally listed or candidate species; however, sufficient habitat and occurrence data are not available for USFS- and BLM-listed sensitive species and, therefore, quantitative analysis of cumulative impacts on these species is not possible for the purposes of this EIS.

Most direct cumulative impacts on special status plants associated with construction of the Proposed Action would occur in the immediate geographical area of construction activities for access roads, tower structures, and ancillary facilities. However, some anticipated direct and indirect effects (described in Section 3.2.6.4.3), such as the introduction and spread of noxious weed species and increased dust deposition, could occur in a larger geographical context as well as in the immediate vicinity of construction activities.

The temporal scope of the analysis includes 5 years for impacts associated with Project construction and site stabilization. The Proposed Action does not include plans to decommission the Project; therefore, the temporal scope of analysis for impacts associated with operation and maintenance of the Project is based on the assumption that the effects of operating and maintaining the transmission line would persist for the life of the Project (50 years or longer). Because the Proposed Action does not include decommissioning (refer to Section 2.4.9), long-term impacts associated with the presence of the transmission line (e.g., tower foundations) may be permanent.

4.3.6.1 Issues Identified for Analysis

4.3.6.1.1 Loss and Degradation of Habitat for Special Status Plant Species

Loss of special status plant habitat was identified as an issue warranting analysis by the agencies and public during scoping (Table 4-3). Loss of special status plant habitat could occur with construction of access roads, tower structures, and ancillary facilities of constructed in these areas. Loss of habitat for special status plant species is more likely to negatively affect a species if impacts are extensive, occur over a significant portion of available habitat, or affect patchy or isolated populations. Cumulative loss of habitat are analyzed qualitatively for all special status species and quantitatively for federally listed, candidate, and proposed species in Section 4.3.6.5.

4.3.6.1.2 Long-term Sustainability of Special Status Plant Populations

Negative impacts on long-term sustainability of special status plant populations was identified as an issue relating to special status plant resources by the agencies and during public scoping (Table 4-3). Long-term sustainability of some special status plant populations could be threatened through cumulative detrimental direct and indirect impacts of past and present actions and RFFAs to populations and potential habitat. Impacts on habitat could result in habitat fragmentation, which could limit gene flow between populations, decrease genetic diversity in populations, and potentially negatively impact population long-term viability (Ellstrand and Elam 1993). These impacts could be particularly threatening to long-term sustainability of special status plant resources if impacts are extensive, occur over a significant portion of available habitat, or affect populations that are already especially patchy or isolated. Cumulative impacts on habitat for special status plants are analyzed in terms of direct impacts on special status plant habitat (i.e., decrease in extent [in acres] of habitat) and discussed quantitatively in Section 4.3.6.5.

4.3.6.2 Existing Condition

Conversion of native vegetation to agricultural use since settlement of European peoples in the area in the middle of the 19th century has significantly affected the character of landscapes and the quantity and quality of habitats for special status plants in the CIAA. Construction of settlements and transportation systems as well as human population growth have resulted in further conversion of habitats for plants and animals and significant shifts in the abundance and distribution of species of the area. Drought, wildfire,

climate change, introduction of noxious weeds, and anthropogenic disturbance have likewise resulted in changes to habitats in more recent times.

Cumulative effects analysis and results are based on the best available species-specific habitat information. Descriptions of existing conditions of special status plants are provided in Section 3.2.5.5. Species accounts for special status plant species are presented in Appendix E.

4.3.6.3 Results

Direct loss of special status plant habitat could result from ground-disturbing activities or construction of permanent or temporary features. Indirect negative impacts on habitat (i.e., habitat degradation) also could occur where disturbance is adjacent to habitat but does not affect it directly. Degradation could be a result of many factors, including changes to erosional patterns, dust deposition from increased traffic, decreased attractiveness of the area to pollinators, and noxious weed invasion (refer to Section 3.2.5.4 for more detailed information).

Past actions in the CIAA, such as residential development, mining operations, oil and gas development, pipelines, and oil shale and tar sands development have resulted in the loss or degradation of special status plant habitat. Unsustainable grazing practices and other soil-disturbing activities, as well as transport of weed seeds via human and livestock movement, also have likely resulted in large-scale invasion of this area by noxious and invasive weeds. Present actions also are likely to result in loss or degradation of special status plant habitat, though it is assumed that selective mitigation measures and/or federal or agency regulation would ensure the minimization of these impacts. Inadvertent habitat degradation in areas adjacent to ground-disturbing actions also are likely to occur with present actions, even though selective mitigation measures to minimize these impacts would be required on federal land.

Construction of Project features such as access roads, transmission towers, and ancillary facilities would require the permanent removal of vegetation and could result in the loss of potential habitat for special status plants under all action alternative routes. Non-native plant species are likely to colonize new areas through the transport of seeds by construction and maintenance equipment. Revegetation of disturbed areas is a project design feature for environmental protection (refer to Table 2-8, Design Feature 2); however, it is unlikely that disturbed areas could be restored to pre-disturbance conditions. As site-specific Project-related impacts on habitats and populations of BLM- and USFS-listed sensitive species are not known, it is not possible to quantify cumulative effects on these species. However, it is assumed that application of Design Features 3 and 9 of the Proposed Action for environmental protection (Table 2-8) and Selective Mitigation Measures 2 and 7 (Table 2-13) would minimize disturbance to special status plant species habitat and populations. Impacts on habitat for special status plants, however minimal, would contribute incrementally to losses of special status plant habitat that have occurred or could occur in the CIAA. RFFAs that require the construction of long-term or permanent Project structures or that introduce non-native plant species also would be likely to result in changes to vegetation community structure and the degradation of potential habitat for special status plants.

Quantitative analysis of cumulative effects on special status plant resources was completed through an inventory of available habitat for each species and an estimation of impacts in these habitats by past and present actions and the Proposed Action and other RFFAs. The extent of special status plant habitats (in acres) in the CIAA was determined using information provided by land-management agencies. Development associated with past and present actions and RFFAs was estimated using shapefiles of specific projects received from agencies and local governments. Incremental project development was estimated using assumptions of extent of disturbance per mile of alternative as described in Section 2.5.1.2.

Predicted cumulative effects were analyzed for species to which direct impacts would be anticipated to occur with implementation of any action alternative considered (refer to Section 3.2.6). The results of this analysis are presented by species.

4.3.6.3.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

WYCO alternative routes and route variations would only cross habitat for Ute ladies’-tresses.

Ute Ladies’-tresses

The incremental project-related impacts resulting in loss, fragmentation and modification of Ute ladies’-tresses habitat under all WYCO alternative routes would contribute to the cumulative loss, fragmentation, and modification of Ute ladies’-tresses habitat. The extent of cumulative development on Ute ladies’-tresses habitat is summarized in Table 4-52.

Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	1,540	269	58	1	328	1,212
WYCO-B-1	1,540	269	58	1	328	1,212
WYCO-B-2 (Agency Preferred Alternative)	1,540	269	58	1	328	1,212
WYCO-B-3	1,540	269	58	1	328	1,212
Alternative WYCO-C and Route Variations						
WYCO-C	1,365	268	49	1	318	1,047
WYCO-C-1	1,365	268	49	1	318	1,047
WYCO-C-2	1,365	268	49	1	318	1,047
WYCO-C-3	1,365	268	49	1	318	1,047
Alternative WYCO-D and Route Variation						
WYCO-D	4,801	1,193	190	12	1,395	3,406
WYCO-D-1	4,801	1,193	190	12	1,395	3,406
Alternative WYCO-F and Route Variations						
WYCO-F	3,194	387	137	5	529	2,665
WYCO-F-1	3,194	387	137	5	529	2,665
WYCO-F-2	3,194	387	137	5	529	2,665
WYCO-F-3	3,194	387	137	5	529	2,665
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Past and present activities in the CIAA for all WYCO alternative routes and route variations that would affect Ute ladies’-tresses potential habitat are coal-mining operations, historical wildland fires, the Atlantic Rim oil and gas field, BLM Little Snake and White River Field Office oil and gas units, Colorado and Wyoming state lands oil and gas leases, prescribed fires and spike treatments for the BLM Rawlins Field Office, vegetation treatments for the BLM Little Snake Field Office, the expansion of the

Chokecherry Wind Farm, construction of the Seven Mile Hill Wind Energy Facility, Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences, cattle guards, gates, waterlines), and BLM White River Field Office range improvement projects.

RFFAs in the CIAA for Ute ladies’-tresses potential habitat are coal-mining operations, the Continental Divide-Creston Junction oil and gas project, the construction of the TransWest Express and the Gateway West transmission projects, and the Hogback Ridge wind-energy project.

The incremental project-related development in Ute ladies’-tresses potential habitat would account for only a minor portion (between 1 and 12 acres) of the total cumulative effects predicted in the CIAA for the WYCO alternative routes considered (Table 4-53).

4.3.6.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

Potential habitat for Ute ladies’-tresses and Cisco milkvetch is crossed by all COUT BAX alternative routes. San Rafael cactus habitat is crossed by Alternative COUT BAX-C.

Ute Ladies’-tresses

The incremental project-related impacts resulting in loss, fragmentation, and modification of Ute ladies’-tresses habitat under all COUT BAX alternative routes would contribute to the cumulative loss, fragmentation, and modification of Ute ladies’-tresses habitat in the CIAA. The extent of cumulative development in Ute ladies’-tresses habitat is summarized in Table 4-53.

TABLE 4-53 UTE LADIES’-TRESSES HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	2,919	928	11	12	951	1,968
COUT BAX-C	3,428	945	472	12	1,429	1,999
COUT BAX-E	4,119	643	528	13	1,184	2,935

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA for all COUT BAX alternative routes that would affect Ute ladies’-tresses potential habitat are coal-mining operations, the Central Utah Telephone Fiber Optic Line, historical wildland fires, SITLA active humic shale, metalliferous mineral, and potash leases, BLM Grand Junction, Moab, and White River Field Office active oil and gas extraction leases, SITLA active oil and gas extraction leases, the Ferron natural gas project, Enterprise Mid-America pipelines, residential development, vegetation management and weed treatment activities for the BLM White River Field Office, fuel treatments for the BLM Vernal Field Office, and range improvement projects for the BLM White River Field Office.

RFFAs in the CIAA for all COUT BAX alternative routes that would affect Ute ladies’-tresses potential habitat are a diversion dam, Golden Eagle, LLC oil and gas development, Twin Bridges Resources oil and gas development, the Narrows Proposed East Bench and Oak Creek pipeline, the Woodside power generation facility, the construction of the TransWest Express Transmission Project, and UDWR watershed restoration focus areas.

The incremental project-related development in Ute ladies’-tresses potential habitat would account for only a minor portion (between 12 and 13 acres) of the total cumulative effects predicted in the CIAA for the COUT BAX alternative routes considered (Table 4-52).

Cisco Milkvetch

The incremental project-related impacts resulting in loss, fragmentation, and modification of Cisco milkvetch habitat under Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E would contribute to the cumulative loss, fragmentation, and modification of Cisco milkvetch habitat in the CIAA. The extent of cumulative development in Cisco milkvetch habitat for the relevant alternative routes and route variations is summarized in Table 4-54.

TABLE 4-54 CISCO MILKVETCH HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	146,502	4,056	914	489	5,459	141,043
COUT BAX-C	146,502	4,056	914	480	5,451	141,052
COUT BAX-E	146,502	4,056	914	466	5,436	141,066

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA for all COUT BAX alternative routes that would affect Cisco milkvetch habitat are historical wildland fires, SITLA active humic shale and potash leases, BLM Moab Field Office oil and gas units, SITLA active oil and gas extraction leases, and Enterprise Mid-America pipelines.

The only RFFAs in the CIAA for COUT BAX alternative routes that would affect Cisco milkvetch habitat are the construction of the TransWest Express Transmission Project and UDWR watershed restoration focus areas.

The incremental project-related development in Cisco milkvetch habitat would account for a moderate portion (between 466 and 489 acres) of the total cumulative effects predicted in the CIAA for the COUT BAX alternative routes considered (Table 4-54).

San Rafael Cactus

Alternative COUT BAX-C is the only Project alternative that crosses San Rafael cactus habitat. Impacts on San Rafael cactus habitat under Alternative COUT BAX-C would not contribute to the cumulative loss, fragmentation, and modification of San Rafael cactus habitat in the CIAA for this alternative, as all areas where the Project would affect habitat for this species are in the extent of past and present actions and RFFAs (Table 4-55). The extent of cumulative development on San Rafael cactus habitat for all relevant alternative routes is summarized in Table 4-55.

TABLE 4-55 SAN RAFAEL CACTUS HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-C	3,865	74	22	0	96	3,769
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Rather than past and/or present projects, development in the CIAA for Alternative COUT BAX-C that would affect San Rafael cactus habitat is attributed to roads and other infrastructure occurring in habitat for this species.

RFFAs in the CIAA for Alternative COUT BAX-C that would affect San Rafael cactus habitat are the construction of the TransWest Express Transmission Project and UDWR watershed restoration focus areas.

All project development in San Rafael cactus habitat in the CIAA would occur in the same geographic areas of past or present actions or other RFFAs, with the majority being in the watershed restoration focus area. Therefore, no incremental Project-related development would be anticipated in San Rafael cactus habitat in the CIAA for Alternative COUT BAX-C.

4.3.6.3.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

Ute ladies’-tresses potential habitat are crossed by all COUT alternative routes and route variations. Clay phacelia habitat are crossed by Alternatives COUT-A, COUT-B, and COUT-C and route variations. Clay reed-mustard and Uinta Basin hookless cactus habitat (as well as Levels 1 and 2 *Sclerocactus* core habitat) are crossed by Alternatives COUT-C and its route variations, COUT-H, and COUT-I. Graham’s beardtongue and White River beardtongue habitat are crossed by Alternatives COUT-B and its route variations, COUT-C and its route variations, COUT-H, and COUT-I.

Ute Ladies’-tresses

The incremental Project-related impacts resulting in loss, fragmentation, and modification of Ute ladies’-tresses habitat under all COUT alternative routes and route variations would contribute to the cumulative loss, fragmentation, and modification of Ute ladies’-tresses habitat in the CIAA for these alternative routes. The extent of cumulative development on Ute ladies’-tresses habitat is summarized in Table 4-56.

TABLE 4-56 UTE LADIES’-TRESSES HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	7,918	3,320	83	31	3,435	4,483
COUT-A-1	7,918	3,320	83	31	3,435	4,483

TABLE 4-56 UTE LADIES’-TRESSES HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-B and Route Variations						
COUT-B	7,651	2,593	133	28	2,754	4,897
COUT-B-1	7,613	2,590	132	28	2,751	4,862
COUT-B-2	7,613	2,590	132	28	2,751	4,862
COUT-B-3	7,613	2,590	132	28	2,751	4,862
COUT-B-4	7,613	2,590	132	28	2,751	4,862
COUT-B-5	7,613	2,590	132	29	2,752	4,861
Alternative COUT-C and Route Variations						
COUT-C	3,298	630	18	11	658	2,639
COUT-C-1	3,234	626	17	11	654	2,580
COUT-C-2	3,234	626	17	11	654	2,580
COUT-C-3 (Agency Preferred Alternative)	3,234	626	17	11	654	2,580
COUT-C-4	3,234	626	17	11	654	2,580
COUT-C-5	3,234	626	17	11	654	2,580
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	2,750	575	13	7	595	2,156
COUT-I	3,768	888	29	11	927	2,841

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

The largest extent of potential habitat for Ute-ladies’-tresses occurs in the cumulative effects analysis areas of Alternatives COUT-A and COUT-B and route variations. Lesser extents of potential habitat for Ute-ladies’-tresses occur in the cumulative effects analysis areas of Alternatives COUT-C and its route variations, COUT-H, and COUT-I.

Past and present activities in the CIAA for all COUT alternative routes and route variations that would affect Ute ladies’-tresses potential habitat are coal-mining operations, the Central Utah Telephone fiber optic line, habitat and rangeland management activities, historical wildland fires, two pipelines, gilsonite mining, SITLA active limestone and metalliferous mineral leases, BLM Vernal Field Office oil and gas units, Chapita Wells/Stagecoach oil and gas units, Greater Deadman Bench oil and gas units, Greater Natural Buttes Area gas development project oil and gas units, Gusher Oil & Gas project oil and gas units, Lake Canyon Exploration and Development Agreement (EDA) oil and gas units, Colorado state land oil and gas leases, Utah Division of Oil, Gas and Mining (UDOGM) oil well pads, recreation management activities, residential development, Sheep Creek Vegetation Management activities, Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences, cattle guards, gates, waterlines), and BLM White River Field Office range improvement projects.

RFFAs in the CIAA that would affect Ute ladies’-tresses potential habitat are the Kerr-McGee oil and gas development, Monument Butte oil and gas development, a diversion dam, Narrows Proposed East Bench

and Oak Creek Pipeline, industrial development, the construction of the TransWest Express Transmission Project, and UDWR watershed restoration focus areas.

The incremental Project-related development in potential habitat for Ute ladies'-tresses would account for only a minor portion (between 7 and 31 acres) of the total cumulative effects predicted in the CIAA for the COUT alternative routes considered (Table 4-56).

Clay Phacelia

Alternatives COUT-A, COUT-B, and COUT-C and route variations cross clay phacelia habitat. Impacts on clay phacelia habitat under Alternatives COUT-A, COUT-B, and COUT-C and route variations would not contribute to the cumulative loss, fragmentation, and modification of clay phacelia habitat in the CIAA for these alternative routes and route variations, as all areas where the Project would affect habitat for this species are in the extent of past and present actions and RFFAs. The extent of cumulative development on clay phacelia habitat for all relevant alternative routes and route variations is summarized in Table 4-57.

TABLE 4-57 CLAY PHACELIA HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	535	125	5	0	129	405
COUT-A-1	535	125	5	0	129	405
Alternative COUT-B and Route Variations						
COUT-B	1,283	253	29	1	283	1,000
COUT-B-1	1,283	253	29	1	283	1,000
COUT-B-2	1,283	253	29	1	283	1,000
COUT-B-3	1,283	253	29	1	283	1,000
COUT-B-4	1,283	253	29	1	283	1,000
COUT-B-5	1,283	253	29	1	283	1,000
Alternative COUT-C and Route Variations						
COUT-C	1,283	253	29	1	283	1,000
COUT-C-1	1,283	253	29	1	283	1,000
COUT-C-2	1,283	253	29	1	283	1,000
COUT-C-3 (Agency Preferred Alternative)	1,283	253	29	1	283	1,000
COUT-C-4	1,283	253	29	1	283	1,000
COUT-C-5	1,283	253	29	1	283	1,000

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA for these alternative routes and route variations that would affect clay phacelia habitat are the Sheep Creek vegetation management area, historic wildland fires, and Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences, waterlines, stream crossings, troughs).

The RFFAs in the CIAA that would affect clay phacelia habitat are the construction of the TransWest Express Transmission Project and UDWR watershed restoration focus areas.

Most Project development in clay phacelia habitat in the CIAA would occur in the same geographic areas of past or present actions or other RFFAs, with the majority being in the Sheep Creek vegetation management area for the Manti-La Sal National Forest. Therefore, incremental Project-related development anticipated in clay phacelia habitat in the CIAA for any COUT alternative route would be minor.

Clay Reed-mustard

The incremental Project-related impacts resulting in loss, fragmentation, and modification of clay reed-mustard habitat under Alternatives COUT-C and its route variations, COUT-H, and COUT-I would contribute to the cumulative loss, fragmentation, and modification of clay reed-mustard habitat in the CIAA for this species. The extent of cumulative development on clay reed-mustard habitat for all relevant alternative routes and route variations is summarized in Table 4-58.

TABLE 4-58 CLAY REED-MUSTARD HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	9,148	227	21	13	261	8,887
COUT-C-1	9,148	227	21	13	261	8,887
COUT-C-2	9,148	227	21	13	261	8,887
COUT-C-3 (Agency Preferred Alternative)	9,148	227	21	13	261	8,887
COUT-C-4	9,148	227	21	13	261	8,887
COUT-C-5	9,148	227	21	13	261	8,888
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	9,148	227	21	13	260	8,888
COUT-I	9,148	227	21	13	260	8,888

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA that would affect clay reed-mustard habitat are BLM Vernal Field Office oil and gas units, Gasco oil and gas development, Greater Natural Buttes area gas development, Riverbend Unit infill oil and gas units, SITLA active oil and gas leases, UDOGM gas well pads, and gilsonite mining operations.

The only RFFA in the CIAA for these alternative routes and route variations that would affect clay reed-mustard habitat is the construction of the TransWest Express Transmission Project.

The incremental Project-related development in clay reed-mustard habitat would account for only a minor portion (13 acres) of the total cumulative effects predicted in the CIAA for the COUT alternative routes and route variations considered (Table 4-58).

Graham’s Beardtongue

The incremental Project-related impacts resulting in loss, fragmentation, and modification of Graham’s beardtongue habitat under Alternatives COUT-B and its route variations, COUT-C and its route variations, COUT-H, and COUT-I would contribute to the cumulative loss, fragmentation, and modification of Graham’s beardtongue habitat. The extent of cumulative development on Graham’s beardtongue habitat for all relevant alternative routes and route variations is summarized in Table 4-59.

TABLE 4-59 GRAHAM’S BEARDTONGUE HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-B and Route Variations						
COUT-B	38,005	7,671	616	0	8,287	29,718
COUT-B-1	50,459	7,978	510	16	8,503	41,956
COUT-B-2	50,459	7,978	510	0	8,487	41,972
COUT-B-3	38,005	7,671	616	0	8,287	29,718
COUT-B-4	52,493	8,243	619	0	8,862	43,631
COUT-B-5	35,971	7,406	507	0	7,913	28,059
Alternative COUT-C and Route Variations						
COUT-C	89,588	5,373	251	116	5,741	83,848
COUT-C-1	125,936	12,579	536	170	13,285	112,651
COUT-C-2	125,936	12,579	536	154	13,268	112,668
COUT-C-3 (Agency Preferred Alternative)	111,448	12,007	533	155	12,695	98,754
COUT-C-4	104,076	5,945	254	118	6,317	97,759
COUT-C-5	89,588	5,373	251	114	5,739	83,850
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	89,324	5,366	230	112	5,708	83,616
COUT-I	89,324	5,366	230	110	5,706	83,618

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA that would affect Graham’s beardtongue habitat include habitat management projects for the BLM Vernal Field Office, historic wildland fires, SITLA active metalliferous mineral leases and mineral materials permits, Berry Petroleum South Unit oil and gas development, BLM Price, Vernal, and White River Field Office oil and gas units, Gasco oil and gas units, Lake Canyon EDA oil and gas units, Rye Patch oil drilling project oil and gas development, SITLA active oil and gas and oil shale leases, West Tavaputs Plateau oil and gas development, Red Leaf Oil Shale Project development, residential development, fuel treatments for the BLM Vernal Field Office, and BLM White River Field Office range improvement projects.

The RFFAs in the CIAA that would affect Graham’s beardtongue habitat are the construction of the TransWest Express Transmission Project and UDWR watershed restoration focus areas.

All Project-related development in habitat for this species due to Alternative COUT-B and Route Variations COUT-B-2, COUT-B-3, COUT-B-4, and COUT-B-5 would occur in areas already disturbed or planned for development. Therefore, no incremental Project-related development would be anticipated in Graham’s beardtongue habitat in the CIAA for this alternative route or these route variations (Table 4-59).

The incremental Project-related development in Graham’s beardtongue habitat would account for only a minor portion (16 to 170 acres) of the total cumulative effects predicted in the CIAA for Route Variation COUT-B-1, as well as alternatives COUT-C and its route variations, COUT-H, and COUT-I (Table 4-59).

Uinta Basin Hookless Cactus

The loss, fragmentation and modification of Uinta Basin hookless cactus habitat under Alternatives COUT-C and its route variations, COUT-H, and COUT-I would contribute to the cumulative loss, fragmentation, and modification of Uinta Basin hookless cactus habitat. The extent of cumulative development on Uinta Basin hookless cactus habitat for all relevant alternative routes and route variations is summarized in Table 4-60.

TABLE 4-60 UINTA BASIN HOOKLESS CACTUS HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	223,055	34,523	2,992	237	37,753	185,302
COUT-C-1	223,055	34,523	2,992	239	37,755	185,300
COUT-C-2	223,055	34,523	2,992	239	37,754	185,301
COUT-C-3 (Agency Preferred Alternative)	223,055	34,523	2,992	241	37,756	185,299
COUT-C-4	223,055	34,523	2,992	241	37,756	185,299
COUT-C-5	223,055	34,523	2,992	233	37,749	185,306
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	223,055	34,523	2,992	228	37,744	185,311
COUT-I	223,055	34,523	2,992	225	37,740	185,315

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA that would affect Uinta Basin hookless cactus habitat are gilsonite mining operations, SITLA active metalliferous mineral leases, BLM Vernal Field Office oil and gas units, Chapita Wells/Stagecoach oil and gas development, North Chapita Wells oil and gas development, Gasco oil and gas development, Greater Deadman Bench oil and gas development, Greater Natural Buttes area gas development, North Alger oil and gas development, Riverbend Unit infill oil and gas development, SITLA active oil and gas and oil shale leases, the Red Leaf oil shale project, the Peter’s Point Loop

pipeline, and the Seep Ridge Road paving project. RFFAs in the CIAA that would affect Uinta Basin hookless cactus habitat are the construction of the TransWest Express Transmission Project, Monument Butte EIS oil and gas development, Kerr-McGee oil and gas development, and Utah Department of Wildlife Resources watershed restoration focus areas.

The incremental Project-related development in Uinta Basin hookless cactus habitat would account for a moderate portion (between 244 and 262 acres) of the total cumulative effects predicted in the CIAA for the COUT alternative routes and route variations considered (Table 4-60).

Level 1 (400-Meter) *Sclerocactus* Core Habitat

The loss, fragmentation and modification of Level 1 *Sclerocactus* core habitat under Alternatives COUT-C and its route variations, COUT-H, and COUT-I would contribute to the cumulative loss, fragmentation, and modification of Level 1 *Sclerocactus* core habitat. The extent of cumulative development on Level 1 *Sclerocactus* core habitat for all relevant alternative routes is summarized in Table 4-61.

TABLE 4-61 LEVEL 1 SCLEROCACTUS CORE HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	20,564	3,072	259	31	3,362	17,202
COUT-C-1	20,564	3,072	259	31	3,362	17,202
COUT-C-2	20,564	3,072	259	31	3,362	17,202
COUT-C-3 (Agency Preferred Alternative)	20,564	3,072	259	32	3,362	17,202
COUT-C-4	20,564	3,072	259	32	3,362	17,202
COUT-C-5	20,564	3,072	259	31	3,361	17,203
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	20,564	3,072	259	30	3,361	17,204
COUT-I	20,564	3,072	259	29	3,360	17,204

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA for Level 1 *Sclerocactus* core habitat are gilsonite mining operations, SITLA active metalliferous mineral leases, BLM Vernal Field Office oil and gas units, Chapita Wells/Stagecoach oil and gas development, North Chapita Wells oil and gas development, Gasco oil and gas development, Greater Natural Buttes area gas development, Riverbend Unit infill oil and gas development, SITLA active oil and gas and oil shale leases, and UDOGM gas well pads. RFFAs in the CIAA for Uinta Basin hookless cactus are the construction of the TransWest Express Transmission Project, Monument Butte EIS oil and gas development, Kerr-McGee oil and gas development, and Utah Department of Wildlife Resources watershed restoration focus areas.

The incremental Project-related development in Level 1 *Sclerocactus* core habitat would account for only a minor portion (29 to 32 acres) of the total cumulative effects predicted in the CIAA for Alternatives COUT-C and its route variations, COUT-H, and COUT-I (Table 4-61).

The FWS has recommended that Level 1 *Sclerocactus* core habitat areas be managed to exclude additional ground disturbance (FWS *Sclerocactus* document). The Project and other RFFAs would result in additional ground disturbance in Level 1 *Sclerocactus* core habitat areas and would therefore not be consistent with FWS management recommendations. The effects of the Project and other RFFAs would contribute approximately 9 percent (288 to 291 acres) of the total estimated cumulative ground disturbance in Level 1 *Sclerocactus* core habitat areas, and ground disturbance resulting from the Project would only be a minor component (29 to 32 acres; approximately 11 percent) of the disturbance resulting from all RFFAs.

The methods used to evaluate ground disturbance in *Sclerocactus* core habitats may overestimate the amount of ground disturbance in the CIAA from the Project and other past and present actions and RFFAs. All actions in Level 1 *Sclerocactus* core habitat areas would be managed to minimize effects on individual cacti and their habitats. Micrositing of Project features and other selective mitigation measures as described in Sections 3.2.6.4.3 and 3.2.6.5.4 and would minimize impacts in Level 1 *Sclerocactus* core areas.

Level 2 (1,000-Meter) *Sclerocactus* Core Habitat

The loss, fragmentation and modification of Level 2 *Sclerocactus* core habitat under Alternatives COUT-C and its route variations, COUT-H, and COUT-I would contribute to the cumulative loss, fragmentation, and modification of Level 2 *Sclerocactus* core habitat. The extent of cumulative development on Level 2 *Sclerocactus* core habitat for all relevant alternative routes and route variations is summarized in Table 4-62.

TABLE 4-62 LEVEL 2 SCLEROCACTUS CORE HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	65,353	9,775	610	71	10,456	54,897
COUT-C-1	65,353	9,775	610	72	10,457	54,896
COUT-C-2	65,353	9,775	610	72	10,456	54,897
COUT-C-3 (Agency Preferred Alternative)	65,353	9,775	610	72	10,457	54,896
COUT-C-4	65,353	9,775	610	72	10,457	54,896
COUT-C-5	65,353	9,775	610	70	10,455	54,898

TABLE 4-62 LEVEL 2 SCLEROCACTUS CORE HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	65,353	9,775	610	68	10,453	54,900
COUT-I	65,353	9,775	610	67	10,452	54,901

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA for Level 2 *Sclerocactus* core habitat are gilsonite mining operations, SITLA active metalliferous mineral leases, BLM Vernal Field Office oil and gas units, Chapita Wells/Stagecoach oil and gas development, North Chapita Wells oil and gas development, Gasco oil and gas development, Greater Deadman Bench oil and gas development, Greater Natural Buttes area gas development, Riverbend Unit infill oil and gas development, SITLA active oil and gas and oil shale leases, and UDOGM gas well pads. RFFAs in the CIAA for Uinta Basin hookless cactus are the construction of the TransWest Express Transmission Project, Monument Butte EIS oil and gas development, Kerr-McGee oil and gas development, and Utah Department of Wildlife Resources watershed restoration focus areas.

The incremental Project-related development in Level 2 *Sclerocactus* core habitat would account for only a minor portion (67 to 72 acres) of the total cumulative effects predicted in the CIAA for Alternatives COUT-C and its route variations, COUT-H, and COUT-I (Table 4-62).

FWS has recommended that total ground disturbance in Level 2 *Sclerocactus* core habitat areas be maintained at or below 5 percent and that no additional ground disturbance occur if total (unreclaimed) disturbance exceeds this limit (FWS *Sclerocactus* document). Disturbance from past and present actions accounts for approximately 15 percent (9,775 acres) of total surface area in Level 1 *Sclerocactus* core habitat areas and, therefore, actions of the Project and other RFFAs would not be consistent with FWS management recommendations in these areas. The effects of the Project and other RFFAs would contribute approximately 7 percent (677 to 682 acres) of the total estimated cumulative ground disturbance in Level 2 *Sclerocactus* core habitat areas, and ground disturbance resulting from the Project would only be a minor component (67 to 72 acres; approximately 10 percent) of the disturbance resulting from all RFFAs.

The methods used to evaluate ground disturbance in *Sclerocactus* core habitats may overestimate the amount of ground disturbance in the CIAA from the Project and other past and present actions and RFFAs. All actions in Level 2 *Sclerocactus* core habitat areas would be managed to minimize effects on individual cacti and their habitats. Micrositing of Project features and other selective mitigation measures as described in Sections 3.2.6.4.3 and 3.2.6.5.4 and would minimize impacts in Level 2 *Sclerocactus* core areas.

White River Beardtongue

The loss, fragmentation and modification of White River beardtongue habitat under Alternatives COUT-B and its route variations, COUT-C and its route variations, COUT-H, and COUT-I would

contribute to the cumulative loss, fragmentation, and modification of White River beardtongue habitat. The extent of cumulative development on White River beardtongue habitat for all relevant alternative routes and route variations is summarized in Table 4-63.

TABLE 4-63 WHITE RIVER BEARDTONGUE HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-B and Route Variations						
COUT-B	38,005	7,671	616	0	8,287	29,718
COUT-B-1	50,459	7,978	510	16	8,503	41,956
COUT-B-2	50,459	7,978	510	0	8,487	41,972
COUT-B-3	38,005	7,671	616	0	8,287	29,718
COUT-B-4	52,493	8,243	619	0	8,862	43,631
COUT-B-5	35,971	7,406	507	0	7,913	28,059
Alternative COUT-C and Route Variations						
COUT-C	89,531	5,395	251	118	5,764	83,767
COUT-C-1	125,879	12,600	536	171	13,308	112,571
COUT-C-2	125,879	12,600	536	155	13,291	112,588
COUT-C-3 (Agency Preferred Alternative)	111,391	12,028	533	156	12,718	98,673
COUT-C-4	104,019	5,967	254	119	6,340	97,679
COUT-C-5	89,531	5,395	251	115	5,761	83,769
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	89,266	5,387	230	113	5,731	83,536
COUT-I	89,266	5,387	230	111	5,729	83,537

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present activities in the CIAA that would affect White River beardtongue habitat include habitat management projects for the BLM Vernal Field Office, SITLA active metalliferous mineral leases and mineral materials permits, Berry Petroleum South Unit oil and gas development, BLM Price, Vernal, and White River Field Office oil and gas units, Gasco oil and gas units, Lake Canyon EDA oil and gas units, Rye Patch oil drilling project oil and gas development, SITLA active oil and gas and oil shale leases, West Tavaputs Plateau oil and gas development, Red Leaf Oil Shale Project development, residential development, fuel treatments for the BLM Vernal Field Office, and BLM White River Field Office range improvement projects.

The RFFAs in the CIAA that would affect White River beardtongue habitat are the construction of the TransWest Express Transmission Project and UDWR watershed restoration focus areas.

All Project-related development in habitat for this species due to Alternative COUT-B and Route Variations COUT-B-2, COUT-B-3, COUT-B-4, and COUT-B-5 would occur in areas already disturbed

or planned for development. Therefore, no additional development would be incurred in White River beardtongue potential habitat by the Project for these alignments (Table 4-63).

The incremental Project-related development in White River beardtongue habitat would account for only a minor portion (16 to 171 acres) of the total cumulative effects predicted in the CIAA for Alternative Route Variation COUT-B-1, COUT-C and its route variations, COUT-H, and COUT-I (Table 4-63).

4.3.7 Wildlife

The section addresses potential cumulative effects on wildlife resources resulting from the Project in addition to past, other present, and RFFAs. Resources addressed in this section are the same as those described in Section 3.2.7.

The approach for analysis of cumulative effects on wildlife resources, including the geographic and temporal scopes of analysis, is presented in Table 4-3. The cumulative effects analysis for wildlife considers direct and indirect impacts from the Project (described in Section 3.2.7) in conjunction with the past and present actions and RFFAs listed in Tables 4-1 and 4-2. Crucial and severe habitat data were used to assess cumulative effects on big game, and were obtained from WGFD, CPW, and UDWR (Table 4-64). For wildlife species with limited data available for analysis that could occur in the Project area, a qualitative evaluation of the potential cumulative effects was performed. For information regarding species life history and a list of migratory birds that potentially occur in the Project area that support the analysis of cumulative effects, refer to Section 3.2.7.4 and Appendix E.

The geographic scope for detailed analysis of cumulative effects on wildlife resources is identified by species in Table 4-64. CIAAs were established for wildlife species based on the best available information regarding species specific home range or territory sizes.

4.3.7.1 Issues Identified for Analysis

4.3.7.1.1 Cumulative Impacts on Big Game Crucial and Severe Habitat

Potential impacts on big game populations and crucial and severe habitat were identified as a cumulative effects issue by the agencies and during public scoping. The quality and quantity of available winter range is the foremost limiting factor for big game populations identified by state wildlife agencies in Wyoming, Colorado (CDOW 2006), and Utah (UDWR 2007a, b; 2008a, b, c; 2010a). Habitat quality is necessary for maintaining long term survival of big game species by providing adequate forage and cover. Availability of crucial and severe winter range is essential for population survival during extreme or persistent climatic conditions, and is used during seasonal shortages in forage (Byers 2003; Peek 2003). Development that occurs in limited habitats or winter ranges places pressure on local wildlife populations, and impacts habitat quality and function (Sawyer et al. 2002); and surrounding habitat often cannot absorb or dissipate impacts from sensitive habitats (Watkins et al. 2007).

The cumulative effects analysis for big game species and their habitats addresses the potential effects of the Project and other past and present actions, and RFFAs and their contribution to loss, fragmentation, and modification of vegetation that provides crucial and severe elk, mule deer, pronghorn, moose and bighorn sheep habitats and forage; the degree to which these actions could place pressure on local wildlife populations and have additive effects on big game limiting factors (habitat quality, and availability of crucial and severe habitat); and the potential for these cumulative actions to affect local populations. Cumulative impacts on big game crucial and severe habitat were analyzed quantitatively, and effects are discussed qualitatively.

**TABLE 4-64
CUMULATIVE IMPACTS ANALYSIS AREAS AND RATIONALE FOR WILDLIFE**

Habitat Types¹	Cumulative Impacts Analysis Area²	Rationale	Type and Source of Spatial Data³
Big Game			
Elk Calving Ground Crucial Spring/Fall Crucial Summer/Summer Concentration Areas Crucial/Severe Winter Range Crucial Year-long Migration Corridors	Contiguous designated crucial and severe habitat in Hunt Units in Wyoming, Game Management Units in Colorado, and Herd Units in Utah crossed by alternative routes	Areas essential for the survival of individual elk and local elk populations that may be affected by the Project	Seasonal range boundaries and migration corridors (WGFD 2008, 2011d), production areas, severe winter range, summer concentration areas, and migration corridors (CPW 2012c), and seasonal range boundaries (UDWR 2007a)
Mule Deer Crucial Summer/Summer Concentration Areas Crucial Spring/Fall Crucial/Critical Winter Range Crucial Winter/Spring Crucial Year-long Migration Corridors	Contiguous designated crucial and critical habitat in Hunt Units in Wyoming, Game Management Units in Colorado, and Herd Units in Utah, crossed by alternative routes	Areas essential for the survival of individual mule deer and local mule deer populations that may be affected by the Project	Seasonal range and migration corridors (WGFD 2008, 2010c), critical winter range and migration corridors (CPW 2012d), seasonal range boundaries (UDWR 2007b)
Pronghorn Fawning Areas Severe Winter Range Crucial Year-long Migration Corridors	Contiguous designated crucial and severe habitat in Hunt Units in Wyoming, Game Management Units in Colorado, and Herd Units in Utah, crossed by alternative routes	Areas essential for the survival of individual pronghorn and local pronghorn populations that may be affected by the Project	Seasonal range and migration corridors (WGFD 2008, 2010c), severe winter range, and migration corridors (CPW 2012e), summer and yearlong habitats (UDWR 2010a)
Moose Calving Areas Crucial Spring/Fall Crucial Winter Range Crucial Year-long	Contiguous designated crucial habitat in Hunt Units in Wyoming, and Herd Units in Utah, crossed by alternative routes	Areas essential for the survival of individual moose and local moose populations that may be affected by the Project	Seasonal range boundaries (UDWR 2006b; WGFD 2011c)

**TABLE 4-64
CUMULATIVE IMPACTS ANALYSIS AREAS AND RATIONALE FOR WILDLIFE**

Habitat Types¹	Cumulative Impacts Analysis Area²	Rationale	Type and Source of Spatial Data³
Rocky Mountain Bighorn Sheep Crucial Year-long	Contiguous designated crucial habitat in Hunt Units in Wyoming, and Herd Units in Utah, crossed by alternative routes	Areas essential for the survival of individual Rocky Mountain bighorn sheep and local Rocky Mountain bighorn sheep populations that may be affected by the Project	Seasonal range boundaries (UDWR 2006a; WGFD 2011a)
Desert Bighorn Sheep Crucial Year-long	Contiguous designated habitat in wildlife management units crossed by alternative routes	Areas essential for the survival of individual desert bighorn sheep and local desert bighorn sheep populations that may be affected by the Project	Seasonal range boundaries (UDWR 2008c)
Birds			
Migratory Birds	Vegetation communities in 12-digit hydrologic unit codes (HUC) (subwatersheds) crossed by alternative routes	Area beyond which effects of Project on migratory birds are no longer discernible	Gap Analysis Project (GAP) land cover categories from Northwest and Southwest Regional Gap Analysis Project (USGS 2010b, c)
Reptiles			
Reptiles	Vegetation communities in 12-digit HUCs (subwatersheds) crossed by alternative routes	Area beyond which effects of Project on migratory birds are no longer discernible	GAP land cover categories from Northwest and Southwest Regional Gap Analysis Project (USGS 2010b, c)
Mammals			
Mammals	Vegetation communities in 12-digit HUCs (subwatersheds) crossed by alternative routes	Area beyond which effects of Project on migratory birds are no longer discernible	GAP land cover categories from Northwest and Southwest Regional Gap Analysis Project (USGS 2010b, c)
<p>NOTES:</p> <p>¹Agency-designated big game habitats vary by state. Summer concentration, critical winter and severe winter are designated big game habitats in Colorado. Crucial summer, winter and year-long are designated habitats in Wyoming and Utah; crucial spring/fall and crucial winter/spring are designated habitat in Utah only. Mapped migration corridors are designated in Wyoming and Colorado only.</p> <p>²Cumulative impacts analysis areas were established for wildlife designated and potential habitats based on the best available information regarding species specific home range or territory size.</p> <p>³When data were provided as line files, migration corridors for elk, mule deer, and pronghorn were buffered by 0.25 mile on either side. Migration corridor data for elk, mule deer, and pronghorn were unavailable for the state of Utah.</p>			

4.3.7.1.2 Cumulative Effects of Anthropogenic Development on Migratory Birds

The potential for the Project to affect migratory birds and their habitats was identified as an issue during public and agency scoping. Loss and fragmentation of migratory bird breeding and wintering habitat, and the cumulative effects of habitat change can adversely affect breeding success and lead to population declines in migratory bird species (Finch 1991; Robinson et al. 1995). The cumulative effects analysis for migratory birds addresses the potential for the Project and past and other present actions and RFFAs to contribute to loss, fragmentation, and modification of migratory bird breeding, nesting, foraging, wintering and stop-over habitats, as well as the potential for these actions to affect migratory bird behavior and existing patterns of seasonal distribution and habitat use. Effects on migratory birds are analyzed qualitatively. Detailed analysis of cumulative impacts on specific habitat types that are likely to be used by migratory birds are presented in Section 4.3.5. A list of priority migratory species and associated habitats that are likely to occur in the CIAA for all alternative routes is included in Appendix E (Table E-6).

4.3.7.1.3 Synergistic Temporal Effects with Other Actions

The potential for temporal and/or spatial synergistic, adverse effects on wildlife resulting from the construction of the Project and other transmission line projects (i.e., the TransWest Express and Gateway West transmission projects) were identified by the agencies and public during scoping. This analysis assumes that the selected route for the Project and the selected routes for the TransWest Express and the Gateway West (in Wyoming) transmission projects would be located in the same corridor and offset by approximately 1,500 feet. Construction of the Project may follow, and potentially overlap construction and stabilization efforts of the TransWest Express Transmission Project. Overlapping construction and stabilization periods for the two projects could result in temporal effects that could prolong displacement of wildlife from important habitats, displacement of wildlife from a larger geographic area, and extend the potential recovery time of wildlife from the direct and indirect effects from the Project. Cumulative effects of the Project and the TransWest Express and the Gateway West transmission projects are discussed qualitatively for each resource analyzed in detail.

4.3.7.1.4 Past, Present, and Other Reasonably Foreseeable Future Actions in the Wildlife Cumulative Impacts Analysis Area

Land administered by the Ashley, Manti-La Sal, and Uinta National Forests and the BLM in the Project area are managed for multiple-resource use. Past and present actions and RFFAs in the CIAA include timber harvest, livestock grazing, recreational use (e.g., off-road-vehicle use, biking, hiking, camping, and hunting), oil and gas exploration and development, mining, mineral production, constructions of transmission lines, pipelines, highways, wind- and solar-energy development, military training/testing, residential subdivision expansion, and communication site development. Past and present actions have contributed to incremental loss, alteration and fragmentation of foraging, nesting, breeding habitat and cover for wildlife species. Continuation of past and present actions into the future, in addition to other RFFAs is anticipated to contribute to the incremental modification of wildlife habitats in the CIAA. For a comprehensive summary of past and present actions and RFFAs refer to Tables 4-1 and 4-2.

4.3.7.2 Existing Condition

Conversion of native vegetation to agricultural use, deforestation and, crop cultivation in the CIAA began in the middle of the 19th century with European settlement and expansion and has significantly affected the character of landscapes and the quantity and quality of habitats for wildlife resources within the CIAA (Huston 2005). Construction of settlements, transportation systems, and increases in human population growth, the recreational industry (Leung and Marion 2000) and energy development also have resulted in further conversion of habitats for BLM decision and significant shifts in the abundance, distribution, and species composition of the fauna and flora of the area. These historic modifications to the landscape have

resulted in baseline conditions and trends to which the Project and other current, future and RFFAs (refer to Tables 4-1 and 4-2) analyzed in this section could contribute continuing and additive cumulative effects.

Energy and mineral development in the CIAA continue to place pressure on big game behavior, population dynamics, through the loss, modification and fragmentation of crucial habitat, and habitat quality and quantity remains a primary concern to wildlife managers (UDWR 2008d, 2009b, 2010b). Roads have increased the risk of ungulate mortality, and potential disturbance and stress to big game from increased recreational activity, human presence and noise; factors that can affect individual health, fitness and reproductive rates in big game (Bowles 1995; Leung and Marion 2000). Sensitivity to, and/or toleration of anthropogenic disturbance in the CIAA however, is likely to be species-specific and a function of population or individual response to disturbance. Domestic livestock grazing in the CIAA has increased competition for forage between livestock and big game species, particularly in crucial winter ranges or summer ranges where habitat and forage is limited or affected by drought (UDWR 2008d, 2009b, 2010b). Livestock grazing also has altered native plant communities and increased exotic grass and invasive plant encroachment, which has had an additive effect on habitat loss and degradation in the CIAA. Furthermore, fences may alter movement patterns between seasonal ranges, restrict access to water and feeding areas and disrupt migration patterns in the CIAA; particularly for pronghorn and mule deer (UDWR 2008d, 2009b). Despite these incremental modifications of natural landscapes, however, wildlife habitat functionality is maintained and oftentimes enhanced on USFS- and BLM-administered lands and private lands in the Project area through habitat restoration and improvement projects that promote ecosystem health (BLM 2013p), management of invasive species (USFS 2004b), and government incentive programs such as the Wildlife Habitat Incentives Program (NRCS 2013).

4.3.7.3 Results

4.3.7.3.1 Cumulative Impacts on Wildlife Resources Common to all Alternative routes

The alternative routes cross similar ecosystems that support wildlife resources and the types of past, present, and RFFAs in the CIAA for all alternative routes are also similar. Due to the similarity of resources affected and past, present, and future actions in the CIAA, many cumulative effects on wildlife resources would be common to all alternative routes. Data that could be used to complete a quantitative analysis of the cumulative effects on the Project and other past, present, and RFFAs are not available for most bird, reptile and mammal species. Therefore, the potential effects on these resources are analyzed qualitatively.

Migratory Birds

Information that supports the analysis of potential cumulative effects on migratory birds includes quantitative analysis of cumulative impacts on habitat types that are likely to be used by migratory birds included in Section 4.3.5 and lists of priority migratory birds (such as song birds, waterfowl, and raptors) and associated habitats that are likely to occur in the CIAA included in Appendix E, Table E-6.

Population trends of migratory birds are available from Breeding Bird Surveys (Sauer et al. 2012). Surveys conducted at the regional scale between 2000 and 2010 in the Breeding Bird Surveys for the western region showed that 26 percent of short-distance and neotropical migratory species surveyed showed significant declines; but 40 percent of migratory species surveyed showed significant population increases (total species count 178). Breeding Bird Surveys conducted at the state level between 2000 and 2010 showed 3 percent of short-distance and neotropical migrant species surveyed in Wyoming had significant population declines, and 12 percent showed significant population increases (total 111 species). In Colorado, 19 percent showed significant population declines and 20 percent showed

significant population increases (total 120 species); and in Utah, 27 percent showed significant population declines and 35 percent showed significant population increases (total 104 species) (Sauer et al. 2012).

Population trends at the habitat level are considered in relation to particular habitat type, and include species other than migratory species. Many wetland bird populations are increasing due to concerted conservation efforts of those habitats; however, populations associated with grassland, arid land, and forested habitats are in decline (North American Bird Conservation Initiative 2009). Many passerine populations associated with Intermountain shrub steppe and grasslands are in decline (Gilbert and Chalfoun 2011; Knick and Rotenberry 2002). In the Intermountain west, 37 shrub-steppe dependent species showed population declines, compared to a population increase in only three species (Dobkin and Sauder 2004).

Conservation of migratory birds in the Intermountain West has focused on preservation and restoration of habitat. Threats to migratory species include the loss, alteration and degradation of habitat resulting from ongoing land use change and development, invasive plant introduction, changes in fire intensity and frequency resulting from land management practices and livestock grazing, alterations of stream flows and spring development, and increases in recreation (Rich et al. 2004). Migratory bird sensitivity to, and recovery from disturbance is likely to be a function of species-specific characteristics and behavior, as well as the type of action (scale, density and arrangement) of each development in relation to other development and occupied habitat. Developments with structures (such as communication towers, wind turbines, commercial and residential buildings and transmission lines); or disturbance that occurs over multiple breeding seasons in or in proximity to important nesting, breeding, foraging, and stop-over habitats, migratory paths and concentration areas could increase site avoidance, behavioral disturbance and mortality at the population level (Manville 2009).

All alternative routes and route variations would contribute to the cumulative loss, fragmentation, and modification of bird and migratory bird habitat resulting from past and present actions and RFFAs in the CIAA. Past and present actions in the CIAA include coal mines, communication facilities, historical fire boundaries, pipelines, mineral leases, oil and gas development, oil shale development, recreational and residential development, wind energy facilities, habitat and rangeland management activities, and vegetation management activities. RFFAs in the CIAA include coal mines, industrial development, oil and gas development, pipelines, power generation facilities, recreational and residential development, habitat restoration projects; and the TransWest Express, Mona South, Mona North, and Gateway West transmission lines. A detailed description of past and present actions and RFFAs associated with specific habitat types likely to be used by migratory bird species is included in Section 4.3.5.

Disturbance from construction and reclamation of any of the alternative routes could overlap temporally with the construction and reclamation activities of the TransWest Express Transmission Project, and could result in synergistic temporal effects that prolong disturbance (approximately 5 years), and migratory bird avoidance of suitable habitat over multiple breeding seasons in proximity to the two transmission lines. Synergistic effects from collocating the Project with the TransWest Express and/or the Gateway West (in Wyoming) transmission projects could increase potential collision risk for migratory birds, particularly in areas where transmission lines cross bird landing or take-off flight paths (Janss 2000), such as the Platte River in Wyoming. Physiological factors that increase the risk of collision with transmission line wires are described in Section 3.2.7. However, there also are technical considerations for the location of multiple transmission lines across the landscape (APLIC 2012). Collocating the Project and TransWest Express and/or Gateway West transmission projects within a distance of 1,500 feet may require birds to make repeated flight adjustments and could increase collision risk compared to a single transmission line. Collision risk could be reduced in sensitive areas, such as known migratory or flight paths, by siting the transmission lines directly adjacent to one another (within 250 feet), which would increase the visibility of the wires, limit the area of disturbance, and require birds to make only one flight

adjustment to circumvent wires (APLIC 2012; Bevanger 1994). Potential collisions with wires located at different heights are unlikely to occur as similar clearance standards would be required for colocated transmission lines, which carry similar voltage.

Overall, each action in the CIAA could contribute incrementally to localized loss, modification, and fragmentation of migratory bird habitat and changes in migratory bird behavior, seasonal distribution and abundance. Cumulative disturbance from all actions considered would contribute to historic and ongoing loss and modification of habitat supporting migratory bird populations at the regional scale, and based on anticipated RFFAs, regional trends, including declines in shrub steppe and grassland migratory bird populations are likely to continue. However, most migratory bird habitat would remain undisturbed by the Project and other actions in the CIAA (refer to Section 4.3.5) and range wide migratory bird populations and current distributions appear secure.

Reptiles

All alternative routes and route variations would contribute to the cumulative loss, fragmentation, and modification of reptile habitats resulting from past and present actions and RFFAs in the CIAA (refer to the Migratory Birds Section for a detailed list of past and present actions, and RFFAs in the CIAA for all alternative routes considered for the Project).

Population declines in many reptile species have been attributed to habitat loss and degradation, invasive species introduction, environmental pollutants (such as pesticides and herbicides), and physiological factors (Gibbons et al. 2000). Cumulative effects on reptiles and their habitat from action in the CIAA would include the loss, alteration and fragmentation to foraging and breeding habitat, and cover, which would reduce habitat quality and function and could affect reptile abundance and distribution, and mortality rates (Newbold 2005; Stebbins 2003; Vitt and Pianka 1994; Yahner et al. 2001). Reptile sensitivity to, and recovery from cumulative disturbance in the CIAA is likely to be a function of species-specific characteristics and behavior; and the type of action (scale, density and arrangement) of each development in relation to occupied habitat. High-density developments (such as oil and gas fields), which clear vegetation, affect microclimate and increase soil compaction could have greater cumulative impacts on reptiles than low density development (such as dispersed recreation projects). Alternatively, gas-well disturbance may be used by reptiles seasonally for basking and egg-laying (Moseley et al. 2010). Impacts on reptiles from road construction that result in reptile avoidance or changes in movement may depend on road characteristics (such as width and road surface); and the degree of visual disturbance, noise and vibration of activity on the road (Brehme et al. 2012).

The Project could overlap spatially with the TransWest Express and/or the Gateway West (in Wyoming) transmission projects and could result in cumulative effects on reptiles in the Project area. Additionally, construction and reclamation activities of the Project could temporally overlap with the construction and reclamation activities of the TransWest Express Transmission Project, which could result in synergistic effects that prolong disturbance on reptile species. Research suggests that revegetation efforts and early successional foliage could increase habitat for reptiles on rights-of-way and result in a greater abundance of reptile species than in the adjacent border zones (Yahner 2004; Yahner et al. 2001). However, reptile response to vegetation treatments likely would be a function of the quality, availability and type of surrounding habitat. Overall, the Project would contribute to past and future modification of potentially suitable reptile habitat, and the cumulative disturbance from all actions considered could place additional stress on habitats that are currently limiting for reptile populations in the CIAA. However, the effects of the Project would be anticipated to be small compared to the effects of other actions, as the majority of ground disturbance in the CIAA would result from other actions. Under all alternative routes and route variations, the majority of potentially suitable reptile habitat would remain undisturbed by the Project and other actions in the CIAA. Quantitative analysis of cumulative impacts on habitat types that are likely to be used by reptiles is included in Section 4.3.5.

Mammals

All alternative routes and route variations would contribute to the cumulative loss, fragmentation, and modification of mammal habitats resulting from past and present actions and RFFAs in the CIAA (refer to the Birds Section for a detailed list of past and present actions and RFFAs in the CIAA for all alternative routes).

Recent small mammal surveys in the Intermountain West region suggest a lack of mammal occurrence in suitable shrub-steppe habitats (Dobkin and Sauder 2004). Of 22 species surveyed only one species appeared relatively common. Where small terrestrial mammals did occur, they were found in small, disconnected populations; isolated by unsuitable habitat that restricted movement. Cumulative effects on mammals and potentially suitable habitat as a result of Project impacts and other past, present, and future actions include loss, alteration and fragmentation to foraging and breeding habitat, and cover, which could affect mammal abundance, distribution, dispersal and survival (Hanser et al. 2011; Noss et al. 2006) in the CIAA. Mammal sensitivity to, and recovery from cumulative disturbance in the CIAA is likely to be a function of species-specific characteristics and behavior; and the type of action (scale, density and arrangement) of each development in relation to occupied habitat. High-density developments (such as oil and gas fields) that affect microclimate and increase, noise and soil compaction; or development that increase habitat fragmentation (such as roads) through vegetation clearance could have greater cumulative impacts on mammals than low-density or nonfragmenting development (such as dispersed recreation projects). Continuous and intermittent noise from anthropogenic development can have considerable effects on foraging and reproductive success, anti-predator and territorial behavior, and community structure in a diverse number of terrestrial species (Barber et al. 2009). Soil compaction associated with gas wells, for example, may suppress establishment of suitable vegetation cover, increase predation risk and affect mammal abundance (Moseley et al. 2010). Impacts on small mammals from road construction can result in avoidance or changes in movement due to road characteristics such as road width and surface (Brehme et al. 2012). Dirt roads and secondary paved roads may be more permeable to some small mammalian species than wider paved roads (Brehme et al. 2012). Mammals isolated in small patches of fragmented habitat are at increased risk of local extinction because recolonization, movement and gene flow necessary for long-term persistence are restricted (Moseley et al. 2010).

Overall, the Project would contribute to past and future modification of potentially suitable habitat for mammals, and the cumulative disturbance from all actions considered could contribute to factors currently limiting mammal populations in the CIAA. The Project could overlap spatially with the TransWest Express and/or the Gateway West (in Wyoming) transmission projects and could result in cumulative effects on mammals in the Project area. Additionally, construction and reclamation activities of the Project could temporally overlap with the construction and reclamation activities of the TransWest Express Transmission Project, resulting in cumulative effects that prolong disturbance on mammal species. However, the effects of the Project would be anticipated to be small compared to the effects of other actions. Under all alternative routes and route variations, the majority of potentially suitable mammal habitat would remain undisturbed by the Project and other actions in the CIAA. Quantitative analysis of cumulative impacts on habitat types that are likely to be used by mammals is included in Section 4.3.5.

4.3.7.3.2 Quantitative Cumulative Impacts on Wildlife Resources

Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

Elk

The estimated area (in acres) of cumulative development in elk crucial/severe habitat and migration corridors is summarized in Table 4-65.

TABLE 4-65 ELK CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Calving Grounds						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	263,477	18,600	1,003	155	19,758	243,720
WYCO-B-1	263,477	18,600	1,003	154	19,757	243,721
WYCO-B-2 (Agency Preferred Alternative)	263,477	18,600	1,003	154	19,757	243,721
WYCO-B-3	263,477	18,600	1,003	155	19,757	243,720
Alternative WYCO-C and Route Variations						
WYCO-C	263,477	18,600	1,003	154	19,756	243,721
WYCO-C-1	263,477	18,600	1,003	153	19,756	243,722
WYCO-C-2	263,477	18,600	1,003	153	19,756	243,722
WYCO-C-3	263,477	18,600	1,003	153	19,756	243,721
Alternative WYCO-D and Route Variation						
WYCO-D	310,104	22,384	8,369	0	30,752	279,351
WYCO-D-1	310,104	22,384	8,369	0	30,752	279,351
Alternative WYCO-F and Route Variations						
WYCO-F	263,477	18,600	1,003	153	19,756	243,722
WYCO-F-1	263,477	18,600	1,003	152	19,755	243,722
WYCO-F-2	263,477	18,600	1,003	152	19,755	243,722
WYCO-F-3	263,477	18,600	1,003	153	19,756	243,722
Crucial Summer/Summer Concentration						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	272,236	11,297	1,104	155	12,555	259,681
WYCO-B-1	272,236	11,297	1,104	154	12,554	259,681
WYCO-B-2 (Agency Preferred Alternative)	272,236	11,297	1,104	154	12,555	259,681
WYCO-B-3	272,236	11,297	1,104	155	12,555	259,681
Alternative WYCO-C and Route Variations						
WYCO-C	272,236	11,297	1,104	154	12,554	259,682
WYCO-C-1	272,236	11,297	1,104	153	12,553	259,682
WYCO-C-2	272,236	11,297	1,104	153	12,553	259,682
WYCO-C-3	272,236	11,297	1,104	153	12,554	259,682

TABLE 4-65 ELK CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-D and Route Variation						
WYCO-D	355,187	23,145	5,352	0	28,497	326,690
WYCO-D-1	355,187	23,145	5,352	0	28,497	326,690
Alternative WYCO-F and Route Variations						
WYCO-F	272,236	11,297	1,104	153	12,553	259,682
WYCO-F-1	272,236	11,297	1,104	152	12,553	259,683
WYCO-F-2	272,236	11,297	1,104	152	12,553	259,683
WYCO-F-3	272,236	11,297	1,104	153	12,553	259,682
Crucial/Severe Winter Range						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	461,730	33,614	2,495	594	36,702	425,027
WYCO-B-1	461,730	33,614	2,495	591	36,700	425,030
WYCO-B-2 (Agency Preferred Alternative)	461,730	33,614	2,495	592	36,700	425,029
WYCO-B-3	461,730	33,614	2,495	593	36,702	425,028
Alternative WYCO-C and Route Variations						
WYCO-C	461,730	33,614	2,495	590	36,698	425,031
WYCO-C-1	461,730	33,614	2,495	587	36,696	425,034
WYCO-C-2	461,730	33,614	2,495	588	36,696	425,033
WYCO-C-3	461,730	33,614	2,495	589	36,698	425,032
Alternative WYCO-D and Route Variation						
WYCO-D	1,080,286	118,357	4,401	1,121	123,878	956,408
WYCO-D-1	1,080,286	118,357	4,401	1,123	123,880	956,405
Alternative WYCO-F and Route Variations						
WYCO-F	461,730	33,614	2,495	587	36,696	425,034
WYCO-F-1	461,730	33,614	2,495	585	36,693	425,036
WYCO-F-2	461,730	33,614	2,495	585	36,694	425,036
WYCO-F-3	461,730	33,614	2,495	587	36,695	425,034
Crucial Year-long						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	382,754	72,890	86	28	73,003	309,751
WYCO-B-1	382,754	72,890	86	28	73,003	309,751
WYCO-B-2 (Agency Preferred Alternative)	382,754	72,890	86	28	73,003	309,751
WYCO-B-3	382,754	72,890	86	28	73,003	309,751

TABLE 4-65 ELK CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-C and Route Variations						
WYCO-C	382,754	72,890	86	28	73,003	309,751
WYCO-C-1	382,754	72,890	86	27	73,003	309,751
WYCO-C-2	382,754	72,890	86	27	73,003	309,751
WYCO-C-3	382,754	72,890	86	28	73,003	309,751
Alternative WYCO-D and Route Variation						
WYCO-D	382,896	72,930	86	0	73,016	309,880
WYCO-D-1	382,896	72,930	86	0	73,016	309,880
Alternative WYCO-F and Route Variations						
WYCO-F	382,754	72,890	86	27	73,003	309,751
WYCO-F-1	382,754	72,890	86	27	73,003	309,751
WYCO-F-2	382,754	72,890	86	27	73,003	309,751
WYCO-F-3	382,754	72,890	86	27	73,003	309,751
Migration Corridors						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	398,049	32,802	321	54	33,178	364,872
WYCO-B-1	398,049	32,802	321	54	33,177	364,872
WYCO-B-2 (Agency Preferred Alternative)	398,049	32,802	321	54	33,178	364,872
WYCO-B-3	398,049	32,802	321	54	33,178	364,872
Alternative WYCO-C and Route Variations						
WYCO-C	398,049	32,802	321	54	33,177	364,872
WYCO-C-1	398,049	32,802	321	54	33,177	364,872
WYCO-C-2	398,049	32,802	321	54	33,177	364,872
WYCO-C-3	398,049	32,802	321	54	33,177	364,872
Alternative WYCO-D and Route Variation						
WYCO-D	622,129	56,782	2,549	281	59,611	562,518
WYCO-D-1	622,129	56,782	2,549	281	59,612	562,517
Alternative WYCO-F and Route Variations						
WYCO-F	398,049	32,802	321	54	33,177	364,872
WYCO-F-1	398,049	32,802	321	54	33,177	364,873
WYCO-F-2	398,049	32,802	321	54	33,177	364,873
WYCO-F-3	398,049	32,802	321	54	33,177	364,872

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

The loss, fragmentation, and modification of designated elk crucial and severe range, and migration routes from any of the WYCO alternative routes and route variations would contribute to the cumulative loss, fragmentation, and degradation of elk crucial and severe habitat in the CIAA (Table 4-65). Past and present actions in the CIAA for all WYCO alternative routes that have affected designated elk crucial/severe habitat and migration corridors include historical fires, oil and gas development, coal

mines, wind-energy development, and vegetation management. RFFAs in the CIAA for elk calving grounds, crucial/severe winter and crucial year-long habitat include a coal mine and the TransWest Express Transmission Project. RFFAs in the CIAA for elk migration routes include the Gateway West transmission line and a wind-energy facility.

The majority of elk crucial and severe range affected by the Project is located in Colorado. Elk herds affected by the Project in Colorado include the E-2 (Bears Ears) and E-6 (White River) herds, which are currently over carrying capacity due to increased population numbers and ongoing loss, fragmentation and alteration of crucial habitat (CDOW 2005b). The availability of crucial winter range in the CIAA is a limiting factor for elk populations, and would be affected more by Alternative WYCO-D and WYCO-D-1 compared to other WYCO alternative routes. Elk crucial/severe range and migration corridors affected by the WYCO alternative routes and route variations are located in areas previously disturbed by past and present human activities, suggesting that local elk populations have some level of tolerance towards human activity and habitat disturbance. Research suggests that some elk compensate for site-specific environmental disturbance from energy development such as oil and gas development by shifting range use, centers of activity and habitat use rather than abandoning range completely (Van Dyke and Klein 1996). Further research showed that elk use of sites cleared for oil and gas development was not immediate, but correlated with an increase in grass and forb abundance over a 2 year period post-construction (Van Dyke et al. 2012). Elk also were found to shift range use during construction of a wind-energy facility when human presence increased, but subsequently acclimated to the development and crossed access roads in their range; elk range shifts did not affect their nutrition and dietary quality despite loss of resources due to development (Walter et al. 2006).

The WYCO alternative routes could overlap spatially with the TransWest Express and the Gateway West (in Wyoming) transmission projects. Additionally, disturbance from construction and reclamation activities of the Project could temporally overlap with the construction and reclamation activities of the TransWest Express Transmission Project, which could result in synergistic temporal effects that could prolong elk avoidance of crucial habitat in proximity to the two transmission lines. Impacts on elk populations would be minimized or avoided through implementation of seasonal restrictions for both projects. Overall, the Project would contribute to past and future modification of elk crucial habitat, and the cumulative disturbance from all actions considered could add to carrying capacity pressure of local herds by limiting availability of crucial habitat in the CIAA. However, the effects of the Project are anticipated to be small compared to the effects of other actions (Table 4-65). Under all WYCO alternative routes, the majority of available elk crucial/severe habitat and migration corridors would remain undisturbed by the Project and other actions in the CIAA (Table 4-65).

Mule Deer

The estimated area (in acres) of cumulative development in mule deer critical/severe habitat and migration corridors is summarized in Table 4-66.

TABLE 4-66 MULE DEER CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Crucial/Critical Winter Range						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	585,709	52,647	2,819	346	55,812	529,897
WYCO-B-1	585,709	52,647	2,819	345	55,812	529,897
WYCO-B-2 (Agency Preferred Alternative)	585,709	52,647	2,819	366	55,832	529,877
WYCO-B-3	585,709	52,647	2,819	345	55,812	529,897
Alternative WYCO-C and Route Variations						
WYCO-C	585,709	52,647	2,819	343	55,810	529,899
WYCO-C-1	585,709	52,647	2,819	343	55,810	529,899
WYCO-C-2	585,709	52,647	2,819	363	55,830	529,879
WYCO-C-3	585,709	52,647	2,819	343	55,810	529,899
Alternative WYCO-D and Route Variation						
WYCO-D	877,772	94,255	3,228	372	97,855	779,917
WYCO-D-1	877,772	94,255	3,228	373	97,856	779,916
Alternative WYCO-F and Route Variations						
WYCO-F	585,709	52,647	2,819	342	55,808	529,901
WYCO-F-1	585,709	52,647	2,819	342	55,808	529,901
WYCO-F-2	585,709	52,647	2,819	362	55,828	529,881
WYCO-F-3	585,709	52,647	2,819	342	55,808	529,901
Crucial Year-long						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	898,860	102,833	5,519	327	108,680	790,181
WYCO-B-1	898,860	102,833	5,519	327	108,679	790,181
WYCO-B-2 (Agency Preferred Alternative)	898,860	102,833	5,519	327	108,679	790,181
WYCO-B-3	898,860	102,833	5,519	328	108,680	790,180
Alternative WYCO-C and Route Variations						
WYCO-C	898,860	102,833	5,519	326	108,678	790,182
WYCO-C-1	898,860	102,833	5,519	604	108,956	789,904
WYCO-C-2	898,860	102,833	5,519	604	108,957	789,904
WYCO-C-3	898,860	102,833	5,519	428	108,781	790,080
Alternative WYCO-D and Route Variation						
WYCO-D	898,837	102,833	5,519	423	108,775	790,062
WYCO-D-1	898,837	102,833	5,519	423	108,776	790,062

TABLE 4-66 MULE DEER CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-F and Route Variations						
WYCO-F	898,860	102,833	5,519	427	108,779	790,081
WYCO-F-1	898,860	102,833	5,519	0	108,352	790,508
WYCO-F-2	898,860	102,833	5,519	0	108,352	790,508
WYCO-F-3	898,860	102,833	5,519	0	108,352	790,508
Migration Corridors						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	236,744	30,224	2,343	56	32,624	204,121
WYCO-B-1	236,744	30,224	2,343	56	32,623	204,121
WYCO-B-2 (Agency Preferred Alternative)	236,744	30,224	2,343	56	32,623	204,121
WYCO-B-3	236,744	30,224	2,343	56	32,623	204,121
Alternative WYCO-C and Route Variations						
WYCO-C	236,744	30,224	2,343	54	32,621	204,123
WYCO-C-1	236,744	30,224	2,343	53	32,621	204,123
WYCO-C-2	236,744	30,224	2,343	53	32,621	204,123
WYCO-C-3	236,744	30,224	2,343	54	32,621	204,123
Alternative WYCO-D and Route Variation						
WYCO-D	248,169	32,505	2,351	126	34,982	213,188
WYCO-D-1	248,169	32,505	2,351	126	34,982	213,187
Alternative WYCO-F and Route Variations						
WYCO-F	236,744	30,224	2,343	175	32,742	204,002
WYCO-F-1	236,744	30,224	2,343	174	32,742	204,003
WYCO-F-2	236,744	30,224	2,343	174	32,742	204,002
WYCO-F-3	236,744	30,224	2,343	175	32,742	204,002

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

The loss, fragmentation, and modification of designated mule deer critical/severe range, and migration routes from any of the WYCO alternative routes and route variations would contribute to the cumulative loss, fragmentation, and degradation of mule deer critical/severe range in the CIAA (Table 4-66). Past and present actions in the CIAA for all WYCO alternative routes that have affected designated mule deer critical/severe habitat and migration corridors include historical fires, oil and gas development, coal mines, industrial development, wind-energy development, habitat and rangeland management, and vegetation management. RFFAs in the CIAA for all WYCO alternative routes include oil and gas development, coal mines, wind energy development, and the Gateway West and TransWest Express transmission lines. Potential impacts on mule deer populations in the CIAA from past and present actions and RFFAs could be a function of the type of action, and scale, density and arrangement of each development in designated critical/severe habitat (Lutz et al. 2011). Large-scale or high-density actions that disrupt mule deer over multiple breeding seasons (e.g., high density oil and gas development and

infrastructure) would have greater impacts than low-density development. Similarly, actions such as habitat and vegetation management could have beneficial effects on mule deer.

In Wyoming, mule deer herds affected by the Project include the Platte River (MD541) and Baggs (MD247) herds (WGFD 2012a). Ongoing loss, fragmentation and alteration of habitat from energy development, and the availability of critical/severe winter range and production areas are limiting factors for mule deer in the CIAA. Mule deer critical/severe winter range affected by any of the WYCO alternative routes is located in areas previously disturbed by past and present human activities; suggesting that local mule deer populations tolerate some level of human activity and habitat disturbance. The Project could overlap spatially with the TransWest Express and/or the Gateway West (in Wyoming) transmission projects and could result in synergistic effects on mule deer in the Project area. Additionally, synergistic temporal effects from construction and stabilization of the Project and the TransWest Express Transmission Project could prolong mule deer displacement from critical/severe habitat and increase physiological stress in populations in proximity to the colocated Projects, although impacts on mule deer would be subject to seasonal selective mitigation measures. Overall, the Project would contribute to past and future modifications of mule deer critical/severe range, and the cumulative disturbance from all actions considered could contribute to ongoing loss, fragmentation and alteration of critical/severe range that limit local mule deer populations in the CIAA. However, the effects of the Project would be anticipated to be small compared to the effects of other actions (Table 4-66). Under all WYCO alternative routes and route variations, the majority of available mule deer critical/severe habitat and migration corridors in Wyoming and Colorado would remain undisturbed by the Project and other actions in the CIAA (Table 4-66).

Pronghorn

The estimated area (in acres) of cumulative development in pronghorn crucial/severe habitat and migration corridors is summarized in Table 4-67.

TABLE 4-67 PRONGHORN CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Crucial/Severe Winter Range						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	228,064	15,352	1,328	201	16,881	211,184
WYCO-B-1	228,064	15,352	1,328	242	16,921	211,143
WYCO-B-2 (Agency Preferred Alternative)	228,064	15,352	1,328	200	16,880	211,185
WYCO-B-3	228,064	15,352	1,328	201	16,881	211,184
Alternative WYCO-C and Route Variations						
WYCO-C	228,064	15,352	1,328	199	16,879	211,185
WYCO-C-1	228,064	15,352	1,328	240	16,920	211,144
WYCO-C-2	228,064	15,352	1,328	198	16,878	211,186
WYCO-C-3	228,064	15,352	1,328	199	16,879	211,185

TABLE 4-67 PRONGHORN CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-D and Route Variation						
WYCO-D	258,271	23,629	1,811	289	25,729	232,542
WYCO-D-1	258,271	23,629	1,811	289	25,730	232,542
Alternative WYCO-F and Route Variations						
WYCO-F	228,064	15,352	1,328	199	16,878	211,186
WYCO-F-1	228,064	15,352	1,328	239	16,919	211,145
WYCO-F-2	228,064	15,352	1,328	198	16,877	211,187
WYCO-F-3	228,064	15,352	1,328	199	16,878	211,186
Crucial Year-long						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	1,108,918	83,939	10,538	442	94,919	1,013,999
WYCO-B-1	1,108,918	83,939	10,538	440	94,917	1,014,001
WYCO-B-2 (Agency Preferred Alternative)	1,108,918	83,939	10,538	440	94,917	1,014,001
WYCO-B-3	1,108,918	83,939	10,538	441	94,919	1,013,999
Alternative WYCO-C and Route Variations						
WYCO-C	1,108,918	83,939	10,538	418	94,895	1,014,023
WYCO-C-1	1,108,918	83,939	10,538	416	94,893	1,014,025
WYCO-C-2	1,108,918	83,939	10,538	416	94,893	1,014,025
WYCO-C-3	1,108,918	83,939	10,538	417	94,894	1,014,024
Alternative WYCO-D and Route Variation						
WYCO-D	1,109,063	84,110	10,538	563	95,212	1,013,851
WYCO-D-1	1,109,063	84,110	10,538	564	95,213	1,013,850
Alternative WYCO-F and Route Variations						
WYCO-F	1,108,918	83,939	10,538	523	95,000	1,013,918
WYCO-F-1	1,108,918	83,939	10,538	521	94,998	1,013,920
WYCO-F-2	1,108,918	83,939	10,538	522	94,999	1,013,919
WYCO-F-3	1,108,918	83,939	10,538	523	95,000	1,013,918
Migration Corridors						
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	225,390	22,875	2,902	134	25,911	199,479
WYCO-B-1	225,390	22,875	2,902	133	25,911	199,479
WYCO-B-2 (Agency Preferred Alternative)	225,390	22,875	2,902	133	25,911	199,479
WYCO-B-3	225,390	22,875	2,902	134	25,911	199,479

TABLE 4-67 PRONGHORN CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-C and Route Variations						
WYCO-C	225,390	22,875	2,902	97	25,874	199,515
WYCO-C-1	225,390	22,875	2,902	97	25,874	199,516
WYCO-C-2	225,390	22,875	2,902	97	25,874	199,516
WYCO-C-3	225,390	22,875	2,902	97	25,874	199,516
Alternative WYCO-D and Route Variation						
WYCO-D	225,064	22,868	2,900	70	25,838	199,226
WYCO-D-1	225,064	22,868	2,900	70	25,838	199,226
Alternative WYCO-F and Route Variations						
WYCO-F	225,390	22,875	2,902	159	25,936	199,454
WYCO-F-1	225,390	22,875	2,902	158	25,935	199,455
WYCO-F-2	225,390	22,875	2,902	158	25,935	199,454
WYCO-F-3	225,390	22,875	2,902	159	25,936	199,454
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

The loss, fragmentation, and modification of designated pronghorn crucial/severe range, and migration routes from any of the WYCO alternative routes and route variations would contribute to the cumulative loss, fragmentation, and degradation of pronghorn crucial/severe range in the CIAA (Table 4-67). Past and present actions in the CIAA for all WYCO alternative routes that have affected designated pronghorn crucial/severe habitat and migration corridors include historical fires, oil and gas development, coal mines, residential development, wind-energy development, and vegetation management. RFFAs in the CIAA for all WYCO alternative routes include oil and gas development, coal mines, wind energy development, and the Gateway West and TransWest Express transmission lines. Potential impacts on pronghorn populations in the CIAA from past and present actions and RFFAs could be a function of the location and type of development in relation to the location of pronghorn designated crucial/severe habitat and migration corridors. Development that severs migration corridors, particularly via roads or fences, could affect distribution of pronghorn on winter ranges (Sawyer et al. 2002). Large-scale or high density actions that disrupt pronghorn over multiple breeding seasons (e.g., high density oil and gas development and infrastructure) would have greater impacts than low-density development. Habitat and vegetation management could have beneficial effects on pronghorn.

In Wyoming, pronghorn herds that could be affected by the WYCO alternative routes include Iron Springs herd (PR630) with a population estimated at approximately 10,000; Baggs herd (PR438) with an estimated population of 8,100; and Bitter Creek herd (PR414) with an average population of 7,531 (WGFD 2012a). Ongoing loss, fragmentation and alteration of habitat from energy development, and the availability of crucial/severe winter range and fawning areas are limiting factors for pronghorn in the CIAA. Pronghorn crucial/severe range affected by any of the WYCO alternative routes is located in areas previously disturbed by past and present human activities; suggesting that local pronghorn populations tolerate some level of human activity and habitat disturbance. However, individual response of pronghorn to energy development can vary from tolerance to strong avoidance (Berger et al. 2007).

Disturbance from construction and stabilization of any of the WYCO alternative routes could overlap temporally with the construction and stabilization activities of the TransWest Express and/or the Gateway West (in Wyoming) transmission line projects, and could result in synergistic temporal effects that

prolong pronghorn displacement from critical/severe habitat in proximity to the colocated transmission lines. Impacts on pronghorn from both transmission line projects would be minimized or avoided through implementation of seasonal restrictions. Overall, the Project would contribute to past and future modification of pronghorn crucial/severe range, and the cumulative disturbance from all actions considered could contribute to ongoing loss, fragmentation and alteration of habitat, and the availability of crucial/severe winter range and fawning areas that limit local pronghorn herds in the CIAA. However, the effects of the Project are anticipated to be small compared to the effects of other actions (Table 4-67). Under all WYCO alternative routes and route variations, the majority of available pronghorn crucial/severe habitat and migration corridors in Wyoming and Colorado would remain undisturbed by the Project and other actions in the CIAA (Table 4-67).

Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

Elk

The estimated area (in acres) of cumulative development in elk crucial/severe habitat and migration corridors is summarized in Table 4-68.

TABLE 4-68 ELK CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Calving Grounds						
COUT BAX-B	275,394	11,553	251	75	11,879	263,515
COUT BAX-C	275,394	11,553	251	74	11,877	263,517
COUT BAX-E	275,394	11,553	251	72	11,875	263,519
Crucial Summer/Summer Concentration						
COUT BAX-B	849,861	120,445	9,344	294	130,083	719,778
COUT BAX-C	1,010,484	136,491	9,489	288	146,269	864,215
COUT BAX-E	1,010,484	136,491	9,489	207	146,187	864,297
Crucial/Severe Winter Range						
COUT BAX-B	894,696	157,615	7,603	371	165,590	729,106
COUT BAX-C	1,041,050	161,112	7,987	365	169,464	871,586
COUT BAX-E	1,041,050	161,112	7,987	382	169,481	871,569
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

The loss, fragmentation, and modification of designated elk crucial and severe range from any of the COUT BAX alternative routes would contribute to the cumulative loss, fragmentation, and degradation of elk crucial and severe habitat in the CIAA (Table 4-68). Past and present actions in the CIAA for all COUT BAX alternative routes that have affected designated elk crucial/severe habitat include historical fires, oil and gas development, oil shale and tar sands development, gravel pits, oil shale development, pipelines, coal mines, mineral development, residential development, communication facilities, and habitat/rangeland and vegetation management. RFFAs in the CIAA include coal mines, recreational development, a tunnel, transportation infrastructure, sand and gravel mining, construction of a reservoir, a dam, pipelines, and the TransWest Express Transmission Project.

Elk herds that could be affected by the COUT BAX alternative routes include the Yellow Creek (DAU E-10) herd in Colorado (CDOW 2006) and the Central Mountains elk herd in Utah (UDWR 2012a).

Limiting factors for elk in the CIAA include the availability of crucial winter range, and an exponential increase in oil and gas development (CDOW 2006). However, elk crucial/severe range affected by COUT BAX alternative routes are located in areas previously disturbed by past and present human activities, suggesting that local elk populations have some level of tolerance towards human activity and habitat disturbance. Furthermore, the E-10 herd has an increasing population of approximately 8,700 animals (CDOW 2006), and the Central Mountains elk herd consists of approximately 12,600 animals, which is higher than management objectives (UDWR 2012a). Synergistic temporal effects from construction and stabilization of the Project and the TransWest Express transmission lines could prolong elk displacement from crucial/severe habitat in proximity to the two projects; although impacts on elk would be subject to seasonal selective mitigation measures (refer to elk discussion for the WYCO alternative routes). Overall, the Project would contribute to past and future modification of elk crucial habitat, and the cumulative disturbance from all actions considered could further limit availability of crucial/severe range in the CIAA necessary for maintaining local elk herd populations that are currently close to or exceeding the carrying capacity of current resources (CDOW 2006; UDWR 2012a). However, the effects of the Project would be anticipated to be small compared to the effects of other actions (Table 4-68). Under all COUT BAX alternative routes, the majority of available elk crucial/severe range and calving grounds would remain undisturbed by the Project and other actions in the CIAA (Table 4-68).

Mule Deer

The estimated area (in acres) of cumulative development in mule deer critical/severe habitat and migration corridors is summarized in Table 4-69.

TABLE 4-69 MULE DEER CRUCIAL/CRITICAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Crucial Spring/Fall Range						
COUT BAX-B	449,333	26,544	390	58	26,992	422,341
COUT BAX-C	458,539	27,996	409	57	28,462	430,077
COUT BAX-E	458,539	27,996	409	32	28,436	430,102
Crucial Summer/Summer Concentration						
COUT BAX-B	881,930	225,198	12,306	87	237,591	644,339
COUT BAX-C	1,090,463	246,874	13,564	85	260,522	829,940
COUT BAX-E	1,090,463	246,874	13,564	14	260,452	830,011
Crucial/Critical Winter Range						
COUT BAX-B	2,030,119	281,718	5,141	813	287,672	1,742,447
COUT BAX-C	2,232,236	293,880	5,244	799	299,923	1,932,313
COUT BAX-E	2,232,236	293,880	5,244	573	299,697	1,932,539
Crucial Winter/Spring Range						
COUT BAX-B	535,735	50,889	16,558	18	67,464	468,271
COUT BAX-C	535,735	50,889	16,558	18	67,464	468,271
COUT BAX-E	535,735	50,889	16,558	50	67,496	468,239
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

The loss, fragmentation, and modification of designated mule deer critical/severe range from any of the COUT BAX alternative routes would contribute to the cumulative loss, fragmentation, and degradation of mule deer critical/severe range in the CIAA (Table 4-69). Past and present actions in the CIAA for all

COUT BAX alternative routes that have affected designated mule deer critical/severe habitat include historical fires, oil and gas development, oil shale and tar sands development, coal mines, gypsum mines, pipelines, sand and gravel pits, mineral leases, residential and recreational development, communication facilities, habitat and rangeland management, and vegetation management. RFFAs in the CIAA for all COUT BAX alternative routes include oil and gas development, coal mines, gypsum mines, sand and gravel mining, construction of a reservoir, a dam, transportation, a tunnel, pipelines, power generation facilities, wind energy development; and the Gateway West, TransWest Express, Mona North and Mona South transmission lines. Potential impacts on mule deer populations in the CIAA from past and present actions and RFFAs could be a function of the type of action, and the scale, density and arrangement of each development in designated critical/severe habitat (Lutz et al. 2011).

Mule deer herds affected by the Project include the Book Cliffs (D-11) herd in Colorado, and the Central Mountains herd in Utah. The Book Cliffs herd has been in steady decline since 1990 and currently has a population of 8,600 animals (CDOW 2005a). The Central Mountains herd has a current population size of approximately 60,000 animals and is currently within management objectives (UDWR 2012a). Ongoing loss, fragmentation and alteration of sensitive habitat, increases in energy development and human activity, and the availability of critical/severe winter range are limiting factors for mule deer herds in the CIAA. Mule deer critical/severe winter range has been affected by a wider variety of past and present actions than any other designated mule deer critical/severe range in the CIAA, and is located in areas previously disturbed by past and present human activities; suggesting that local mule deer populations tolerate some level of human activity and habitat disturbance. Synergistic temporal effects from construction and stabilization of the Project and the TransWest Express Transmission Project could prolong mule deer displacement from critical/severe habitat, and physiological stress in populations in proximity to the two projects; although impacts on mule deer would be subject to seasonal selective mitigation measures (refer to mule deer discussion for the WYCO alternative routes). Overall, the Project would contribute to past and future modification of mule deer critical/severe range, and the cumulative disturbance from all actions considered could contribute to ongoing loss, fragmentation and alteration of sensitive habitat in the CIAA that is necessary for maintaining local mule deer herds, including the Book Cliffs herd in Colorado, which already has a population decline due to habitat alteration and developmental pressure; and the Central Mountains herd in Utah that is at carrying capacity due to the poor condition of winter range on the management unit (CDOW 2005a; UDWR 2006c). However, the effects of the Project would be anticipated to be small compared to the effects of other actions (Table 4-69). Under all COUT BAX alternative routes, the majority of available mule deer critical/severe habitat in Colorado and Utah would remain undisturbed by the Project and other actions in the CIAA (Table 4-69).

Pronghorn

The estimated area (in acres) of cumulative development in pronghorn crucial/severe habitat is summarized in Table 4-70.

TABLE 4-70 PRONGHORN CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Fawning Areas						
COUT BAX-B	534,266	18,165	4,752	963	23,880	510,386
COUT BAX-C	602,519	20,418	4,821	855	26,094	576,425
COUT BAX-E	602,519	20,418	4,821	1,230	26,469	576,050
Crucial/Severe Winter Range						
COUT BAX-B	58,471	3,872	226	41	4,139	54,332
COUT BAX-C	58,471	3,872	226	40	4,139	54,332
COUT BAX-E	58,471	3,872	226	39	4,137	54,334
Crucial Year-long						
COUT BAX-B	1,093,553	124,748	5,343	963	131,055	962,499
COUT BAX-C	1,161,819	127,005	5,413	855	133,273	1,028,546
COUT BAX-E	1,161,819	127,005	5,413	1,269	133,687	1,028,132
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

The loss, fragmentation, and modification of designated pronghorn crucial/severe range from any of the COUT BAX alternative routes would contribute to the cumulative loss, fragmentation, and degradation of pronghorn crucial/severe range in the CIAA (Table 4-70). Past and present actions in the CIAA for all COUT BAX alternative routes that have affected designated pronghorn crucial/severe habitat include historical fires, oil and gas development, coal mines, residential development, wind energy development, and vegetation management. RFFAs in the CIAA for all COUT BAX alternative routes include oil and gas development, coal mines, wind-energy development, and the Gateway West and TransWest Express transmission lines. Potential impacts on pronghorn populations in the CIAA from past and present actions and RFFAs could be a function of the location and type of development in relation to the location of pronghorn designated crucial/severe habitat. Development that include fences or roads can restrict movement between seasonal ranges and watering and feeding areas (Sawyer et al. 2002), and could have greater impacts on pronghorn population viability in the CIAA than development that does not restrict their movement.

Ongoing loss, fragmentation and alteration of habitat from energy development, the availability of crucial/severe winter range, and the quality of spring/summer ranges are limiting factors for pronghorn in the CIAA (UDWR 2009b). Pronghorn crucial/severe range affected by any of the COUT BAX alternative routes is located in areas previously disturbed by past and present human activities; suggesting that local pronghorn populations tolerate some level of human activity and habitat disturbance. However, individual response of pronghorn to energy development can vary from tolerance to strong avoidance (Berger et al. 2007). Synergistic temporal effects from construction and stabilization of the Project and the TransWest Express Transmission Project could prolong pronghorn displacement from critical/severe habitat in proximity to the two projects; although impacts on pronghorn would be subject to seasonal selective mitigation measures (refer to pronghorn discussion for the WYCO alternative routes). Overall, the Project would contribute to past and future modification of pronghorn crucial/severe range, and the cumulative disturbance from all actions considered could contribute to loss, fragmentation, and modification of resources limiting local pronghorn herds in the CIAA. However, the effects of the Project are anticipated to be small compared to the effects of other actions (Table 4-70). Under all COUT BAX alternative

routes, the majority of available pronghorn crucial/severe habitat would remain undisturbed by the Project and other actions in the CIAA (Table 4-70).

Moose

The estimated area (in acres) of cumulative development in moose crucial habitat is summarized in Table 4-71.

TABLE 4-71 MOOSE CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Calving Grounds						
COUT BAX-B	111,449	9,790	1,357	3	11,150	100,299
COUT BAX-C	111,449	9,790	1,357	3	11,150	100,299
COUT BAX-E	111,449	9,790	1,357	0	11,147	100,302
Crucial Winter Range						
COUT BAX-B	768,086	156,446	11,272	101	167,819	600,268
COUT BAX-C	900,003	177,502	12,873	99	190,474	709,529
COUT BAX-E	900,003	177,502	12,873	14	190,390	709,613
Crucial Year-long						
COUT BAX-B	111,449	9,790	1,357	3	11,150	100,299
COUT BAX-C	111,449	9,790	1,357	3	11,150	100,299
COUT BAX-E	111,449	9,790	1,357	0	11,147	100,302

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

The loss, fragmentation, and modification of designated moose crucial habitat from any of the COUT BAX alternative routes would contribute to the cumulative loss, fragmentation, and degradation of moose crucial habitat in the CIAA (Table 4-71). Past and present actions in the CIAA for all COUT BAX alternative routes that have affected designated moose crucial habitat include historical fires, oil and gas development, coal mines, sand and gravel mining, residential development, and vegetation management. RFFAs in the CIAA for all COUT BAX alternative routes include coal mines, vegetation management, and the TransWest Express transmission line.

The moose population in Utah is currently estimated at 3,200 animals, and populations have intentionally been reduced, particularly in northern Utah, since 2005 as they have reached or exceeded carrying capacity of available habitat (UDWR 2009a). Habitat degradation and the availability of quality crucial habitat are limiting factors for moose populations in the CIAA for all COUT BAX alternative routes. Moose crucial habitat affected by any of the COUT BAX alternative routes is located in areas previously disturbed by past and present human activities; suggesting that local moose populations tolerate human activity and habitat disturbance to some extent (UDWR 2009a). Disturbance from construction and stabilization of any of the COUT BAX alternative routes could overlap temporally with the construction and stabilization activities of the TransWest Express Transmission Project, and could result in synergistic temporal effects that prolong moose avoidance from crucial habitat in proximity to the two transmission lines. Impacts on moose from both transmission line projects would be minimized or avoided through implementation of seasonal restrictions. Overall, the Project would contribute to past and future modification of moose crucial habitat, and the cumulative disturbance from all actions considered could contribute to loss, modification, and fragmentation of crucial habitat limiting moose populations that may

already be exceeding carrying capacity of local resources in the CIAA. However, the effects of the Project are anticipated to be small compared to the effects of other actions (Table 4-71). Under all COUT BAX alternative routes, the majority of available moose crucial habitat would remain undisturbed by the Project and other actions in the CIAA (Table 4-71).

Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

Elk

The estimated area (in acres) of cumulative development in elk crucial/severe habitat is summarized in Table 4-72.

TABLE 4-72 ELK CRUCIAL/SEVERE HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Calving Grounds						
Alternative COUT-A and Route Variation						
COUT-A	1,071,079	29,514	1,214	86	30,814	1,040,265
COUT-A-1	1,071,079	29,514	1,214	86	30,814	1,040,265
Alternative COUT-B and Route Variations						
COUT-B	1,128,397	37,014	1,805	40	38,860	1,089,537
COUT-B-1	1,128,397	37,014	1,805	41	38,860	1,089,536
COUT-B-2	1,128,397	37,014	1,805	41	38,860	1,089,537
COUT-B-3	1,128,397	37,014	1,805	41	38,860	1,089,537
COUT-B-4	1,128,397	37,014	1,805	41	38,860	1,089,537
COUT-B-5	1,128,397	37,014	1,805	42	38,861	1,089,536
Alternative COUT-C and Route Variations						
COUT-C	483,736	86,361	1,934	81	88,376	395,360
COUT-C-1	483,736	86,361	1,934	81	88,376	395,359
COUT-C-2	483,736	86,361	1,934	81	88,376	395,359
COUT-C-3 (Agency Preferred Alternative)	483,736	86,361	1,934	82	88,377	395,359
COUT-C-4	483,736	86,361	1,934	82	88,377	395,359
COUT-C-5	483,736	86,361	1,934	79	88,374	395,361
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	481,265	86,205	1,194	37	87,436	393,829
COUT-I	414,526	81,045	786	36	81,867	332,659
Crucial Spring/Fall Range						
Alternative COUT-A and Route Variation						
COUT-A	463,284	7,136	5,359	238	12,733	450,551
COUT-A-1	463,284	7,136	5,359	242	12,737	450,547
Alternative COUT-B and Route Variations						
COUT-B	463,284	7,136	5,359	40	12,536	450,748

TABLE 4-72 ELK CRUCIAL/SEVERE HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT-B-1	463,284	7,136	5,359	41	12,536	450,748
COUT-B-2	463,284	7,136	5,359	41	12,536	450,748
COUT-B-3	463,284	7,136	5,359	41	12,536	450,748
COUT-B-4	463,284	7,136	5,359	41	12,536	450,748
COUT-B-5	463,284	7,136	5,359	42	12,537	450,747
Alternative COUT-C and Route Variations						
COUT-C	460,397	6,983	5,359	42	12,384	448,013
COUT-C-1	460,397	6,983	5,359	43	12,384	448,013
COUT-C-2	460,397	6,983	5,359	43	12,384	448,013
COUT-C-3 (Agency Preferred Alternative)	460,397	6,983	5,359	43	12,384	448,012
COUT-C-4	460,397	6,983	5,359	43	12,384	448,012
COUT-C-5	460,397	6,983	5,359	42	12,383	448,014
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	274,779	4,895	131	0	5,026	269,753
COUT-I	147,774	3,733	66	0	3,799	143,975
Crucial Summer/Summer Concentration Alternative COUT-A and Route Variation						
COUT-A	1,696,168	140,924	10,608	118	151,651	1,544,518
COUT-A-1	1,696,168	140,924	10,608	118	151,651	1,544,518
Alternative COUT-B and Route Variations						
COUT-B	1,916,696	165,370	10,970	1	176,341	1,740,355
COUT-B-1	1,916,696	165,370	10,970	0	176,340	1,740,356
COUT-B-2	1,916,696	165,370	10,970	0	176,340	1,740,357
COUT-B-3	1,916,696	165,370	10,970	0	176,340	1,740,357
COUT-B-4	1,916,696	165,370	10,970	0	176,340	1,740,357
COUT-B-5	1,916,696	165,370	10,970	0	176,340	1,740,357
Alternative COUT-C and Route Variations						
COUT-C	1,272,035	214,716	11,099	2	225,817	1,046,218
COUT-C-1	1,272,035	214,716	11,099	0	225,815	1,046,220
COUT-C-2	1,272,035	214,716	11,099	0	225,815	1,046,220
COUT-C-3 (Agency Preferred Alternative)	1,272,035	214,716	11,099	0	225,815	1,046,220
COUT-C-4	1,272,035	214,716	11,099	0	225,815	1,046,220
COUT-C-5	1,272,035	214,716	11,099	0	225,815	1,046,220

TABLE 4-72 ELK CRUCIAL/SEVERE HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	1,215,059	212,171	10,354	55	222,580	992,479
COUT-I	1,087,291	203,773	9,620	222	213,615	873,676
Crucial/Severe Winter Range						
Alternative COUT-A and Route Variation						
COUT-A	1,504,761	242,009	8,596	797	251,402	1,253,359
COUT-A-1	1,504,761	242,009	8,596	797	251,402	1,253,360
Alternative COUT-B and Route Variations						
COUT-B	1,742,057	252,313	9,266	591	262,170	1,479,887
COUT-B-1	1,742,057	252,313	9,266	639	262,218	1,479,839
COUT-B-2	1,742,057	252,313	9,266	704	262,282	1,479,774
COUT-B-3	1,742,057	252,313	9,266	690	262,268	1,479,788
COUT-B-4	1,742,057	252,313	9,266	716	262,295	1,479,762
COUT-B-5	1,742,057	252,313	9,266	693	262,272	1,479,785
Alternative COUT-C and Route Variations						
COUT-C	1,706,074	242,494	9,813	619	252,926	1,453,147
COUT-C-1	1,706,074	242,494	9,813	671	252,978	1,453,096
COUT-C-2	1,706,074	242,494	9,813	738	253,045	1,453,029
COUT-C-3 (Agency Preferred Alternative)	1,706,074	242,494	9,813	717	253,024	1,453,050
COUT-C-4	1,706,074	242,494	9,813	793	253,100	1,452,973
COUT-C-5	1,706,074	242,494	9,813	741	253,048	1,453,026
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	1,647,606	236,594	9,535	211	246,339	1,401,267
COUT-I	1,332,277	206,963	8,467	379	215,810	1,116,467
Crucial Year-long						
Alternative COUT-A and Route Variation						
COUT-A	136,718	8,611	1,518	45	10,174	126,544
COUT-A-1	136,718	8,611	1,518	45	10,174	126,544
Alternative COUT-B and Route Variations						
COUT-B	250,328	20,302	2,109	44	22,455	227,873
COUT-B-1	250,328	20,302	2,109	67	22,478	227,850
COUT-B-2	250,328	20,302	2,109	67	22,478	227,850
COUT-B-3	250,328	20,302	2,109	67	22,478	227,850
COUT-B-4	250,328	20,302	2,109	67	22,478	227,850
COUT-B-5	250,328	20,302	2,109	69	22,479	227,849

TABLE 4-72 ELK CRUCIAL/SEVERE HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	257,112	21,293	2,109	85	23,486	233,626
COUT-C-1	257,112	21,293	2,109	109	23,510	233,601
COUT-C-2	257,112	21,293	2,109	109	23,510	233,602
COUT-C-3 (Agency Preferred Alternative)	257,112	21,293	2,109	110	23,511	233,601
COUT-C-4	257,112	21,293	2,109	110	23,511	233,601
COUT-C-5	257,112	21,293	2,109	106	23,508	233,604
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	251,442	21,060	1,368	37	22,465	228,977
COUT-I	183,399	15,847	939	105	16,891	166,508
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

The loss, fragmentation, and modification of designated elk crucial and severe range from any of the COUT alternative routes and route variations would contribute to the cumulative loss, fragmentation, and degradation of elk crucial and severe habitat in the CIAA (Table 4-72). Elk crucial spring/fall habitat would not be affected by Alternatives COUT-H and COUT-I. Past and present actions in the CIAA for all COUT alternative routes that have affected designated elk crucial/severe habitat include historical fires, oil and gas development, oil shale and tar sands development, sand and gravel pits, pipelines, coal mines, mineral development, residential development, communication facilities, and habitat/rangeland and vegetation management. RFFAs in the CIAA include coal mines, oil and gas development, construction of a tunnel, transportation infrastructure, a dam, and pipelines, residential development, development of recreation sites, and the TransWest Express Transmission Project.

In Utah, elk that could be affected by the COUT alternative routes include the Wasatch Mountains elk herd, which had an estimated population of 6,478 animals in 2011; and is currently over the management objective of 5,400 animals (UDWR 2012a). Limiting factors to local elk herds in the CIAA include range conditions, energy development and urban expansion, and alteration and fragmentation of sensitive habitat (UDWR 2012a). Elk crucial/severe range would be most affected by any of the COUT alternative routes, but is located in areas previously disturbed by past and present human activities, suggesting that local elk populations have some level of tolerance towards human activity and habitat disturbance. Synergistic temporal effects from construction and stabilization of the Project and the TransWest Express Transmission Project could prolong elk displacement from crucial/severe habitat in proximity to the two projects; although impacts on elk would be subject to seasonal selective mitigation measures (refer to elk discussion for the WYCO alternative routes). Overall, the Project would contribute to past and future modification of elk crucial habitat and the cumulative disturbance from all actions considered could contribute to loss, fragmentation, and modification of sensitive habitats that limit local elk herds, including the Wasatch Mountains elk herd that is currently above management objectives due to resource

pressure in the CIAA. However, the effects of the Project would be anticipated to be small compared to the effects of other actions (Table 4-72). Under all COUT alternative routes, the majority of available elk crucial/severe range and calving grounds would remain undisturbed by the Project and other actions in the CIAA (Table 4-72).

Mule Deer

The estimated area (in acres) of cumulative development in mule deer crucial/severe habitat is summarized in Table 4-73.

TABLE 4-73 MULE DEER CRUCIAL/CRITICAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Crucial Spring/Fall Range						
Alternative COUT-A and Route Variation						
COUT-A	449,333	26,544	390	80	27,014	422,320
COUT-A-1	449,333	26,544	390	80	27,014	422,320
Alternative COUT-B and Route Variations						
COUT-B	459,862	28,182	409	79	28,669	431,193
COUT-B-1	459,862	28,182	409	79	28,670	431,192
COUT-B-2	459,862	28,182	409	79	28,669	431,192
COUT-B-3	459,862	28,182	409	79	28,669	431,192
COUT-B-4	459,862	28,182	409	79	28,669	431,192
COUT-B-5	459,862	28,182	409	81	28,671	431,190
Alternative COUT-C and Route Variations						
COUT-C	459,862	28,182	409	83	28,673	431,189
COUT-C-1	459,862	28,182	409	83	28,673	431,188
COUT-C-2	459,862	28,182	409	83	28,673	431,188
COUT-C-3 (Agency Preferred Alternative)	459,862	28,182	409	84	28,674	431,188
COUT-C-4	459,862	28,182	409	84	28,674	431,188
COUT-C-5	459,862	28,182	409	81	28,671	431,190
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	459,862	28,182	409	36	28,626	431,236
COUT-I	459,862	28,182	409	61	28,652	431,210
Crucial Summer/Summer Concentration						
Alternative COUT-A and Route Variation						
COUT-A	2,254,072	222,364	19,189	303	241,855	2,012,217
COUT-A-1	2,254,072	222,364	19,189	307	241,859	2,012,213

TABLE 4-73 MULE DEER CRUCIAL/CRITICAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-B and Route Variations						
COUT-B	2,495,212	249,685	20,520	20	270,225	2,224,987
COUT-B-1	2,495,212	249,685	20,520	175	270,380	2,224,832
COUT-B-2	2,495,212	249,685	20,520	227	270,432	2,224,780
COUT-B-3	2,495,212	249,685	20,520	164	270,369	2,224,843
COUT-B-4	2,495,212	249,685	20,520	267	270,472	2,224,740
COUT-B-5	2,495,212	249,685	20,520	126	270,332	2,224,881
Alternative COUT-C and Route Variations						
COUT-C	1,770,129	274,607	20,520	21	295,148	1,474,981
COUT-C-1	1,770,129	274,607	20,520	220	295,347	1,474,782
COUT-C-2	1,770,129	274,607	20,520	274	295,401	1,474,728
COUT-C-3 (Agency Preferred Alternative)	1,770,129	274,607	20,520	167	295,294	1,474,835
COUT-C-4	1,770,129	274,607	20,520	488	295,615	1,474,514
COUT-C-5	1,770,129	274,607	20,520	367	295,494	1,474,636
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	1,489,152	265,229	15,903	16	281,148	1,208,004
COUT-I	1,072,742	248,296	13,637	190	262,123	810,619
Crucial/Critical Winter Range						
Alternative COUT-A and Route Variation						
COUT-A	1,824,165	321,914	5,399	722	328,034	1,496,131
COUT-A-1	1,824,165	321,914	5,399	721	328,034	1,496,131
Alternative COUT-B and Route Variations						
COUT-B	2,067,765	337,067	5,641	483	343,191	1,724,574
COUT-B-1	2,067,765	337,067	5,641	489	343,197	1,724,568
COUT-B-2	2,067,765	337,067	5,641	489	343,196	1,724,568
COUT-B-3	2,067,765	337,067	5,641	488	343,196	1,724,569
COUT-B-4	2,067,765	337,067	5,641	488	343,196	1,724,569
COUT-B-5	2,067,765	337,067	5,641	500	343,208	1,724,557
Alternative COUT-C and Route Variations						
COUT-C	2,003,345	338,752	5,819	488	345,058	1,658,286
COUT-C-1	2,003,345	338,752	5,819	495	345,065	1,658,279
COUT-C-2	2,003,345	338,752	5,819	493	345,064	1,658,281
COUT-C-3 (Agency Preferred Alternative)	2,003,345	338,752	5,819	498	345,069	1,658,276
COUT-C-4	2,003,345	338,752	5,819	498	345,068	1,658,276
COUT-C-5	2,003,345	338,752	5,819	482	345,052	1,658,292

TABLE 4-73 MULE DEER CRUCIAL/CRITICAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	1,967,178	332,709	5,590	319	338,619	1,628,559
COUT-I	1,718,109	297,671	4,974	586	303,231	1,414,878
Crucial Winter/Spring Range						
Alternative COUT-A and Route Variation						
COUT-A	608,008	56,184	18,736	309	75,229	532,780
COUT-A-1	608,008	56,184	18,736	309	75,228	532,780
Alternative COUT-B and Route Variations						
COUT-B	608,008	56,184	18,736	286	75,206	532,802
COUT-B-1	608,008	56,184	18,736	288	75,208	532,801
COUT-B-2	608,008	56,184	18,736	288	75,207	532,801
COUT-B-3	608,008	56,184	18,736	287	75,207	532,801
COUT-B-4	608,008	56,184	18,736	287	75,207	532,801
COUT-B-5	608,008	56,184	18,736	294	75,214	532,794
Alternative COUT-C and Route Variations						
COUT-C	608,008	56,184	18,736	300	75,220	532,789
COUT-C-1	608,008	56,184	18,736	302	75,222	532,786
COUT-C-2	608,008	56,184	18,736	302	75,221	532,787
COUT-C-3 (Agency Preferred Alternative)	608,008	56,184	18,736	304	75,224	532,784
COUT-C-4	608,008	56,184	18,736	304	75,224	532,784
COUT-C-5	608,008	56,184	18,736	294	75,214	532,794
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	537,287	51,103	16,591	56	67,750	469,537
COUT-I	535,735	50,889	16,558	19	67,465	468,270
Crucial Year-long						
Alternative COUT-A and Route Variation						
COUT-A	262,529	102,193	326	48	102,567	159,962
COUT-A-1	262,529	102,193	326	48	102,567	159,962
Alternative COUT-B and Route Variations						
COUT-B	310,384	112,499	506	30	113,035	197,349
COUT-B-1	310,384	112,499	506	30	113,035	197,349
COUT-B-2	310,384	112,499	506	30	113,035	197,349
COUT-B-3	310,384	112,499	506	30	113,035	197,349
COUT-B-4	310,384	112,499	506	30	113,035	197,349
COUT-B-5	310,384	112,499	506	31	113,036	197,348

TABLE 4-73 MULE DEER CRUCIAL/CRITICAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	163,180	37,605	332	28	37,965	125,215
COUT-C-1	163,180	37,605	332	28	37,965	125,215
COUT-C-2	163,180	37,605	332	28	37,965	125,215
COUT-C-3 (Agency Preferred Alternative)	163,180	37,605	332	29	37,965	125,215
COUT-C-4	163,180	37,605	332	29	37,965	125,215
COUT-C-5	163,180	37,605	332	377	38,314	124,866
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	163,180	37,605	332	369	38,306	124,874
COUT-I	189,929	29,444	4,139	364	33,947	155,982
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

The loss, fragmentation, and modification of designated mule deer crucial/critical range from any of the COUT alternative routes would contribute to the cumulative loss, fragmentation, and degradation of mule deer crucial/critical range in the CIAA (Table 4-73). Past and present actions in the CIAA for all COUT alternative routes that have affected designated mule deer crucial/critical habitat include historical fires, oil and gas development, oil shale and tar sands development, coal mines, gypsum mines, construction of pipelines, sand and gravel pits, mineral leasing activities, residential development, construction of educational and communication facilities, habitat and rangeland management, and vegetation management. RFFAs in the CIAA for all COUT alternative routes include oil and gas development, coal mining, gypsum mining, sand and gravel mining, construction of a reservoir, transportation infrastructure, a helicopter port, a tunnel, pipelines, and power generation facilities including wind energy development, vegetation management; and TransWest Express, Mona North and Mona South transmission lines. Potential impacts on mule deer populations in the CIAA from past and present actions and RFFAs would be a function of the type of action, and the scale, density and arrangement of each development in designated crucial/critical habitat (Lutz et al. 2011).

In Utah, mule deer that could be affected by the Project include the Wasatch Mountains herd, which has a current population size of 31,200, but a target population of 40,800 (UDWR 2006d). The availability and quality of crucial/critical winter range is a limiting factor for mule deer herds in the CIAA for all COUT alternative routes. Mule deer crucial/critical winter range is located in areas previously disturbed by past and present human activities; suggesting that local mule deer populations tolerate some level of human activity and habitat disturbance. The majority of mule deer crucial year-long habitat follows natural river systems, which provide some protection for mule deer from development in the CIAA. Synergistic temporal effects from construction and stabilization of the Project and the TransWest Express Transmission Project could prolong mule deer displacement from crucial/severe habitat, and increase physiological stress in populations in proximity to the two projects; although impacts on mule deer would

be subject to seasonal selective mitigation measures (refer to mule deer discussion for the WYCO alternative routes). Overall, the Project would contribute to past and future modification of mule deer crucial/critical range, and the cumulative disturbance from all actions considered could contribute to loss, fragmentation, and modification of habitats that currently limit local mule deer herds, including the Wasatch Mountains mule deer herd that use winter range with decreasing DCI scores (15 percent over the last 5 years) (UDWR 2006d). However, the effects of the Project are anticipated to be small compared to the effects of other actions (Table 4-73). Under all COUT BAX alternative routes, the majority of available mule deer crucial/critical habitat in Colorado and Utah would remain undisturbed by the Project and other actions in the CIAA (Table 4-73).

Pronghorn

The estimated area (in acres) of cumulative development in pronghorn crucial/severe habitat is summarized in Table 4-74.

TABLE 4-74 PRONGHORN CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Fawning Areas						
Alternative COUT-A and Route Variation						
COUT-A	421,678	43,186	2,076	400	45,662	376,016
COUT-A-1	421,678	43,186	2,076	400	45,662	376,016
Alternative COUT-B and Route Variations						
COUT-B	728,872	57,979	8,852	396	67,226	661,646
COUT-B-1	728,872	57,979	8,852	398	67,229	661,644
COUT-B-2	728,872	57,979	8,852	398	67,228	661,644
COUT-B-3	728,872	57,979	8,852	398	67,228	661,644
COUT-B-4	728,872	57,979	8,852	397	67,228	661,645
COUT-B-5	728,872	57,979	8,852	407	67,237	661,635
Alternative COUT-C and Route Variations						
COUT-C	858,879	91,669	10,940	574	103,183	755,695
COUT-C-1	858,879	91,669	10,940	579	103,188	755,691
COUT-C-2	858,879	91,669	10,940	578	103,187	755,692
COUT-C-3 (Agency Preferred Alternative)	858,879	91,669	10,940	583	103,192	755,687
COUT-C-4	858,879	91,669	10,940	583	103,191	755,687
COUT-C-5	858,879	91,669	10,940	564	103,173	755,706
Alternative COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	858,879	91,669	10,940	552	103,161	755,718
COUT-I	1,121,237	98,636	13,939	807	113,382	1,007,855

TABLE 4-74 PRONGHORN CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Crucial Year-long						
Alternative COUT-A and Route Variation						
COUT-A	597,487	147,481	2,667	400	150,549	446,938
COUT-A-1	597,487	147,481	2,667	400	150,549	446,938
Alternative COUT-B and Route Variations						
COUT-B	918,159	164,876	9,497	396	174,769	743,390
COUT-B-1	918,159	164,876	9,497	398	174,771	743,388
COUT-B-2	918,159	164,876	9,497	398	174,771	743,388
COUT-B-3	918,159	164,876	9,497	398	174,770	743,388
COUT-B-4	918,159	164,876	9,497	397	174,770	743,389
COUT-B-5	918,159	164,876	9,497	407	174,780	743,379
Alternative COUT-C and Route Variations						
COUT-C	1,048,165	198,566	11,585	574	210,726	837,440
COUT-C-1	1,048,165	198,566	11,585	579	210,731	837,435
COUT-C-2	1,048,165	198,566	11,585	578	210,729	837,436
COUT-C-3 (Agency Preferred Alternative)	1,048,165	198,566	11,585	583	210,734	837,431
COUT-C-4	1,048,165	198,566	11,585	583	210,734	837,431
COUT-C-5	1,048,165	198,566	11,585	564	210,716	837,450
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	1,048,165	198,566	11,585	552	210,704	837,462
COUT-I	1,693,999	207,820	14,584	865	223,270	1,470,729
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

The loss, fragmentation, and modification of designated pronghorn crucial/severe range from any of the COUT alternative routes and route variations would contribute to the cumulative loss, fragmentation, and degradation of pronghorn crucial/severe range in the CIAA (Table 4-74). Past and present actions in the CIAA for all COUT alternative routes that have affected designated pronghorn crucial/severe habitat include historical fires, oil and gas development, oil shale and tar sands development, coal mining, development of recreation sites, construction of transportation infrastructure, military training, mineral leasing, habitat/rangeland management, and vegetation management. RFFAs in the CIAA for all COUT alternative routes and route variations include oil and gas development, construction of power generation facilities, development of recreation sites, and the TransWest Express transmission line. Potential impacts on pronghorn populations in the CIAA from past and present actions and RFFAs could be a function of the location and type of development in relation to the location of pronghorn designated crucial/severe habitat and migration corridors. Development that include fences or roads can sever pronghorn migration corridors; and restrict movement between seasonal ranges and watering and feeding areas (Sawyer et al. 2002), and could have greater impacts on pronghorn population viability in the CIAA than development that does not restrict their movement.

In Utah the current statewide pronghorn population is estimated at 12,000 to 14,000 animals in 29 subpopulations (UDWR 2009b). Ongoing loss, fragmentation and alteration of habitat from energy development, the availability of crucial/severe winter range, water and quality spring forage are limiting factors for pronghorn in the CIAA (UDWR 2009b). Pronghorn crucial/severe range affected by any of the COUT alternative routes and route variations is located in areas previously disturbed by past and present human activities; suggesting that local pronghorn populations tolerate some level of human activity and habitat disturbance. However, individual response of pronghorn to energy development can vary from tolerance to strong avoidance (Berger et al. 2007). Synergistic temporal effects from construction and stabilization of the Project and the TransWest Express Transmission Project could prolong pronghorn displacement from crucial/severe habitat in proximity to the two projects; although impacts on pronghorn would be subject to seasonal selective mitigation measures (refer to pronghorn discussion for the WYCO alternative routes). Overall, the Project would contribute to past and future modification of pronghorn crucial/severe range, and the cumulative disturbance from all actions considered could contribute to loss, fragmentation, and modification of limiting resources for local pronghorn herds in the CIAA. However, the effects of the Project are anticipated to be small compared to the effects of other actions (Table 4-74). Under all COUT alternative routes and route variations, the majority of available pronghorn crucial/severe habitat and migration corridors would remain undisturbed by the Project and other actions in the CIAA (Table 4-74).

Moose

The estimated area (in acres) of cumulative development in moose crucial habitat is summarized in Table 4-75.

TABLE 4-75 MOOSE CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Calving Grounds						
Alternative COUT-A and Route Variation						
COUT-A	238,515	13,082	1,454	0	14,535	223,980
COUT-A-1	238,515	13,082	1,454	0	14,535	223,980
Alternative COUT-B and Route Variations						
COUT-B	238,515	13,082	1,454	37	14,572	223,943
COUT-B-1	238,515	13,082	1,454	42	14,577	223,938
COUT-B-2	238,515	13,082	1,454	42	14,577	223,938
COUT-B-3	238,515	13,082	1,454	42	14,577	223,938
COUT-B-4	238,515	13,082	1,454	42	14,577	223,938
COUT-B-5	238,515	13,082	1,454	43	14,578	223,937

TABLE 4-75 MOOSE CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	238,515	13,082	1,454	39	14,574	223,941
COUT-C-1	238,515	13,082	1,454	44	14,579	223,936
COUT-C-2	238,515	13,082	1,454	44	14,579	223,936
COUT-C-3 (Agency Preferred Alternative)	238,515	13,082	1,454	44	14,579	223,936
COUT-C-4	238,515	13,082	1,454	44	14,579	223,936
COUT-C-5	238,515	13,082	1,454	43	14,578	223,937
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	147,993	10,372	1,451	0	11,823	136,170
COUT-I	111,449	9,790	1,357	3	11,150	100,299
Crucial Spring/Fall Range						
Alternative COUT-A and Route Variation						
COUT-A	187,874	7,797	5,636	209	13,641	174,232
COUT-A-1	187,874	7,797	5,636	213	13,646	174,228
Alternative COUT-B and Route Variations						
COUT-B	187,874	7,797	5,636	0	13,433	174,441
COUT-B-1	187,874	7,797	5,636	0	13,433	174,441
COUT-B-2	187,874	7,797	5,636	0	13,433	174,441
COUT-B-3	187,874	7,797	5,636	0	13,433	174,441
COUT-B-4	187,874	7,797	5,636	0	13,433	174,441
COUT-B-5	187,874	7,797	5,636	0	13,433	174,441
Alternative COUT-C and Route Variations						
COUT-C	187,874	7,797	5,636	0	13,433	174,441
COUT-C-1	187,874	7,797	5,636	0	13,433	174,441
COUT-C-2	187,874	7,797	5,636	0	13,433	174,441
COUT-C-3 (Agency Preferred Alternative)	187,874	7,797	5,636	0	13,433	174,441
COUT-C-4	187,874	7,797	5,636	0	13,433	174,441
COUT-C-5	187,874	7,797	5,636	0	13,433	174,441
Alternative COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	4,977	35	6	0	41	4,936
COUT-I	0	0	0	0	0	0

TABLE 4-75 MOOSE CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Severe Winter Range						
Alternative COUT-A and Route Variation						
COUT-A	1,177,119	180,437	12,892	194	193,524	983,595
COUT-A-1	1,177,119	180,437	12,892	194	193,524	983,595
Alternative COUT-B and Route Variations						
COUT-B	1,319,148	201,607	14,579	29	216,215	1,102,933
COUT-B-1	1,319,148	201,607	14,579	182	216,368	1,102,780
COUT-B-2	1,319,148	201,607	14,579	235	216,420	1,102,728
COUT-B-3	1,319,148	201,607	14,579	171	216,357	1,102,791
COUT-B-4	1,319,148	201,607	14,579	274	216,460	1,102,688
COUT-B-5	1,319,148	201,607	14,579	134	216,320	1,102,828
Alternative COUT-C and Route Variations						
COUT-C	1,224,449	200,294	14,579	55	214,928	1,009,521
COUT-C-1	1,224,449	200,294	14,579	252	215,125	1,009,324
COUT-C-2	1,224,449	200,294	14,579	306	215,180	1,009,270
COUT-C-3 (Agency Preferred Alternative)	1,224,449	200,294	14,579	200	215,073	1,009,376
COUT-C-4	1,224,449	200,294	14,579	548	215,421	1,009,028
COUT-C-5	1,224,449	200,294	14,579	425	215,298	1,009,151
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	1,213,836	199,571	14,440	39	214,050	999,786
COUT-I	910,115	177,615	12,958	284	190,857	719,258
Crucial Year-long						
Alternative COUT-A and Route Variation						
COUT-A	1,100,932	53,710	1,451	0	55,161	1,045,771
COUT-A-1	1,100,932	53,710	1,451	0	55,161	1,045,771
Alternative COUT-B and Route Variations						
COUT-B	1,100,932	53,710	1,451	37	55,198	1,045,734
COUT-B-1	1,100,932	53,710	1,451	42	55,203	1,045,729
COUT-B-2	1,100,932	53,710	1,451	42	55,203	1,045,729
COUT-B-3	1,100,932	53,710	1,451	42	55,203	1,045,729
COUT-B-4	1,100,932	53,710	1,451	42	55,203	1,045,729
COUT-B-5	1,100,932	53,710	1,451	43	55,204	1,045,728

TABLE 4-75 MOOSE CRUCIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	190,266	11,134	1,451	39	12,624	177,643
COUT-C-1	190,266	11,134	1,451	44	12,629	177,638
COUT-C-2	190,266	11,134	1,451	44	12,629	177,638
COUT-C-3 (Agency Preferred Alternative)	190,266	11,134	1,451	44	12,629	177,638
COUT-C-4	190,266	11,134	1,451	44	12,629	177,638
COUT-C-5	190,266	11,134	1,451	43	12,627	177,639
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	153,733	10,419	1,451	0	11,870	141,863
COUT-I	111,449	9,790	1,357	3	11,150	100,299
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

The loss, fragmentation, and modification of designated moose crucial habitat from any of the COUT alternative routes and route variations would contribute to the cumulative loss, fragmentation, and degradation of moose crucial habitat in the CIAA; with the exception that COUT-A, and Route Variation COUT-A-1, which would not affect designated moose calving grounds or crucial year-long habitat (Table 4-75). Moose crucial spring/fall habitat would be affected only by COUT-A and Route Variation COUT-A-1. Past and present actions in the CIAA for all COUT alternative routes and route variations that have affected designated moose crucial habitat include historical fires, oil and gas development, coal mining, mineral leasing, residential development, habitat/rangeland management, and vegetation management. RFFAs in the CIAA for all COUT alternative routes include coal mining, vegetation management, construction of transportation infrastructure, residential development, and the TransWest Express transmission line.

The moose population in Utah is currently estimated at 3,200 animals, and populations have intentionally been reduced, particularly in northern Utah, since 2005 as they have reached or exceeded carrying capacity of available habitat (UDWR 2009a). Habitat degradation and the availability of quality crucial habitat are limiting factors for moose populations in the CIAA for all COUT alternative routes. Moose crucial habitat affected by any of the COUT alternative routes and route variations is located in areas previously disturbed by past and present human activities; suggesting that local moose populations tolerate human activity and habitat disturbance to some extent (UDWR 2009a). Synergistic temporal effects from construction and stabilization of the Project and the TransWest Express Transmission Project could prolong moose displacement from crucial/severe habitat in proximity to the two projects; although impacts on moose would be subject to seasonal selective mitigation measures (refer to moose discussion for the COUT BAX alternative routes). Overall, the Project would contribute to past and future modification of moose crucial habitat, and the cumulative disturbance from all actions considered could contribute to loss, fragmentation and degradation of habitat that limits local moose populations that are

currently above carrying capacity of local resources in the CIAA. However, the effects of the Project would be anticipated to be small compared to the effects of other actions (Table 4-75). Under all COUT alternative routes and route variations, the majority of available moose crucial habitat would remain undisturbed by the Project and other actions in the CIAA (Table 4-75).

Rocky Mountain Bighorn Sheep

The estimated area (in acres) of cumulative disturbance on Rocky Mountain bighorn sheep crucial habitat is summarized in Table 4-76.

TABLE 4-76 ROCKY MOUNTAIN BIGHORN SHEEP CRUCIAL YEAR-LONG HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	544,197	22,544	1,824	0	24,368	519,829
COUT-A-1	544,197	22,544	1,824	0	24,368	519,829
Alternative COUT-B and Route Variations						
COUT-B	895,479	41,959	1,901	0	43,860	851,619
COUT-B-1	895,479	41,959	1,901	0	43,860	851,619
COUT-B-2	895,479	41,959	1,901	0	43,860	851,619
COUT-B-3	895,479	41,959	1,901	0	43,860	851,619
COUT-B-4	895,479	41,959	1,901	0	43,860	851,619
COUT-B-5	895,479	41,959	1,901	0	43,860	851,619
Alternative COUT-C and Route Variations						
COUT-C	1,211,652	110,070	2,176	62	112,308	1,099,344
COUT-C-1	1,211,652	110,070	2,176	63	112,309	1,099,343
COUT-C-2	1,211,652	110,070	2,176	62	112,309	1,099,343
COUT-C-3 (Agency Preferred Alternative)	1,211,652	110,070	2,176	63	112,309	1,099,343
COUT-C-4	1,211,652	110,070	2,176	63	112,309	1,099,343
COUT-C-5	1,211,652	110,070	2,176	61	112,307	1,099,345
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	1,201,175	108,667	813	60	109,540	1,091,636
COUT-I	1,041,340	98,355	394	59	98,808	942,532

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

The loss, fragmentation and modification of designated Rocky Mountain bighorn sheep crucial year-long habitat from any of the COUT alternative routes and route variations would contribute to the cumulative loss, fragmentation and degradation of Rocky Mountain bighorn sheep crucial habitat in the CIAA; with the exception that COUT-A and COUT-B and route variations, which would not affect crucial year-long habitat (Table 4-76). Past and present actions in the CIAA for all COUT alternative routes and route variations that have affected designated Rocky Mountain bighorn sheep crucial year-long habitat include

historical fires, oil and gas development, oil shale and tar sands development, coal mining, construction of pipelines, mineral leasing, and development of educational areas, habitat/rangeland management, and vegetation management. RFFAs in the CIAA for all COUT alternative routes include oil and gas development, residential development, and the TransWest Express transmission line.

In Utah, restoration efforts for Rocky Mountain bighorn sheep over the last 40 years have included transplanting animals (approximately 900 animals) to suitable habitat in the state. Many of those transplants have failed, and the current estimated population in Utah is 1,900 sheep (UDWR 2008c). Limiting factors for Rocky Mountain bighorn sheep in the CIAA include loss of crucial habitat due to development, forage competition with ungulates, extreme weather, predation and disease (UDWR 2008a). Loss of quality habitat has corresponded with a reduction in Rocky Mountain bighorn sheep population numbers across its range (Beecham et al. 2007; Deforge 1972). A portion of Rocky Mountain bighorn sheep crucial year-long habitat affected by any of the COUT alternative routes and route variations is located in areas previously disturbed by past and present human activities. Rocky Mountain sheep can habituate to human activity and presence if activity is somewhat predictable temporally and spatially, but can be adversely affected by less predictable actions (such as recreation, or development), which can result in a change in area use, abandonment of ranges and disease onset through physiological stress (UDWR 2008c). The majority of crucial year-long habitat follows natural river systems, which provide some protection for Rocky Mountain bighorn sheep from development in the CIAA. Disturbance from construction and stabilization of any of the COUT alternative routes could overlap temporally with the construction and stabilization activities of the TransWest Express Transmission Project, and could result in synergistic temporal effects that prolong Rocky Mountain bighorn sheep avoidance from crucial habitat in proximity to the two transmission lines. Impacts on Rocky Mountain bighorn sheep from both transmission line projects would be minimized or avoided through implementation of seasonal restrictions. Overall, the Project would contribute to past and future modification of Rocky Mountain bighorn sheep crucial year-long habitat, and the cumulative disturbance from all actions considered could contribute to loss of crucial habitat, and a reduction in habitat quality that currently limits Rocky Mountain bighorn sheep populations in the CIAA, and which has been linked to corresponding losses in bighorn populations (Deforge 1972). However, the effects of the Project are anticipated to be small compared to the effects of other actions (Table 4-76). Under all COUT alternative routes and route variations, the majority of available Rocky Mountain bighorn sheep crucial year-long habitat would remain undisturbed by the Project and other actions in the CIAA (Table 4-76).

4.3.8 Special Status Wildlife

The section addresses potential cumulative effects of the Project in addition to other past, other present, and RFFAs on special status wildlife resources. Resources addressed in this section are those described in Section 3.2.8.

The approach used to analyze cumulative effects on special status wildlife resources, including the geographic and temporal scopes of analysis, is presented in Table 4-3. The cumulative impacts analysis for special status wildlife considers direct and indirect impacts from the Project (described in Section 3.2.8) in conjunction with the past, present, RFFAs listed in Tables 4-1 and 4-2. Potential habitat models, known greater sage-grouse habitat, and lek location data were used to assess cumulative effects on special status wildlife, and were obtained from BLM, WGFD, CPW, and UDWR (Table 4-77). For instances where limited data were available for a given special status wildlife species likely to occur in the Project area, a qualitative evaluation of the potential cumulative effects was performed. For information regarding species life history and a list of species that may potentially occur in the Project area that support the analysis of cumulative effects, refer to Section 3.2.7.4 and Appendix E.

CIAAs were established for special status wildlife based on available information regarding species-specific home range or territory sizes. The geographic scope for analysis of cumulative effects on special status wildlife resources is identified by species in Table 4-77. For the purposes of this analysis, home ranges/territories were assumed to be circular; CIAAs include the 250-foot-wide right-of-way for each alternative route and the adjacent potentially suitable habitat in a distance equal to one home range/territory diameter on either side of the right-of-way to encompass habitat area used by all affected individuals of a given species in its territory or home range distance from the right-of-way.

4.3.8.1 Issues Identified for Analysis

4.3.8.1.1 Loss, Modification, and Fragmentation of Special Status Species Habitat

The effects of the Project could contribute (to varying degrees) to existing and ongoing loss, fragmentation, and modification of vegetation and terrain that provide potential habitat for special status wildlife. The quality and quantity of special status wildlife habitats (e.g., riparian corridors that support southwestern willow flycatchers and contiguous sagebrush habitats that support sage-grouse) are necessary for maintaining viable populations of special status wildlife species. Direct and indirect effects of any one past, present, or future action may not affect special status wildlife species or their habitat to the degree that existing populations would be affected. The combined incremental effects of all past, present, and future actions, however, could be extensive and occur over the majority of the available habitat in the Project area for some special status wildlife species. The modification and fragmentation of special status wildlife habitats potentially could result in shifts in species composition and diversity in the Project area.

An analysis of the Project's impacts relative to USFS LRMP standards and guidelines including thresholds for disturbance to designated sage-grouse habitat on USFS-administered land are included in the Wildlife Specialist Report (USFS 2013c).

4.3.8.1.2 Long-term Persistence of Special Status Wildlife in the Project Area

Due to a growing concern for the long-term persistence of species in areas of overlapping past, other present, and RFFAs, special status wildlife issues have been identified by resource agencies.

Long-term persistence of special status wildlife populations in the Project area could be threatened through cumulative detrimental direct and indirect impacts of past, present, and future actions to individuals and populations (refer to Section 3.2.8.4). Long-term persistence of special status wildlife also could be adversely affected if biological thresholds, such as minimum effective territory size (Ehrlich et al. 1988) and dispersal distances or minimum patch size and connectivity between suitable habitats (Oliver 2004), are no longer met due to the combined cumulative impacts of past, present, and future actions occurring in the CIAAs.

4.3.8.1.3 Synergistic Temporal Effects with Other Actions

The potential for synergistic (interaction and compounded) adverse effects on special status wildlife resulting from the construction of the Project and the TransWest Express Project was identified by the agencies and public during scoping. This analysis assumes the selected route for the Project and the selected routes for the TransWest Express Project would be located in the same 2-mile-wide study corridor offset by approximately 1,500 feet. Construction of the Project would potentially overlap construction and site stabilization efforts for the TransWest Express Project. Overlapping or repeated disturbance during construction and reclamation periods for the two projects could result in prolonged displacement of special status wildlife from important habitats, displacement of species from a larger geographic area, alteration of special status wildlife behavior or movement patterns, and could extend the potential recovery time of special status wildlife resources.

**TABLE 4-77
CUMULATIVE IMPACTS ANALYSIS AREAS AND RATIONALE FOR SPECIAL STATUS SPECIES**

Habitat Types	Cumulative Impacts Analysis Area (distance on either side of right-of-way) ¹	Rationale	Type and Source of Spatial Data
Birds			
<p>Greater sage-grouse core areas or priority habitat</p> <p>Greater sage-grouse general habitat and transmission line corridors designated in Wyoming Executive Order 2011-5</p>	11 miles	Sage-grouse that attend leks up to 18 kilometers (11 miles) from the Project may be indirectly affected by the loss of habitat functionality during other seasons of the year (Connelly et al. 2000).	Overall distribution (CPW 2012h); Lek locations (CPW 2012i; UDWR 2013b; WGFD 2012c); Core habitat areas (WGFD 2010b); Preliminary priority and preliminary general habitats (CPW 2012j); Occupied, winter, and brood rearing habitats (UDWR 2011b, c)
Mexican Spotted Owl Potential Habitat	1 mile	Human activities within 0.5 mile of nest sites may adversely affect nest success (Romin and Muck 2002). A 1.0-mile area around the potential right-of-way would encompass human activities within 0.5 mile of Mexican spotted owl nest sites that may be affected by the Project.	Modeled habitat in study corridors (EPG 2013)
Mountain Plover Potential Habitat	1,320 feet	Project disturbance buffers around active mountain plover nests vary with topography, type of activity proposed, and duration of disturbance. For disturbances including human presence and continual equipment operations a 0.25 mile (1,320 feet) buffer is recommended (BLM 2011w).	Modeled habitat in study corridors (EPG 2013)
Southwestern Willow Flycatcher Potential Habitat	1 mile	A 1.0-mile area around the potential right-of-way would encompass human activities within 0.5 mile of suitable riparian habitat for southwestern willow flycatcher that may be affected by the Project.	Modeled habitat in study corridors (EPG 2013)

**TABLE 4-77
CUMULATIVE IMPACTS ANALYSIS AREAS AND RATIONALE FOR SPECIAL STATUS SPECIES**

Habitat Types	Cumulative Impacts Analysis Area (distance on either side of right-of-way) ¹	Rationale	Type and Source of Spatial Data
Yellow-billed Cuckoo Potential Habitat	1,656 feet	Preferred yellow-billed cuckoo nesting sites are areas with at least 15 to 20 hectares (used 20 hectares) of deciduous/riparian forest (Wiggins 2005). A point buffered ² by 20 hectares (200,000 square meters) has a diameter of 1,656 feet.	Modeled habitat in study corridors (EPG 2013)
Mammals			
Black-footed Ferret Management Areas	1.3 miles	The minimal area required to sustain a ferret is 167 to 355 hectares (used 355) in white-tailed prairie dog habitat (4 prairie dogs per hectare) (Stromberg et al. 1983). A point buffered ² by 355 hectares (1.37 square miles) has a diameter of 1.3 miles.	Black footed-ferret management areas (BLM 2011g) (UDWR 2011d) Reintroduction sites (BLM 2011h; UDWR 2011d)
White-tailed Prairie Dog Potential Colonies	524 feet	Clark (1973) found that adult female white-tailed prairie dogs had the largest average home range size (1.9 hectares, rounded to 2 hectares), compared to juvenile females and males of all ages. A point buffered ² by 2 hectares (20,000 square meters) has a diameter of 524 feet.	Modeled colonies in study corridors (EPG 2013)
Pygmy Rabbit Potential Habitat	1.8 miles	Pygmy rabbits may disperse up to 1.8 miles from known burrow sites (Estes-Zumpf and Rachlow 2009).	Modeled habitat in study corridors (EPG 2013)
<p>NOTE: ¹Cumulative impacts analysis areas were established for special status wildlife potential habitats based on available information regarding species specific home range or territory size. ²Home ranges/territories were assumed to be circular; cumulative impacts analysis areas include the 250-foot right-of-way for each alternative route and the adjacent potentially suitable habitat in a distance equal to one home range/territory diameter on either side of the right-of-way.</p>			

4.3.8.1.4 Past, Present, and Other Reasonably Foreseeable Future Actions in the Special Status Wildlife Cumulative Impacts Analysis Areas

Land administered by Ashley, Manti-La Sal, and Uinta National Forests and the BLM in the Project area are managed for multiple-resource use. Past and present actions and RFFAs in the CIAAs, include timber harvest, livestock grazing, recreational use (e.g., off-road-vehicle use, biking, hiking, camping, and hunting), oil and gas exploration and development, mining, mineral production, transmission lines, pipelines, highways, wind and solar energy development, military training/testing, residential subdivision expansion, and communication site development. The combined actions contribute to incremental loss, alteration and fragmentation of foraging, nesting, breeding habitat and refuge and/or escape cover for special status wildlife species. These actions have contributed to modification of the landscape in the past will continue to contribute to this modification into the foreseeable future. Despite these incremental modifications of natural landscapes, the functionality of habitats that support special status wildlife species are maintained on the majority of USFS- and BLM-administered land and privately owned land. However, future actions will continue to adversely affect local special status wildlife populations as well as habitat functionality and quality in the CIAA for each species. Adverse impacts on special status wildlife could be particularly intense if development occurs in areas where specialized habitat types are limited (e.g., riparian corridors that support special status migratory birds or contiguous sagebrush habitats that support sage-grouse). Surrounding habitat may not provide the same limited and specialized habitat attributes and, therefore, is unlikely to accommodate displaced individuals whose limited specialized habitat areas would be affected (Watkins et al 2007). For a comprehensive summary of past, other present, and RFFAs refer to Tables 4-1 and 4-2.

In addition to RFFAs identified in Tables 4-1 and 4-2, BLM and USFS are currently preparing EISs to amend BLM RMPs and USFS LRMPs used to manage sage-grouse habitats in the Project area. All alternatives being considered in the BLM RMP and USFS LRMP amendment EISs would implement new conservation measures to protect sage-grouse habitat on BLM- and USFS-administered lands and would restrict the type and location of activities that could be authorized in sage-grouse habitat by the agencies. The amendment of these RMPs and LRMPs would benefit sage-grouse and sage-grouse habitat by protecting it from further degradation and promoting conservation actions. These management alternatives also would restrict some of the RFFAs proposed within sage-grouse habitat identified in Tables 4-1 and 4-2. This may result in a decrease in the amount of sage-grouse habitat affected cumulatively by all alternatives and other past, present and RFFAs (Tables 4-80 to 4-83, 4-91 through 4-93, and 4-101 through 4-103), though the amount of decrease cannot be calculated at this time.

Additionally, states and sage-grouse local working groups are currently revising sage-grouse management plans used to manage sage-grouse habitats in the Project area. Similar to the revision of BLM RMPs and USFS LRMPs, revisions to state and local working group sage-grouse management plans would likely result in more restrictive management of sage-grouse and sage-grouse habitat in the Project area. This may result in beneficial conservation actions being taken to improve sage-grouse habitats, increase sage-grouse habitat connectivity, and a decrease in the amount of sage-grouse habitat affected cumulatively by all alternatives and other past, present and RFFAs (Tables 4-80 to 4-83, 4-91 through 4-93, and 4-101 through 4-103), though the amount of decrease cannot be calculated at this time

4.3.8.2 Existing Condition

Conversion of native vegetation to agricultural use through vegetation clearance, deforestation and cultivation since European settlement and expansion began in the middle of the 19th century, has significantly affected the character of landscapes and the quantity and quality of habitats for special status wildlife resources in the CIAA for each species (Huston 2005). Construction of settlements, transportation systems, and increases in human population growth, the recreational industry (Leung et al. 2000) and energy development also have resulted in further conversion of habitats for special status

wildlife resources and significant shifts in the abundance, distribution, and species composition of the fauna and flora of the area. These historic modifications to the landscape have resulted in baseline conditions and trends to which the Project and other current, future and RFFAs (refer to Tables 4-1 and 4-2) analyzed in this section could contribute continuing and additive cumulative effects.

Incremental modification of the landscape and increased adverse impacts resulting from habitat loss and fragmentation on local special status wildlife habitats and their associated populations will continue as development of current and future projects occur. Energy generation and mineral exploration development continue to incrementally affect population dynamics, habitat quality, and availability for special status wildlife species in the CIAAs. Habitat fragmentation due to an increase in extent and frequency of human activity, land use changes, road and fencing density could increase the potential for species mortality, and alter and restrict large scale movement patterns and seasonal migrations (Andr n 1994; Franklin et al. 2002). Construction and use of new access roads also could affect the behavior, health, fitness and reproductive rates of special status wildlife through increased recreational activity, human presence/activity and noise in previously undisturbed habitat (Bowles 1998, Leung et al. 2000), although sensitivity to anthropogenic disturbance is likely to be species specific and vary among individuals within a species. As habitat loss and fragmentation steadily continue, additional loss and degradation of special status wildlife habitat quality and function due to range overlap with incrementally spreading energy generation and transmission development could occur and affect forage quality and carrying capacity for native special status species (Connelly et al. 2004). Livestock grazing could continue to potentially alternative plant assemblages and increase exotic grass introduction; potentially impacting fire regimes and habitat effectiveness.

4.3.8.3 Results

4.3.8.3.1 Qualitative Assessment of Cumulative Impacts on Special Status Wildlife Resources

Birds

For species for which agency or modeled data were not available, cumulative effects on some special status birds and their habitats likely to occur in the Project area could not be quantified although effects on these resources could occur as a result of impacts associated with the Project and past, other present, and RFFAs. Appendix E contains information including the current distribution, habitat requirements, and population trends for special status birds that may be affected by the Project. Similar to other resources described in Section 4.3.8.3, the current distribution and population trends for these species in the Project area are a result of the effects of past and present actions (Table 4-1) that have modified the landscape and affected the quality and quantity of resources necessary to maintain long-term sustainability of special status bird species in the Project area. The Project and other RFFAs would contribute to the ongoing and past modification of the landscape and effects on the quality and quantity of resources required by special status birds to maintain long-term species persistence in the Project area. The Project's contribution to these effects would be incremental and minor in comparison to the landscape-scale effects of past and other present actions and RFFAs (Tables 4-1 and 4-2). The habitats crossed by the alternative routes in each route grouping are similar and these habitats have been and will continue to be affected by similar past, other present, and RFFAs. Therefore, the effects on special status birds are anticipated to be similar in nature and extent among the alternative routes and the types of effects would be similar to those described for migratory birds included in Section 4.8.3.

Mammals

All alternative routes and route variations would contribute to the cumulative loss, fragmentation, and modification of special status mammal habitats resulting from the past and present actions and RFFAs in the CIAA (refer to Section 4.3.7.4). Appendix E contains information including the current distribution,

habitat requirements, and population trends for special status mammals that could be affected by the Project including species not analyzed in detail in this cumulative impacts analysis.

Reptiles

All alternative routes considered for the Project could contribute to cumulative impacts on special status reptiles (e.g., midget-faded rattle snake, Great Basin gopher snake, northern tree lizard). All Project alternative routes cumulatively could affect the availability of specialized habitats, the effectiveness of a given occupied habitat area at providing cover from predators, and open ‘inter-shrub’ space for movement and reduction in predator detection between refuge for special status reptiles (Newbold 2005, Stebbins 2003, Vitt 1994).

Appendix E contains information including the current distribution, habitat requirements, and population trends for special status reptiles that could be affected by the Project.

4.3.8.3.2 Synergistic Temporal Effects with Other Actions

Construction and site stabilization of the Project may follow, or could potentially overlap with construction and reclamation efforts for the TransWest Express Transmission Project. Synergistic temporal effects on disturbance and species recovery would be likely to occur. Prolonged interactive effects resulting from construction of these two projects would contribute to the overall cumulative effects on special status wildlife and their associated habitats. In addition, construction and site stabilization of the two projects (assuming 1,500 feet apart for the majority of the route) potentially could intensify short-term impacts on special status wildlife resources where the projects are colocated. Short-term cumulative impacts could include the incremental increase and prolonged human presence, and an increase in the length of time that special status wildlife are at risk of mortality from collision with construction equipment. Long-term cumulative impacts on special status wildlife, including loss and fragmentation of potential habitats, an increase in raptor perch sites and subsequent change in raptor species composition and a decrease in prey availability, and an increase in probability of raptor mortality due to collisions with transmission line towers or line, also could occur and be intensified where the projects are colocated. Some synergistic temporal effects resulting from construction of the projects, including repeated temporary displacement of special status wildlife from specialized and geographically limited habitats or the effects of multiple temporally overlapping actions that may displace individuals from specialized habitats from a larger geographic area, would be minimized or avoided through implementation of seasonal restrictions for both projects. For species that use specialized habitats year-round, some synergistic temporal effects resulting from construction projects may not be avoided.

4.3.8.3.3 Quantitative Assessment of Cumulative Impacts on Special Status Wildlife Resources

Quantitative analysis of cumulative effects on special status wildlife resources was completed through an inventory of available agency or modeled potential habitat (USFS 2013c) for each species and an estimation of the extent of development in these habitats associated with the Project, other present and past actions, and RFFAs. The extent of special status wildlife habitats (in acres) in the CIAA was determined using information provided by land-management agencies. The extent of development associated with the other present and past actions, and RFFAs was estimated using shapefiles of specific projects received from agencies and local governments. The extent of ground disturbance associated with the Project was estimated by alternative as described in Section 2.5.1.2.

Analysis of cumulative effects was performed for special status wildlife resources potentially affected for the Project. The results of this analysis for each special status wildlife resource analyzed qualitatively are described in this section. The estimated area of incremental Project development shown in the following tables indicates where Project development would occur outside of areas associated with past and other

present actions or RFFAs. Based on available data, quantitative analysis of cumulative impacts was conducted for the following special status wildlife resources:

- Southwestern willow flycatcher potential habitat
- Yellow-billed cuckoo potential habitat
- Mountain plover potential habitat
- Mexican spotted owl potential habitat
- Greater sage-grouse core area and priority habitat
- Greater sage-grouse general habitat
- Greater sage-grouse habitat within 4 miles of leks in core area and priority habitat
- Greater sage-grouse habitat within 4 miles of leks outside core area and priority habitat
- Pygmy rabbit potential habitat
- White-tailed prairie dog potential habitat
- Black-footed ferret management areas

Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

Southwestern Willow Flycatcher Potential Habitat

The WYCO alternative routes would have no direct or indirect impacts on potential southwestern willow flycatcher habitat. Thus, cumulative effects on this habitat are not analyzed.

Yellow-billed Cuckoo Potential Habitat

The estimated area of cumulative development in potential yellow-billed cuckoo habitat for WYCO alternative routes is summarized in Table 4-78.

TABLE 4-78 YELLOW-BILLED CUCKOO POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	43	4	4	0	8	35
WYCO-B-1	55	4	4	2	10	45
WYCO-B-2 (Agency Preferred Alternative)	43	4	4	0	8	35
WYCO-B-3	43	4	4	0	8	35
Alternative WYCO-C and Route Variations						
WYCO-C	43	4	4	0	8	35
WYCO-C-1	55	4	4	2	10	45
WYCO-C-2	43	4	4	0	8	35
WYCO-C-3	43	4	4	0	8	35
Alternative WYCO-D and Route Variation						
WYCO-D	377	42	5	14	61	316
WYCO-D-1	377	42	5	14	61	316

TABLE 4-78 YELLOW-BILLED CUCKOO POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-F and Route Variations						
WYCO-F	43	4	4	0	8	35
WYCO-F-1	55	4	4	2	10	45
WYCO-F-2	43	4	4	0	8	35
WYCO-F-3	43	4	4	0	8	35
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Past and present actions that have affected yellow-billed cuckoo potential habitat in the CIAA include oil and gas development and wind-energy development. An RFFA in the CIAA for yellow-billed cuckoo includes construction of the TransWest Express Transmission Project.

The extent of development that would be associated with implementation of Alternative WYCO-D and Route Variation WYCO-D-1 and Route Variations WYCO-B-1, WYCO-C-1, and WYCO-F-1 would be anticipated to contribute incrementally to fragmentation and modification of the yellow-billed cuckoo potential habitat in the CIAA. For WYCO alternative routes, the extent of incremental Project development in yellow-billed cuckoo potential habitat accounts for a small proportion of total estimated cumulative development in the available potential habitat in the CIAA (Table 4-78).

If construction and site stabilization actions for the Project along the alignments of Alternative WYCO-D and Route Variation WYCO-D-1 and Route Variations WYCO-B-1, WYCO-C-1, and WYCO-F-1 overlapped temporally with development of the TransWest Express Transmission Project, synergistic temporal effects, including displacement of yellow-billed cuckoos from specialized and geographically limited contiguous riparian habitats or displacement of the species from a larger geographic area could be minimized or avoided through implementation of seasonal restrictions. For species that use specialized habitats year-round, synergistic temporal effects resulting from construction projects may not be avoided.

Mountain Plover Potential Habitat

The estimated area of cumulative development in potential mountain plover habitat for WYCO alternative routes is summarized in Table 4-79.

TABLE 4-79 MOUNTAIN PLOVER POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	17,422	1,156	1,012	752	2,920	14,501
WYCO-B-1	17,301	1,152	965	740	2,857	14,444
WYCO-B-2 (Agency Preferred Alternative)	17,328	1,161	991	745	2,897	14,431
WYCO-B-3	17,427	1,168	1,007	747	2,922	14,504
Alternative WYCO-C and Route Variations						
WYCO-C	19,722	2,280	1,759	689	4,729	14,993
WYCO-C-1	19,602	2,276	1,712	678	4,666	14,936
WYCO-C-2	19,629	2,285	1,738	683	4,706	14,923
WYCO-C-3	19,727	2,292	1,754	685	4,731	14,996
Alternative WYCO-D and Route Variation						
WYCO-D	12,064	1,339	1,126	398	2,862	9,202
WYCO-D-1	12,070	1,351	1,121	394	2,866	9,203
Alternative WYCO-F and Route Variations						
WYCO-F	21,662	1,249	1,795	838	3,882	17,779
WYCO-F-1	21,541	1,245	1,748	826	3,819	17,722
WYCO-F-2	21,568	1,254	1,774	831	3,859	17,709
WYCO-F-3	21,667	1,261	1,790	833	3,884	17,782
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Past and present actions that have affected mountain plover potential habitat in the CIAA include fire management, coal and uranium mining, oil and gas development, and wind and other energy development. RFFAs in the CIAA for mountain plover include the construction of the Gateway West and TransWest Express transmission projects as well as coal mining, oil and gas development, and wind energy development. The extent of development associated with implementation of any of the WYCO alternative routes would be anticipated to contribute incrementally to fragmentation and modification of mountain plover potential habitat in the CIAA. However, mountain plovers often breed near areas disturbed by construction and other human activities (Knopf and Miller 1994), and would be likely to continue to use habitats that are affected by the transmission line and ancillary facilities, access roads, temporary work areas, as well as adjacent mountain plover habitat. The majority of total available potential habitat for this species would not be developed by the Project or other cumulative actions (Table 4-79).

If construction and site stabilization actions for the Project along the alignments of the WYCO alternative routes overlapped temporally with development of the TransWest Express Transmission Project, synergistic temporal effects, including displacement of mountain plover from specialized and contiguous brood-rearing habitats or displacement of the species from a larger geographic area could be minimized or avoided through implementation of seasonal restrictions.

Mexican Spotted Owl Potential Habitat

The WYCO alternative routes would have no direct or indirect impact on potential Mexican spotted owl habitat. Thus, cumulative effects on this habitat are not analyzed.

Greater Sage-grouse Designated Habitats

The types of potential effects on greater sage-grouse that could occur under WYCO alternative routes and the degree to which these effects would be avoided or mitigated are described in detail in Section 3.2.8.4. The estimated area of cumulative development in sage-grouse core areas or priority habitat, general habitat (including sage-grouse habitat in transmission line corridors designated in Wyoming Executive Order 2011-5), habitat within 4 miles of leks in core areas and priority habitat, and habitat within 4 miles of leks outside core areas and priority habitat for WYCO alternative routes is summarized in Tables 4-80 to 4-83.

TABLE 4-80 GREATER SAGE-GROUSE CORE AREAS OR PRIORITY HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	1,104,580	64,984	16,797	367	82,149	1,022,431
WYCO-B-1	1,107,701	65,238	16,797	367	82,402	1,025,299
WYCO-B-2 (Agency Preferred Alternative)	1,103,758	64,772	16,797	384	81,953	1,021,804
WYCO-B-3	1,104,186	64,868	16,797	367	82,032	1,022,154
Alternative WYCO-C and Route Variations						
WYCO-C	1,100,776	64,868	16,791	364	82,023	1,018,753
WYCO-C-1	1,103,898	65,122	16,791	365	82,277	1,021,621
WYCO-C-2	1,099,955	64,656	16,791	381	81,828	1,018,127
WYCO-C-3	1,100,383	64,752	16,791	364	81,907	1,018,476
Alternative WYCO-D and Route Variation						
WYCO-D	1,402,046	119,819	16,916	851	137,586	1,264,459
WYCO-D-1	1,401,652	119,702	16,916	853	137,472	1,264,180
Alternative WYCO-F and Route Variations						
WYCO-F	1,161,394	72,526	16,825	363	89,713	1,071,681
WYCO-F-1	1,164,516	72,779	16,825	363	89,967	1,074,549
WYCO-F-2	1,160,573	72,314	16,825	379	89,518	1,071,055
WYCO-F-3	1,161,000	72,410	16,825	363	89,597	1,071,404

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

TABLE 4-81 GREATER SAGE-GROUSE GENERAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	1,718,961	98,501	46,725	2,448	147,674	1,571,287
WYCO-B-1	1,718,890	98,500	46,725	2,462	147,688	1,571,202
WYCO-B-2 (Agency Preferred Alternative)	1,718,638	98,445	46,725	2,412	147,582	1,571,056
WYCO-B-3	1,718,787	98,479	46,725	2,398	147,602	1,571,185
Alternative WYCO-C and Route Variations						
WYCO-C	1,795,221	93,431	49,010	2,244	144,685	1,650,536
WYCO-C-1	1,795,150	93,430	49,010	2,260	144,699	1,650,452
WYCO-C-2	1,794,900	93,374	49,010	2,210	144,593	1,650,307
WYCO-C-3	1,795,047	93,408	49,010	2,195	144,613	1,650,434
Alternative WYCO-D and Route Variation						
WYCO-D	1,729,865	152,224	38,667	1,755	192,646	1,537,219
WYCO-D-1	1,729,690	152,202	38,667	1,711	192,579	1,537,110
Alternative WYCO-F and Route Variations						
WYCO-F	1,828,143	119,332	48,356	2,484	170,173	1,657,970
WYCO-F-1	1,828,069	119,331	48,356	2,499	170,187	1,657,882
WYCO-F-2	1,827,820	119,276	48,356	2,449	170,082	1,657,738
WYCO-F-3	1,827,966	119,310	48,356	2,435	170,101	1,657,865
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

TABLE 4-82 GREATER SAGE-GROUSE HABITAT WITHIN 4 MILES OF LEKS IN CORE AREAS OR PRIORITY HABITATS CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	1,299,410	75,337	21,317	756	97,410	1,202,000
WYCO-B-1	1,302,462	75,590	21,317	756	97,662	1,204,799
WYCO-B-2 (Agency Preferred Alternative)	1,298,266	75,069	21,317	760	97,146	1,201,120
WYCO-B-3	1,298,841	75,199	21,317	749	97,264	1,201,577

TABLE 4-82 GREATER SAGE-GROUSE HABITAT WITHIN 4 MILES OF LEKS IN CORE AREAS OR PRIORITY HABITATS CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-C and Route Variations						
WYCO-C	1,291,792	74,010	21,235	750	95,996	1,195,796
WYCO-C-1	1,294,844	74,263	21,235	751	96,248	1,198,596
WYCO-C-2	1,290,649	73,742	21,235	755	95,732	1,194,917
WYCO-C-3	1,291,223	73,872	21,235	743	95,850	1,195,374
Alternative WYCO-D and Route Variation						
WYCO-D	1,367,040	143,356	21,350	1,146	165,852	1,471,187
WYCO-D-1	1,636,471	143,217	21,350	1,142	165,709	1,470,762
Alternative WYCO-F and Route Variations						
WYCO-F	1,385,423	86,078	21,414	747	108,240	1,277,183
WYCO-F-1	1,388,475	86,331	21,414	748	108,492	1,279,983
WYCO-F-2	1,384,280	85,810	21,414	752	107,976	1,276,304
WYCO-F-3	1,384,854	85,940	21,414	740	108,094	1,276,760
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

TABLE 4-83 GREATER SAGE-GROUSE HABITAT WITHIN 4 MILES OF LEKS OUTSIDE CORE AREAS OR PRIORITY HABITATS CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	991,619	56,312	29,102	801	86,215	905,404
WYCO-B-1	991,620	56,312	29,102	797	86,212	905,408
WYCO-B-2 (Agency Preferred Alternative)	991,619	56,312	29,102	798	86,212	905,407
WYCO-B-3	991,620	56,312	29,102	800	86,214	905,406
Alternative WYCO-C and Route Variations						
WYCO-C	998,698	50,122	29,075	763	79,960	908,739
WYCO-C-1	998,698	50,122	29,075	760	79,956	908,742
WYCO-C-2	998,698	50,122	29,075	760	79,957	908,741
WYCO-C-3	998,698	50,122	29,075	762	79,959	908,739
Alternative WYCO-D and Route Variation						
WYCO-D	1,126,544	102,941	25,828	919	129,688	996,856
WYCO-D-1	1,126,544	102,941	25,828	921	129,690	996,854

TABLE 4-83 GREATER SAGE-GROUSE HABITAT WITHIN 4 MILES OF LEKS OUTSIDE CORE AREAS OR PRIORITY HABITATS CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-F and Route Variations						
WYCO-F	1,094,756	72,401	30,625	978	104,004	990,752
WYCO-F-1	1,094,756	72,401	30,625	974	104,000	990,755
WYCO-F-2	1,094,756	72,401	30,625	975	104,001	990,755
WYCO-F-3	1,094,756	72,401	30,625	977	104,004	990,752

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions that have affected sage-grouse designated habitats in the CIAA include fire management, coal mining, oil and gas development, and wind and other energy development. RFFAs in the CIAA for designated sage-grouse habitats include the construction of the Gateway West and TransWest Express transmission projects as well as coal mining, oil and gas development, and wind energy development. The extent of development associated with implementation of any of the WYCO alternative routes would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse designated habitats in the CIAA (Tables 4-80 to 4-83).

Some Project impacts on sage-grouse associated with WYCO alternative routes in Wyoming would occur in corridors designated by Wyoming Executive Order 2011-005 or in areas where an alternative route considered for the Project is parallel to an existing EHV transmission line or other linear developments that have degraded the existing quality of sage-grouse habitats (e.g., I-80). In Wyoming, the majority of the core areas and priority habitat, as well as habitats within 4 miles of leks in core areas and priority habitats are avoided by the WYCO alternative routes where there are no past or other present actions or RFFAs so as to not contribute to the cumulative fragmentation and modification of these sage-grouse habitats with high conservation value. The majority of total available potential habitat for this species would not be developed by the Project or other cumulative actions (Tables 4-80 through 4-83).

However, some Project impacts on general sage-grouse habitats and habitats within 4 miles of leks outside of core areas and priority habitats in Wyoming would occur in areas anticipated to be unaffected by past and other present actions and RFFAs. Thus, the Project would be anticipated to incrementally contribute to cumulative developments in these sage-grouse habitats outside of core and priority areas. Much of the impacts on sage-grouse associated with WYCO alternative routes in Colorado would be anticipated to occur outside of existing utility corridors and in areas that have not been substantially altered by previous anthropogenic development activities. In Colorado, development of any of the WYCO alternative routes would further contribute to the fragmentation modification of sage-grouse core areas and priority habitats, habitats within 4 miles of leks in core areas and priority habitats, general habitats, and habitats within 4 miles of leks outside of core areas and priority habitats in the CIAA.

Past and present actions, including oil and gas development, have occurred throughout much of the south-central Wyoming portion of the Project area. The WYCO alternative routes would be located adjacent to existing disturbances including oil and gas development, interstate highways, transmission lines, and unpaved roads in some areas of Wyoming. However, in some areas of Wyoming, alternative routes could cross habitats that have been largely unaffected by previous anthropogenic development, where the route would be located in the transmission corridor designated by Wyoming Executive Order 2011-5, and in the vicinity of Flat Top Mountain between I-80 and the Wyoming/Colorado state line. In Colorado, the

WYCO alternative routes also would be located in areas largely unaffected by previous anthropogenic development between the Wyoming/Colorado state line and U.S. Highway 40. Alternative routes would be parallel to existing infrastructure including a high-voltage transmission line from the junction with U.S. Highway 40 to the end of the alternative routes in Colorado.

If greater sage-grouse are observed during preconstruction surveys for the Project, selective mitigation measures, including seasonal and spatial avoidance would be implemented to reduce potential effects. However, cumulative impacts on vegetation structure providing contiguous sagebrush communities in greater sage-grouse habitat could occur.

If construction and site stabilization actions for the Project along the alignments of the WYCO alternative routes overlapped temporally with development of the TransWest Express Transmission Project, synergistic temporal effects, including displacement of sage-grouse from geographically limited contiguous sagebrush habitats or displacement of the species from a larger geographic area could be minimized or avoided through implementation of seasonal restrictions.

Pygmy Rabbit Potential Habitat

The estimated area of cumulative development in potential pygmy rabbit habitat for WYCO alternative routes is summarized in Table 4-84.

TABLE 4-84 PYGMY RABBIT POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	216,563	11,844	11,104	1,307	24,255	192,308
WYCO-B-1	217,263	11,701	11,104	1,321	24,126	193,136
WYCO-B-2 (Agency Preferred Alternative)	216,563	11,844	11,104	1,302	24,250	192,313
WYCO-B-3	216,563	11,844	11,104	1,306	24,254	192,309
Alternative WYCO-C and Route Variations						
WYCO-C	213,107	12,146	11,042	1,229	24,416	188,691
WYCO-C-1	213,806	12,002	11,042	1,244	24,288	189,518
WYCO-C-2	213,107	12,146	11,042	1,225	24,412	188,695
WYCO-C-3	213,107	12,146	11,042	1,228	24,415	188,692
Alternative WYCO-D and Route Variation						
WYCO-D	242,937	16,806	13,445	1,276	31,527	211,410
WYCO-D-1	242,937	16,806	13,445	1,279	31,529	211,408

TABLE 4-84 PYGMY RABBIT POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-F and Route Variations						
WYCO-F	253,773	13,328	12,853	1,480	27,661	226,112
WYCO-F-1	254,473	13,185	12,853	1,494	27,532	226,941
WYCO-F-2	253,773	13,328	12,853	1,475	27,656	226,117
WYCO-F-3	253,773	13,328	12,853	1,479	27,660	226,113

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions that have affected pygmy rabbit potential habitats in the CIAA include fire management, coal and uranium mining, oil and gas development, and wind and other energy development. RFFAs in the CIAA for pygmy rabbit include the construction of the Gateway West and TransWest Express transmission projects as well as coal mining, oil and gas development, and wind energy development. The extent of development associated with implementation of the WYCO alternative routes would be anticipated to contribute incrementally to loss, fragmentation and modification of pygmy rabbit potential habitat in the CIAA. Pygmy rabbit habitat adjacent to existing human development and linear infrastructure is likely to have previously incurred some of the effects described in Section 3.2.8.4. The magnitude of effects of WYCO alternative routes on pygmy rabbit habitat may be reduced, relative to areas where development structures are absent, in areas where the alternative would be adjacent to the existing human development and infrastructure. The majority of total available potential habitat for this species would not be developed by the Project or other cumulative actions (Table 4-84).

White-tailed Prairie Dog Potential Habitat

The estimated area of cumulative development in potential white-tailed prairie dog habitat for WYCO alternative routes is summarized in Table 4-85.

TABLE 4-85 WHITE-TAILED PRAIRIE DOG POTENTIAL COLONIES CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Colonies	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Colonies
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	2,639	121	131	245	498	2,141
WYCO-B-1	2,434	111	70	234	415	2,018
WYCO-B-2 (Agency Preferred Alternative)	2,433	115	88	232	434	1,999
WYCO-B-3	2,575	115	120	239	474	2,101

TABLE 4-85 WHITE-TAILED PRAIRIE DOG POTENTIAL COLONIES CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Colonies	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Colonies
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-C and Route Variations						
WYCO-C	2,922	455	254	195	903	2,019
WYCO-C-1	2,717	445	193	184	821	1,896
WYCO-C-2	2,717	448	210	182	840	1,877
WYCO-C-3	2,858	449	243	188	880	1,979
Alternative WYCO-D and Route Variation						
WYCO-D	2,296	316	209	164	689	1,608
WYCO-D-1	2,232	310	198	158	666	1,566
Alternative WYCO-F and Route Variations						
WYCO-F	2,722	137	217	231	585	2,136
WYCO-F-1	2,517	127	156	221	504	2,013
WYCO-F-2	2,516	131	174	218	523	1,994
WYCO-F-3	2,658	131	206	225	562	2,096
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Past and present actions that have affected white-tailed prairie dog potential colonies in the CIAA include fire management, oil and gas development, and wind-energy development. RFFAs in the CIAA for white-tailed prairie dog include the construction of the Gateway West and TransWest Express transmission projects as well as oil and gas development, and wind-energy development. The extent of development associated with implementation of any of the WYCO alternative routes would be anticipated to incrementally contribute to fragmentation and modification of white-tailed prairie dog potential colonies in the CIAA. Potential white-tailed prairie dog colonies adjacent to existing human development and linear infrastructure are likely to have previously incurred some of the effects described in Section 3.2.8.4. The magnitude of development associated with implantation of WYCO alternative routes on potential white-tailed prairie dog colonies could be reduced, relative to areas where development structures are absent, in areas where the alternative would be adjacent to the existing human development and infrastructure.

The majority of total available potential colonies for this species would not be developed by the Project or other cumulative actions (Table 4-85).

Black-footed Ferret Potential Habitat

The estimated area of cumulative development in black-footed ferret management areas for WYCO alternative routes is summarized in Table 4-86.

TABLE 4-86 BLACK-FOOTED FERRET MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative WYCO-B and Route Variations						
WYCO-B (Applicant Preferred Alternative)	34,036	4,409	861	273	5,543	28,493
WYCO-B-1	34,036	4,409	861	272	5,542	28,494
WYCO-B-2 (Agency Preferred Alternative)	34,036	4,409	861	272	5,542	28,494
WYCO-B-3	34,036	4,409	861	273	5,543	28,493
Alternative WYCO-C and Route Variations						
WYCO-C	34,036	4,409	861	271	5,541	28,495
WYCO-C-1	34,036	4,409	861	270	5,540	28,496
WYCO-C-2	34,036	4,409	861	270	5,540	28,496
WYCO-C-3	34,036	4,409	861	271	5,541	28,495
Alternative WYCO-D and Route Variation						
WYCO-D	36,322	6,615	3,454	237	10,306	26,017
WYCO-D-1	36,322	6,615	3,454	237	10,306	26,016
Alternative WYCO-F and Route Variations						
WYCO-F	34,036	4,409	861	270	5,540	28,496
WYCO-F-1	34,036	4,409	861	269	5,539	28,497
WYCO-F-2	34,036	4,409	861	269	5,539	28,497
WYCO-F-3	34,036	4,409	861	270	5,540	28,496
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Past and present actions that have affected black-footed ferret management areas in the CIAA include fire management, coal mining, oil and gas development, and wind-energy development. RFFAs in the CIAA for black-footed ferret include the construction of the TransWest Express Transmission Project and coal mining. The extent of development associated with implementation of the WYCO alternative routes would be anticipated to contribute incrementally to fragmentation and modification of black-footed ferret potential habitat in the CIAA. The potential Project effects on black-footed ferret that could occur under the WYCO alternative routes and the degree to which these effects would be mitigated or avoided are described in detail in Section 3.2.8.4.

WYCO alternative routes would intersect the Shirley Basin black-footed ferret management area (MV-9a). Habitats that would be crossed in the management area are characteristically rugged terrain and are not known to support prairie dogs, which are the primary prey of black-footed ferrets. Due to the presumed lack of prairie dog towns, the area affected by WYCO alternative routes would be unlikely to support black-footed ferrets at this time or in the future.

WYCO alternative routes also would intersect the Wolf Creek black-footed ferret management area. Black footed-ferret occurrences have not been recorded since a 2009 to 2010 plague affected the Wolf Creek ferret population, ferrets have not been located during the last 2 years, and reintroductions are not

currently taking place (Ausmus 2012). However, if black-footed ferret reintroductions are resumed in the future, construction and operation of the WYCO alternative routes could result in effects described in Section 3.2.8.4.

The majority of total available potential habitat for this species would not be affected by the Project or other cumulative actions (Table 4-86).

Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

Southwestern Willow Flycatcher Potential Habitat

The estimated area of cumulative development in potential southwestern willow flycatcher habitat for COUT BAX alternative routes is summarized in Table 4-87.

Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	884	105	5	2	111	773
COUT BAX-C	832	102	19	1	122	710
COUT BAX-E	1,742	93	608	6	708	1,034

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions that have affected southwestern willow flycatcher potential habitats in the CIAA include coal and mineral mining, oil and gas development, and pipeline corridors. RFFAs in the CIAA for southwestern willow flycatcher include the construction of the TransWest Express Transmission Project and industrial development. The extent of development that would be associated with implementation of the COUT BAX alternative routes would be anticipated to occur primarily in areas affected past, present or RFFAs in the southwestern willow flycatcher CIAA along COUT BAX alternative routes. The vast majority of the Project development of these alternative routes would not be anticipated to contribute to fragmentation and modification of southwestern willow flycatcher potential habitat in the CIAA. For all alternative routes, the extent of incremental Project development in southwestern willow flycatcher potential habitat accounts for a small proportion of total estimated cumulative development in the available potential habitat in the CIAA (Table 4-87). If construction and site stabilization actions for the Project along the alignments of the COUT BAX alternative routes overlapped temporally with development of the TransWest Express Transmission Project, synergistic temporal effects, including displacement of southwestern willow flycatcher from specialized and geographically limited contiguous riparian habitats or displacement of the species from a larger geographic area could be minimized or avoided through implementation of seasonal restrictions. For species that use specialized habitats year-round, synergistic temporal effects resulting from construction projects may not be avoided.

Yellow-billed Cuckoo

The estimated area of cumulative development in potential yellow-billed cuckoo habitat for COUT BAX alternative routes is summarized in Table 4-88.

**TABLE 4-88
YELLOW-BILLED CUCKOO POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR
THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX)
ALTERNATIVE ROUTES IN ACRES**

Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	462	133	7	4	144	317
COUT BAX-C	484	154	8	3	165	319
COUT BAX-E	686	147	115	10	272	415

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions that have affected yellow-billed cuckoo potential habitats in the CIAA include fire management, coal and mineral mining, oil and gas development, and pipeline corridors. RFFAs in the CIAA for yellow-billed cuckoo include the construction of the TransWest Express Transmission Project and industrial development. The extent of development that would be associated with implementation of the COUT BAX alternative routes would be anticipated to occur primarily in areas affected by past, present or RFFAs in the yellow-billed cuckoo CIAA along COUT BAX alternative routes. The vast majority of the Project development of these alternative routes would not contribute to fragmentation and modification of yellow-billed cuckoo potential habitat in the CIAA. For COUT BAX alternative routes, the extent of incremental Project development in yellow-billed cuckoo potential habitat accounts for a small proportion of total estimated cumulative development in the available potential habitat in the CIAA (Table 4-88).

If construction and site stabilization actions for the Project along the alignments of the COUT BAX alternative routes overlapped temporally with development of the TransWest Express Transmission Project, synergistic temporal effects, including displacement of yellow-billed cuckoo from specialized and geographically limited contiguous riparian habitats or displacement of the species from a larger geographic area could be minimized or avoided through implementation of seasonal restrictions. For species that use specialized habitats year-round, synergistic temporal effects resulting from construction projects may not be avoided.

Mountain Plover

The estimated area of cumulative development in potential mountain plover habitat for COUT BAX alternative routes is summarized in Table 4-89.

**TABLE 4-89
MOUNTAIN PLOVER POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE
COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX)
ALTERNATIVE ROUTES IN ACRES**

Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	366	36	21	14	72	295
COUT BAX-C	366	36	21	14	71	295
COUT BAX-E	366	36	21	13	71	295

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions that have affected mountain plover potential habitats in the CIAA include fire management, coal and mineral mining, oil and gas development, and pipeline corridors. RFFAs in the CIAA for mountain plover include the construction of the TransWest Express Transmission Project and industrial development. The extent of the development associated with implementation of the COUT BAX alternative routes would be anticipated to contribute incrementally to fragmentation modification of mountain plover habitat in the CIAA. However, mountain plovers often breed near areas disturbed by construction and other human activities (Knopf and Miller 1994), and would be likely to continue to use habitats that are affected by the transmission line and ancillary facilities, access roads, temporary work areas, as well as adjacent mountain plover habitat. The majority of total available potential habitat for this species would not be developed by the Project or other cumulative actions (Table 4-89).

If construction and site stabilization actions for the Project along the alignments of the COUT BAX alternative routes overlapped temporally with development of the TransWest Express Transmission Project, synergistic temporal effects, including displacement of mountain plover from specialized and contiguous brood-rearing habitats or displacement of the species from a larger geographic area could be minimized or avoided through implementation of seasonal restrictions.

Mexican Spotted Owl

The estimated area of cumulative development in potential Mexican spotted owl habitat for COUT BAX alternative routes is summarized in Table 4-90.

Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	26,171	738	336	233	1,307	24,864
COUT BAX-C	28,483	742	401	222	1,365	27,118
COUT BAX-E	24,815	731	289	215	1,235	23,580

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions that have affected Mexican spotted owl potential habitats in the CIAA include fire management, oil and gas development, and pipeline corridors. The RFFA in the CIAA for Mexican spotted owl includes the construction of the TransWest Express Transmission Project. The extent of development associated with implementation of any of the COUT BAX alternative routes would be anticipated to contribute incrementally to fragmentation and modification of Mexican spotted owl potential habitat in the CIAA. If Mexican spotted owls are detected during preconstruction surveys, selective mitigation measures, including seasonal and spatial avoidance would be implemented to reduce potential effects. However, some vegetation structure in potential Mexican spotted owl nesting habitat could be lost, as a result of clearing of trees to maintain a safe conductor height.

If construction and site stabilization actions for the Project along the alignments of the COUT BAX alternative routes overlapped temporally with the development of the TransWest Express Transmission Project, synergistic temporal effects, including displacement of Mexican spotted owl from specialized and geographically limited nesting habitats or displacement of the species from a larger geographic area could be minimized or avoided through implementation of seasonal restrictions.

Greater Sage-grouse

The types of potential effects on greater sage-grouse that could occur under COUT BAX alternative routes and the degree to which these effects would be mitigated or avoided are described in detail in Section 3.2.8.4. The estimated area of cumulative development in sage-grouse core areas or priority habitat, general habitat (including sage-grouse habitat in transmission line corridors designated in Wyoming Executive Order 2011-5), habitat within 4 miles of leks in core areas or priority habitat, and habitat within 4 miles of leks outside core areas and priority habitat for COUT BAX alternative routes is summarized in Tables 4-91 through 4-93.

TABLE 4-91 GREATER SAGE-GROUSE CORE AREAS OR PRIORITY HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	201,283	50,170	9,951	45	60,166	141,117
COUT BAX-C	201,283	50,170	9,951	44	60,165	141,118
COUT BAX-E	263,633	45,979	17,626	36	63,641	199,992

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

TABLE 4-92 GREATER SAGE-GROUSE GENERAL HABITAT AND TRANSMISSION LINE CORRIDORS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	137,697	17,877	871	192	18,939	118,757
COUT BAX-C	137,697	17,877	871	188	18,936	118,761
COUT BAX-E	137,697	17,877	871	183	18,930	118,766

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

TABLE 4-93 GREATER SAGE-GROUSE HABITAT WITHIN 4 MILES OF LEKS IN CORE AREAS AND PRIORITY HABITATS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	56,598	1,864	8,220	0	10,085	46,513
COUT BAX-C	56,598	1,864	8,220	0	10,085	46,513
COUT BAX-E	67,177	1,552	8,226	0	9,778	57,398

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions that have affected sage-grouse designated habitats in the CIAA include fire management, coal and mineral mining, oil and gas development, pipeline corridors, and communication development. RFFAs in the CIAA for designated sage-grouse habitats include the construction of the TransWest Express Transmission Project as well as coal mining, oil and gas development, wind-energy, and reservoir development. The extent of development associated with implementation of any of the COUT BAX alternative routes would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse designated habitats in the CIAA.

Some Project impacts on sage-grouse associated with COUT BAX alternative routes in Colorado would be in mapped general habitat and would not occur within 4 miles of known leks. Additionally, much of the development of the COUT BAX alternative routes in Colorado would be parallel to existing disturbances, including high-traffic unpaved roads and existing oil and gas development in areas where general sage-grouse habitat would be intersected. Much of the impacts on sage-grouse associated with COUT BAX alternative routes in Utah would be in mapped habitat and would not occur within 4 miles of known leks. Additionally, much of the development of the COUT BAX alternative routes in Utah would be parallel to an existing EHV transmission line. However, sage-grouse habitats in the CIAA of the different COUT BAX alternative routes have different attributes including population size, levels of lek attendance, stability, and connectivity to surrounding suitable habitats. Detailed descriptions of greater sage-grouse populations crossed by COUT BAX alternative routes in Utah are located in Section 3.2.8. The magnitude of cumulative development in sage-grouse core areas or priority habitat for all alternative routes by sage-grouse population is summarized in Table 4-93.

COUT BAX alternative routes would not intersect sage-grouse habitats within 4 miles of known leks, which are presumably the most important areas for maintaining statewide sage-grouse lek populations in Colorado and Utah. If greater sage-grouse are observed during preconstruction surveys for the Project, selective mitigation measures, including seasonal and spatial avoidance would be implemented to reduce potential effects. However, cumulative impacts on some vegetation structure providing contiguous sagebrush communities in greater sage-grouse habitat could occur.

If construction and site stabilization actions for the Project along the alignments of the COUT BAX alternative routes overlapped temporally with development of the TransWest Express Transmission Project, synergistic temporal effects, including displacement of sage-grouse from geographically limited contiguous sagebrush habitats or displacement of the species from a larger geographic area could be minimized or avoided through implementation of seasonal restrictions.

Greater Sage-grouse Utah Populations Crossed by COUT BAX Alternative Routes

Detailed descriptions of greater sage-grouse populations crossed by COUT BAX alternative routes in Utah are located in Section 3.2.8. The estimated area of cumulative disturbance to sage-grouse core areas or priority habitats for all alternative routes by sage-grouse population is summarized in Table 4-94.

TABLE 4-94 SAGE-GROUSE UTAH POPULATIONS (CORE AREAS OR PRIORITY HABITAT) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Horn Mountain						
COUT BAX-B	49,000	13,761	80	39	13,881	35,119
COUT BAX-C	49,000	13,761	80	39	13,880	35,120
COUT BAX-E	3,594	3,003	0	0	3,003	590
Emma Park						
COUT BAX-B	0	0	0	0	0	0
COUT BAX-C	0	0	0	0	0	0
COUT BAX-E	54,374	3,082	7,116	0	10,197	44,177
Deadman's Bench						
COUT BAX-B	11,627	1,017	266	0	1,283	10,343
COUT BAX-C	11,627	1,017	266	0	1,283	10,343
COUT BAX-E	11,627	1,017	266	0	1,283	10,343
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Of the BLM-designated sage-grouse populations in Utah (Section 3.2.8, Map 3-4) in the CIAA for the species, only habitats supporting the Horn Mountain Population are affected directly by the COUT BAX alternative routes. Past and present actions that have affected sage-grouse core areas and priority habitats supporting the BLM-designated Horn Mountain population in the CIAA include fire management, coal mining, and oil and gas development. The RFFA in the CIAA for sage-grouse core areas and priority habitats includes the construction of the TransWest Express Transmission Project. The extent of development associated with implementation of Alternatives COUT BAX-B and COUT BAX-C would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse core areas and priority habitats in the CIAA (Table 4-94). Some of the Project impacts on sage-grouse habitat supporting the Horn Mountain population associated with Alternatives COUT BAX-B and COUT BAX-C in Utah would be in mapped priority and core area habitat (as all occupied sage-grouse habitat is considered priority habitat) and would not occur within 4 miles of known leks. Additionally, much of the development of Alternatives COUT BAX-B and COUT BAX-C, where they cross the Horn Mountain area, would be parallel to an existing EHV transmission line. The majority of the total available sage-grouse core area and priority habitat supporting the Horn Mountain population would not be developed by the Project or other cumulative actions (Table 4-94).

The COUT BAX alternative routes would not intersect sage-grouse habitats within 4 miles of known leks supporting the Horn Mountain population. Presumably habitats within 4 miles of leks are the most important areas for maintaining statewide sage-grouse lek populations in Utah. Results of research projects in Colorado, Idaho, and Wyoming have indicated that approximately 80 percent of sage-grouse nests occur within 4 miles of the active lek where female grouse were captured and assumed to have bred (Colorado Greater Sage-grouse Steering Committee 2008).

Alternative COUT BAX-E crosses four habitat areas historically considered to be part of the Emma Park population, however, as sage-grouse presence has not been recently confirmed (BLM 2013b), these habitat areas were not considered for the analysis of potential impacts on this population.

White-tailed Prairie Dog Colonies

The estimated area of cumulative development in potential white-tailed prairie dog colonies for COUT BAX alternative routes is summarized in Table 4-95.

TABLE 4-95 WHITE-TAILED PRAIRIE DOG POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	1,671	39	231	85	355	1,315
COUT BAX-C	1,863	31	283	72	386	1,477
COUT BAX-E	1,384	110	209	104	424	961

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions that have affected white-tailed prairie dog potential colonies in the CIAA include fire management, coal and mineral mining, oil and gas development, and pipeline corridors. The primary RFFA in the CIAA for white-tailed prairie dog is the construction of the TransWest Express Transmission Project. The extent of development associated with implementation of any of the COUT BAX alternative routes would be anticipated to incrementally contribute to fragmentation and modification of white-tailed prairie dog potential colonies in the CIAA. Potential white-tailed prairie dog colonies adjacent to existing human development and linear infrastructure are likely to have previously incurred some of the effects described in Section 3.2.8.4. The magnitude of effects of COUT BAX alternative routes on potential white-tailed prairie dog colonies may be reduced, relative to areas where development structures are absent, in areas where the alternative would be adjacent to the existing human development and infrastructure.

The majority of total available potential colonies for this species would not be developed by the Project or other cumulative actions (Table 4-95).

Black-footed Ferret

The estimated area of cumulative development in black-footed ferret management areas for COUT BAX alternative routes is summarized in Table 4-96.

TABLE 4-96 BLACK-FOOTED FERRET MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
COUT BAX-B	3,153	138	123	25	285	2,868
COUT BAX-C	3,153	138	123	24	285	2,868
COUT BAX-E	3,153	138	123	24	284	2,869

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions CIAA that have affected black-footed ferret management areas in the CIAA includes fire management. The RFFA in the CIAA for black-footed ferret includes the construction of the TransWest Express Transmission Project. The extent of development associated with implementation of the COUT BAX alternative routes would be anticipated to contribute incrementally to fragmentation and modification of black-footed ferret potential habitat in the CIAA. The potential Project effects on black-footed ferret that could occur under the COUT BAX alternative routes and the degree to which these effects would be mitigated or avoided are described in detail in Section 3.2.8.4. COUT BAX alternative routes would intersect the Wolf Creek black-footed ferret management area. Black footed-ferret occurrences have not been recorded since a 2009/2010 plague affected the Wolf Creek ferret population, ferrets have not been located in the last 2 years, and reintroductions are not currently taking place (Ausmus 2012). However, if black-footed ferret reintroductions are resumed in the future, the COUT BAX alternative routes could result in effects described in Section 3.2.8.4.

The majority of total available potential habitat for this species would not be developed by the Project or other cumulative actions (Table 4-96).

Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

Southwestern Willow Flycatcher

The estimated area of cumulative development in potential southwestern willow flycatcher habitat for COUT alternative routes is summarized in Table 4-97.

TABLE 4-97 SOUTHWESTERN WILLOW FLYCATCHER POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternatives COUT-H and I						
COUT-H (Applicant Preferred Alternative)	10	10	0	0	10	0
COUT-I	197	42	7	1	51	147

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions in the CIAA that have affected southwestern willow flycatcher potential habitats in the CIAA include oil and gas development. The RFFA in the CIAA for southwestern willow flycatcher includes the construction of the TransWest Express Transmission Project. The extent of development that would be associated with implementation of Alternative COUT-I would not be anticipated to contribute to fragmentation and modification of southwestern willow flycatcher potential habitat in the CIAA. For COUT alternative routes, the extent of incremental Project development in southwestern willow flycatcher potential habitat accounts for a small proportion of total estimated cumulative development in the available potential habitat in the CIAA (Table 4-97). If construction and site stabilization actions for the Project along the alignment of Alternative COUT-I overlapped temporally with development of the TransWest Express Transmission Project, synergistic temporal effects, including displacement of southwestern willow flycatcher from specialized and geographically limited contiguous riparian habitats or displacement of the species from a larger geographic area could be minimized or avoided through

implementation of seasonal restrictions. For species that use specialized habitats year-round, synergistic temporal effects resulting from construction projects may not be avoided.

Yellow-billed Cuckoo

The magnitude of cumulative development in potential yellow-billed cuckoo habitat for COUT alternative routes is summarized in Table 4-98.

TABLE 4-98 YELLOW-BILLED CUCKOO POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	1,225	605	29	20	654	570
COUT-A-1	1,225	605	29	20	654	570
Alternative COUT-B and Route Variations						
COUT-B	1,263	302	69	10	381	883
COUT-B-1	1,212	298	64	11	372	840
COUT-B-2	1,212	298	64	11	372	840
COUT-B-3	1,212	298	64	11	372	840
COUT-B-4	1,212	298	64	11	372	840
COUT-B-5	1,212	298	64	11	373	840
Alternative COUT-C and Route Variations						
COUT-C	525	173	21	5	199	326
COUT-C-1	474	169	16	6	191	283
COUT-C-2	474	169	16	6	191	283
COUT-C-3 (Agency Preferred Alternative)	474	169	16	6	191	283
COUT-C-4	474	169	16	6	191	283
COUT-C-5	474	169	16	6	191	283
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	344	135	14	4	152	192
COUT-I	337	133	12	5	149	187

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions in the CIAA that have affected yellow-billed cuckoo potential habitats in the CIAA include oil and gas development. The RFFA in the CIAA for yellow-billed cuckoo includes the construction of the TransWest Express Transmission Project and the Victory Pipeline Project. The extent of development that would be associated with implementation of the COUT routes would be anticipated to contribute incrementally to fragmentation and modification of yellow-billed cuckoo potential habitat in the CIAA. For COUT alternative routes, the extent of incremental Project development in yellow-billed cuckoo potential habitat accounts for a small proportion of total estimated cumulative development in the available potential habitat in the CIAA (Table 4-98). If construction and site stabilization actions for the

Project along the alignments of the COUT alternative routes overlapped temporally with development of the TransWest Express Transmission Project, synergistic temporal effects, including displacement of yellow-billed cuckoo from specialized and geographically limited contiguous riparian habitats or displacement of the species from a larger geographic area could be minimized or avoided through implementation of seasonal restrictions. For species that use specialized habitats year-round, synergistic temporal effects resulting from construction projects may not be avoided.

Mountain Plover

The estimated area of cumulative development in potential mountain plover habitat for COUT alternative routes is summarized in Table 4-99.

TABLE 4-99 MOUNTAIN PLOVER POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Routes	Total Available Potential Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Potential Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	6,093	528	309	195	1,032	5,062
COUT-A-1	6,093	528	309	195	1,032	5,062
Alternative COUT-B and Route Variations						
COUT-B	7,213	658	438	179	1,275	5,939
COUT-B-1	7,213	658	438	180	1,276	5,937
COUT-B-2	7,213	658	438	180	1,276	5,938
COUT-B-3	7,213	658	438	180	1,275	5,938
COUT-B-4	7,213	658	438	180	1,275	5,938
COUT-B-5	7,213	658	438	184	1,280	5,933
Alternative COUT-C and Route Variations						
COUT-C	10,409	2,947	398	304	3,649	6,760
COUT-C-1	10,409	2,947	398	307	3,652	6,757
COUT-C-2	10,409	2,947	398	306	3,651	6,758
COUT-C-3 (Agency Preferred Alternative)	10,409	2,947	398	309	3,654	6,755
COUT-C-4	10,409	2,947	398	309	3,654	6,755
COUT-C-5	10,409	2,947	398	299	3,644	6,765
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	10,409	2,947	398	293	3,637	6,772
COUT-I	10,409	2,947	398	288	3,633	6,776

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions in the CIAA that have affected mountain plover potential habitats in the CIAA include fire management, coal and other mineral mining, oil and gas development, pipeline corridors, and residential and industrial development. RFFAs in the CIAA for mountain plover include the construction of the TransWest Express Transmission Project, the Victory Pipeline Project, and oil and gas

development. The extent of development associated with implementation of other COUT alternative routes would be anticipated to contribute incrementally to fragmentation and modification of mountain plover potential habitat in the CIAA. However, mountain plovers often breed near areas disturbed by construction and other human activities (Knopf and Miller 1994), and would be likely to continue to use habitats that are affected by the transmission line and ancillary facilities, access roads, temporary work areas, as well as adjacent mountain plover habitat. The majority of the total available potential habitat for this species would not be developed by the Project or other cumulative actions (Table 4-99).

If construction and site stabilization actions for the Project along the alignments of the COUT alternative routes overlapped temporally with development of the TransWest Express Transmission Project, synergistic temporal effects, of the projects including displacement of mountain plover from specialized and contiguous brood-rearing habitats or displacement of the species from a larger geographic area could be minimized or avoided through implementation of seasonal restrictions.

Mexican Spotted Owl

The estimated area of cumulative development in potential Mexican spotted owl habitat for COUT alternative routes is summarized in Table 4-100.

TABLE 4-100 MEXICAN SPOTTED OWL POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-B and Route Variations						
COUT-B	12,346	3,613	354	0	3,967	8,379
COUT-B-1	9,637	3,584	264	8	3,856	5,781
COUT-B-2	10,843	3,602	329	0	3,930	6,913
COUT-B-3	12,226	3,613	354	19	3,986	8,240
COUT-B-4	12,226	3,613	354	19	3,986	8,240
COUT-B-5	10,843	3,602	329	0	3,930	6,913
Alternative COUT-C and Route Variations						
COUT-C	12,497	217	204	81	502	11,995
COUT-C-1	14,107	572	330	90	992	13,114
COUT-C-2	15,232	588	395	81	1,064	14,168
COUT-C-3 (Agency Preferred Alternative)	15,232	588	395	82	1,065	14,167
COUT-C-4	15,986	247	285	157	689	15,298
COUT-C-5	15,986	247	285	152	684	15,303
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	12,474	216	203	77	497	11,977
COUT-I	17,468	1,828	201	127	2,155	15,313
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Past and present actions in the CIAA that have affected Mexican spotted owl potential habitats in the CIAA include fire management, oil and gas development, and pipeline corridors. The RFFA in the CIAA for Mexican spotted owl includes the construction of the TransWest Express Transmission Project. The extent of development associated with implementation of Alternatives COUT-C and its route variations, COUT-H, and COUT-I would be anticipated to contribute incrementally to fragmentation and modification of Mexican spotted owl potential habitat in the CIAA.

The extent of development associated with implementation of Alternatives COUT-A and COUT-B and the associated route variations would not be anticipated to contribute as extensively to fragmentation and modification of Mexican spotted owl potential habitat in the CIAA as the other COUT alternative routes.

If Mexican spotted owls are detected during preconstruction surveys, selective mitigation measures, including seasonal and spatial avoidance could be implemented to reduce potential effects. However, some vegetation structure in potential Mexican spotted owl habitat could be lost, as a result of clearing of trees to maintain a safe conductor height.

The majority of total available potential habitat for this species would not be developed by the Project or other cumulative actions (Table 4-100).

If construction and site stabilization actions for the Project along the alignments of the COUT alternative routes overlapped temporally with the development of the TransWest Express Transmission Project, synergistic temporal effects, including displacement of Mexican spotted owl from specialized and geographically limited nesting habitats or displacement of the species from a larger geographic area could be minimized or avoided through implementation of seasonal restrictions.

Greater Sage-grouse

The types of potential effects on greater sage-grouse that could occur under COUT alternative routes and the degree to which these effects would be mitigated or avoided are described in detail in Section 3.2.8.4. The estimated area of cumulative development in sage-grouse core areas or priority habitat, general habitat (including sage-grouse habitat in transmission line corridors designated in Wyoming Executive Order 2011-5), habitat within 4 miles of leks in core areas or priority habitat, and habitat within 4 miles of leks outside core areas and priority habitat for COUT alternative routes is summarized in Tables 4-101 through 4-103.

TABLE 4-101 GREATER SAGE-GROUSE CORE AREAS OR PRIORITY HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	742,366	144,296	10,970	746	156,012	586,354
COUT-A-1	740,349	144,246	10,950	745	155,941	584,408
Alternative COUT-B and Route Variations						
COUT-B	729,008	120,908	15,187	384	136,478	592,530
COUT-B-1	711,655	117,610	11,346	394	129,350	582,306
COUT-B-2	711,657	117,612	11,346	394	129,351	582,306
COUT-B-3	715,680	118,350	11,346	393	130,089	585,591
COUT-B-4	712,673	118,266	11,346	393	130,005	582,668
COUT-B-5	714,664	117,696	11,346	403	129,444	585,220

TABLE 4-101 GREATER SAGE-GROUSE CORE AREAS OR PRIORITY HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	621,626	92,289	14,554	343	107,186	514,440
COUT-C-1	607,345	90,233	10,713	354	101,300	506,045
COUT-C-2	607,344	90,233	10,713	353	101,299	506,045
COUT-C-3 (Agency Preferred Alternative)	610,351	90,317	10,713	357	101,386	508,965
COUT-C-4	606,463	90,179	10,713	356	101,249	505,215
COUT-C-5	609,471	90,263	10,713	345	101,321	508,150
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	653,230	101,137	18,508	341	119,986	533,244
COUT-I	615,436	109,362	11,064	427	120,852	494,584
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

TABLE 4-102 GREATER SAGE-GROUSE GENERAL HABITAT AND TRANSMISSION LINE CORRIDORS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	132,967	19,949	767	246	20,963	112,005
COUT-A-1	132,967	19,949	767	246	20,962	112,005
Alternative COUT-B and Route Variations						
COUT-B	132,967	19,949	767	243	20,960	112,007
COUT-B-1	132,967	19,949	767	245	20,961	112,006
COUT-B-2	132,967	19,949	767	245	20,961	112,006
COUT-B-3	132,967	19,949	767	245	20,961	112,006
COUT-B-4	132,967	19,949	767	245	20,961	112,006
COUT-B-5	132,967	19,949	767	250	20,967	112,000

TABLE 4-102 GREATER SAGE-GROUSE GENERAL HABITAT AND TRANSMISSION LINE CORRIDORS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	136,367	20,080	767	277	21,124	115,244
COUT-C-1	136,368	20,080	767	279	21,126	115,242
COUT-C-2	136,368	20,080	767	279	21,125	115,242
COUT-C-3 (Agency Preferred Alternative)	136,368	20,080	767	281	21,128	115,240
COUT-C-4	136,368	20,080	767	281	21,128	115,240
COUT-C-5	136,368	20,080	767	272	21,119	115,249
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	136,368	20,080	767	266	21,113	115,255
COUT-I	136,368	20,080	767	262	21,109	115,259
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

TABLE 4-103 GREATER SAGE-GROUSE HABITAT WITHIN 4 MILES OF LEKS IN CORE AREAS OR PRIORITY HABITATS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	374,989	51,016	9,015	429	60,460	314,529
COUT-A-1	374,388	51,007	9,010	429	60,445	313,943
Alternative COUT-B and Route Variations						
COUT-B	394,835	38,499	9,444	112	48,055	346,779
COUT-B-1	390,957	37,275	9,438	98	46,811	344,146
COUT-B-2	390,959	37,277	9,438	98	46,813	344,147
COUT-B-3	391,975	37,930	9,438	98	47,467	344,509
COUT-B-4	391,975	37,930	9,438	98	47,467	344,508
COUT-B-5	390,959	37,277	9,438	100	46,815	344,144

TABLE 4-103 GREATER SAGE-GROUSE HABITAT WITHIN 4 MILES OF LEKS IN CORE AREAS OR PRIORITY HABITATS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	311,209	26,580	9,093	98	35,771	275,438
COUT-C-1	309,410	26,536	9,088	84	35,707	273,703
COUT-C-2	309,410	26,536	9,088	83	35,707	273,703
COUT-C-3 (Agency Preferred Alternative)	309,410	26,536	9,088	84	35,708	273,702
COUT-C-4	309,410	26,536	9,088	84	35,708	273,702
COUT-C-5	309,410	26,536	9,088	81	35,705	273,705
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	281,669	25,287	8,923	80	34,290	247,379
COUT-I	266,261	25,409	8,857	162	34,429	231,832
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Past and present actions in the CIAA that have affected sage-grouse designated habitats in the CIAA include fire management, coal and mineral mining, oil and gas development, pipeline corridors; as well as communication, transportation, and residential developments. RFFAs in the CIAA for designated sage-grouse habitats include the construction of the Gateway West and TransWest Express transmission projects and the Victory Pipeline Project as well as coal mining, oil and gas development, and wind energy and reservoir development. The extent of development associated with implementation of any of the COUT alternative routes would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse designated habitats in the CIAA (Tables 4-101 through 4-103).

Some of the Project impacts on sage-grouse associated with COUT alternative routes in Colorado would be in mapped general habitat and would not cross habitats within 4 miles of leks. Additionally, much of the development of the COUT routes in Colorado would be parallel to existing disturbances, including high traffic unpaved roads and existing oil and gas development in areas where general sage-grouse habitat would be intersected. The majority of the total available designated habitats for sage-grouse would not be developed by the Project or other cumulative actions (Tables 4-101 through 4-103).

Some of the Project impacts on sage-grouse associated with COUT alternative routes in Utah would occur in areas where the alternative would be parallel to an existing high-voltage transmission line that have degraded the existing quality of sage-grouse habitats. COUT alternative routes cross sage-grouse habitats within 4 miles of active leks, which are assumed to be the areas of highest importance for maintaining existing sage-grouse populations in Utah. However, sage-grouse habitats in the CIAA of the different COUT alternative routes and associated route variations have different attributes including population size, levels of lek attendance, stability, and connectivity to surrounding suitable habitats. Detailed descriptions of greater sage-grouse populations crossed by COUT alternative routes in Utah are located in Section 3.2.8. The magnitude of cumulative development in sage-grouse core areas or priority habitat, general habitat, habitat within 4 miles of leks in core areas, and habitat within 4 miles of leks in non-core

areas for all alternative routes by sage-grouse population in Utah, is summarized in Tables 4-101 through 4-103.

If greater sage-grouse are observed during preconstruction surveys for the Project, selective mitigation measures, including seasonal and spatial avoidance would be implemented to reduce potential effects. However, some cumulative impacts on vegetation structure providing contiguous sagebrush communities in greater sage-grouse habitat could occur.

If construction and site stabilization actions for the Project along the alignments of the COUT alternative routes may overlap temporally with the TransWest Express Transmission Project, synergistic temporal effects, including displacement of sage-grouse from geographically limited contiguous sagebrush habitats or displacement of the species from a larger geographic area could be minimized or avoided through implementation of seasonal restrictions.

Greater Sage-grouse Utah Populations Crossed by COUT Alternative Routes

Detailed descriptions of greater sage-grouse populations crossed by COUT alternative routes in Utah are located in Section 3.2.8.

The estimated area of cumulative development in sage-grouse core areas or priority habitat, and habitat within 4 miles of leks in core areas and priority habitats for COUT alternative routes by sage-grouse population is summarized in Tables 4-104 and 4-105.

TABLE 4-104 SAGE-GROUSE UTAH POPULATIONS (CORE AREAS OR PRIORITY HABITATS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
South Slope Uinta Population						
Alternative COUT-A and Route Variation						
COUT-A	147,682	53,737	371	157	54,265	93,416
COUT-A-1	147,682	53,737	371	157	54,265	93,416
Alternative COUT-B and Route Variations						
COUT-B	97,576	29,257	378	0	29,635	67,941
COUT-B-1	97,576	29,257	378	0	29,635	67,941
COUT-B-2	97,576	29,257	378	0	29,635	67,941
COUT-B-3	97,576	29,257	378	0	29,635	67,941
COUT-B-4	97,576	29,257	378	0	29,635	67,941
COUT-B-5	97,576	29,257	378	0	29,635	67,941
Halfway Hollow Population						
Alternative COUT-A and Route Variation						
COUT-A	144,660	34,148	379	231	34,758	109,902
COUT-A-1	144,660	34,148	379	231	34,758	109,902

TABLE 4-104 SAGE-GROUSE UTAH POPULATIONS (CORE AREAS OR PRIORITY HABITATS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-B and Route Variations						
COUT-B	144,660	34,148	379	228	34,756	109,904
COUT-B-1	144,660	34,148	379	230	34,757	109,903
COUT-B-2	144,660	34,148	379	230	34,757	109,903
COUT-B-3	144,660	34,148	379	230	34,757	109,903
COUT-B-4	144,660	34,148	379	229	34,757	109,903
COUT-B-5	144,660	34,148	379	235	34,762	109,898
Deadman's Bench Population						
Alternative COUT-A and Route Variation						
COUT-A	83,243	9,037	358	127	9,522	73,722
COUT-A-1	83,243	9,037	358	127	9,522	73,722
Alternative COUT-B and Route Variations						
COUT-B	83,243	9,037	358	126	9,520	73,723
COUT-B-1	83,243	9,037	358	127	9,521	73,722
COUT-B-2	83,243	9,037	358	127	9,521	73,722
COUT-B-3	83,243	9,037	358	126	9,521	73,722
COUT-B-4	83,243	9,037	358	126	9,521	73,722
COUT-B-5	83,243	9,037	358	129	9,524	73,719
Alternative COUT-C and Route Variations						
COUT-C	122,426	21,129	358	273	21,759	100,666
COUT-C-1	122,426	21,129	358	275	21,762	100,664
COUT-C-2	122,426	21,129	358	275	21,761	100,665
COUT-C-3 (Agency Preferred Alternative)	122,426	21,129	358	277	21,764	100,662
COUT-C-4	122,426	21,129	358	277	21,763	100,662
COUT-C-5	122,426	21,129	358	268	21,755	100,671
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	122,426	21,129	358	263	21,749	100,677
COUT-I	122,426	21,129	358	259	21,745	100,681
Strawberry/Fruitland Population						
Alternative COUT-A and Route Variation						
COUT-A	155,783	17,797	486	230	18,514	137,269
COUT-A-1	155,783	17,797	486	230	18,514	137,269

TABLE 4-104 SAGE-GROUSE UTAH POPULATIONS (CORE AREAS OR PRIORITY HABITATS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-B and Route Variations						
COUT-B	3,273	94	0	0	94	3,179
COUT-B-1	3,273	94	0	0	94	3,179
COUT-B-2	3,273	94	0	0	94	3,179
COUT-B-3	3,273	94	0	0	94	3,179
COUT-B-4	3,273	94	0	0	94	3,179
COUT-B-5	3,273	94	0	0	94	3,179
Alternative COUT-C and Route Variations						
COUT-C	3,273	94	0	0	94	3,179
COUT-C-1	3,273	94	0	0	94	3,179
COUT-C-2	3,273	94	0	0	94	3,179
COUT-C-3 (Agency Preferred Alternative)	3,273	94	0	0	94	3,179
COUT-C-4	3,273	94	0	0	94	3,179
COUT-C-5	3,273	94	0	0	94	3,179
Emma Park Population						
Alternative COUT-A and Route Variation						
COUT-A	10,335	987	108	0	1,095	9,240
COUT-A-1	8,319	936	88	0	1,025	7,294
Alternative COUT-B and Route Variations						
COUT-B	148,759	13,388	4,672	29	18,090	130,669
COUT-B-1	131,527	10,094	837	37	10,968	120,559
COUT-B-2	131,529	10,096	837	37	10,970	120,559
COUT-B-3	135,552	10,833	837	37	11,708	123,845
COUT-B-4	132,546	10,749	837	37	11,624	120,922
COUT-B-5	134,536	10,179	837	38	11,055	123,482
Alternative COUT-C and Route Variations						
COUT-C	160,720	18,488	4,672	31	23,191	137,528
COUT-C-1	145,567	16,375	837	39	17,251	128,316
COUT-C-2	145,567	16,375	837	39	17,251	128,316
COUT-C-3 (Agency Preferred Alternative)	148,574	16,458	837	39	17,335	131,238
COUT-C-4	145,567	16,375	837	39	17,251	128,315
COUT-C-5	148,574	16,458	837	38	17,334	131,240
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	127,833	16,380	7,680	0	24,061	103,772
COUT-I	67,603	12,780	501	83	13,364	54,238

TABLE 4-104 SAGE-GROUSE UTAH POPULATIONS (CORE AREAS OR PRIORITY HABITATS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Anthro Mountain Population						
Alternative COUT-A and Route Variation						
COUT-A	35	4	0	0	4	31
COUT-A-1	35	4	0	0	4	31
Alternative COUT-B and Route Variations						
COUT-B	50,748	6,395	126	0	6,521	44,227
COUT-B-1	50,748	6,395	126	0	6,521	44,227
COUT-B-2	50,748	6,395	126	0	6,521	44,227
COUT-B-3	50,748	6,395	126	0	6,521	44,227
COUT-B-4	50,748	6,395	126	0	6,521	44,227
COUT-B-5	50,748	6,395	126	0	6,521	44,227
Alternative COUT-C and Route Variations						
COUT-C	76,779	11,007	248	39	11,294	65,485
COUT-C-1	77,771	11,067	248	40	11,354	66,417
COUT-C-2	77,771	11,067	248	40	11,354	66,417
COUT-C-3 (Agency Preferred Alternative)	77,771	11,067	248	40	11,355	66,417
COUT-C-4	76,891	11,014	248	40	11,301	65,589
COUT-C-5	76,891	11,014	248	39	11,300	65,591
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	76,779	11,007	248	38	11,292	65,487
COUT-I	76,779	11,007	248	37	11,292	65,487
Horn Mountain Population						
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	3,594	3,003	0	0	3,003	590
COUT-I	48,476	13,758	80	41	13,879	34,597

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

TABLE 4-105 SAGE-GROUSE UTAH POPULATIONS (HABITAT IN 4 MILES OF LEKS IN CORE AREAS OR PRIORITY HABITATS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
South Slope Uinta Population						
Alternative COUT-A and Route Variation						
COUT-A	66,874	23,304	217	135	23,656	43,218
COUT-A-1	66,874	23,304	217	135	23,656	43,218
Alternative COUT-B and Route Variations						
COUT-B	42,681	8,664	217	0	8,881	33,800
COUT-B-1	42,681	8,664	217	0	8,881	33,800
COUT-B-2	42,681	8,664	217	0	8,881	33,800
COUT-B-3	42,681	8,664	217	0	8,881	33,800
COUT-B-4	42,681	8,664	217	0	8,881	33,800
COUT-B-5	42,681	8,664	217	0	8,881	33,800
Alternative COUT-C and Route Variations						
Halfway Hollow Population						
Alternative COUT-A and Route Variation						
COUT-A	80,480	10,630	134	76	10,839	69,640
COUT-A-1	80,480	10,630	134	76	10,839	69,640
Alternative COUT-B and Route Variations						
COUT-B	80,480	10,630	134	75	10,838	69,641
COUT-B-1	80,480	10,630	134	75	10,839	69,641
COUT-B-2	80,480	10,630	134	75	10,839	69,641
COUT-B-3	80,480	10,630	134	75	10,839	69,641
COUT-B-4	80,480	10,630	134	75	10,839	69,641
COUT-B-5	80,480	10,630	134	77	10,840	69,639
Deadman’s Bench Population						
Alternative COUT-A and Route Variation						
COUT-A	29,311	3,242	49	23	3,313	25,998
COUT-A-1	29,311	3,242	49	23	3,313	25,998
Alternative COUT-B and Route Variations						
COUT-B	29,311	3,242	49	22	3,313	25,998
COUT-B-1	29,311	3,242	49	23	3,313	25,998
COUT-B-2	29,311	3,242	49	23	3,313	25,998
COUT-B-3	29,311	3,242	49	23	3,313	25,998
COUT-B-4	29,311	3,242	49	23	3,313	25,998
COUT-B-5	29,311	3,242	49	23	3,313	25,997
Alternative COUT-C and Route Variations						
COUT-C	29,311	3,242	49	83	3,373	25,938
COUT-C-1	29,311	3,242	49	84	3,374	25,937
COUT-C-2	29,311	3,242	49	83	3,374	25,937
COUT-C-3 (Agency Preferred Alternative)	29,311	3,242	49	84	3,374	25,936
COUT-C-4	29,311	3,242	49	84	3,374	25,936
COUT-C-5	29,311	3,242	49	81	3,372	25,939

TABLE 4-105 SAGE-GROUSE UTAH POPULATIONS (HABITAT IN 4 MILES OF LEKS IN CORE AREAS OR PRIORITY HABITATS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	29,311	3,242	49	80	3,370	25,941
COUT-I	29,311	3,242	49	78	3,369	25,942
Strawberry/Fruitland Population						
Alternative COUT-A and Route Variation						
COUT-A	72,994	10,891	390	195	11,477	61,518
COUT-A-1	72,994	10,891	390	195	11,477	61,518
Emma Park Population						
Alternative COUT-A and Route Variation						
COUT-A	1,828	54	6	0	60	1,768
COUT-A-1	1,226	44	0	0	44	1,182
Alternative COUT-B and Route Variations						
COUT-B	101,285	8,787	699	14	9,500	91,784
COUT-B-1	97,407	7,562	693	0	8,255	89,152
COUT-B-2	97,409	7,564	693	0	8,257	89,152
COUT-B-3	98,425	8,218	693	0	8,911	89,514
COUT-B-4	98,425	8,218	693	0	8,911	89,514
COUT-B-5	97,409	7,564	693	0	8,257	89,152
Alternative COUT-C and Route Variations						
COUT-C	103,383	10,104	699	15	10,817	92,566
COUT-C-1	101,584	10,060	693	0	10,753	90,832
COUT-C-2	101,584	10,060	693	0	10,753	90,832
COUT-C-3 (Agency Preferred Alternative)	101,584	10,060	693	0	10,753	90,832
COUT-C-4	101,584	10,060	693	0	10,753	90,832
COUT-C-5	101,584	10,060	693	0	10,753	90,832
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	73,843	8,811	528	0	9,339	64,504
COUT-I	52,588	8,181	463	83	8,727	43,861
Anthro Mountain Population						
Alternative COUT-B and Route Variations						
COUT-B	32,941	4,826	126	0	4,952	27,989
COUT-B-1	32,941	4,826	126	0	4,952	27,989
COUT-B-2	32,941	4,826	126	0	4,952	27,989
COUT-B-3	32,941	4,826	126	0	4,952	27,989
COUT-B-4	32,941	4,826	126	0	4,952	27,989
COUT-B-5	32,941	4,826	126	0	4,952	27,989

TABLE 4-105 SAGE-GROUSE UTAH POPULATIONS (HABITAT IN 4 MILES OF LEKS IN CORE AREAS OR PRIORITY HABITATS) CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-C and Route Variations						
COUT-C	32,941	4,826	126	0	4,952	27,989
COUT-C-1	32,941	4,826	126	0	4,952	27,989
COUT-C-2	32,941	4,826	126	0	4,952	27,989
COUT-C-3 (Agency Preferred Alternative)	32,941	4,826	126	0	4,952	27,989
COUT-C-4	32,941	4,826	126	0	4,952	27,989
COUT-C-5	32,941	4,826	126	0	4,952	27,989
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	32,941	4,826	126	0	4,952	27,989
COUT-I	32,941	4,826	126	0	4,952	27,989

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

South Slope Uinta Population

Of the BLM-designated sage-grouse populations in Utah (Section 3.2.8, Map 3-4) in the CIAA for the species, core areas and priority habitats, as well as habitats within 4 miles of leks supporting the South Slope Uinta population, would be affected directly by Alternative COUT-A and Route Variation COUT-A-1. Past and present actions that have affected sage-grouse core areas and priority habitats supporting the BLM-designated South Slope Uinta population in the CIAA include residential and oil and gas development. The RFFA in the CIAA for core and priority habitats includes the construction of the TransWest Express Transmission Project and the Victory Pipeline Project. The extent of development associated with implementation of Alternative COUT-A and Route Variation COUT-A-1 would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse designated habitats in the CIAA (Tables 4-104 and 4-105).

Project impacts on sage-grouse habitat supporting the South Slope Uinta population associated with Alternative COUT-A and Route Variation COUT-A-1 would be in priority and core area habitat, as well as habitat within 4 miles of known leks. However, much of the development of the COUT alternative routes, where they are anticipated to cross the South Slope Uinta area, would be parallel to an existing EHV transmission line.

Halfway Hollow Population

Of the BLM-designated sage-grouse populations in Utah (Section 3.2.8, Map 3-4) in the CIAA for the species, core areas and priority habitats, as well as habitats within 4 miles of leks supporting the Halfway Hollow population, would be affected directly by Alternative COUT-A and Route Variation COUT-A-1 as well as COUT-B and the associated route variations. Past and present actions that have affected sage-grouse core areas and priority habitats supporting the BLM-designated Halfway Hollow population in the

CIAA include mineral mining and oil and gas development. The RFFA in the CIAA for core and priority habitats includes the construction of the TransWest Express Project. A portion of the Project development of Alternative COUT-A, Route Variation COUT-A-1, Alternative COUT-B, and the associated route variations would occur outside areas affected by past, present, or RFFAs in the sage-grouse CIAA (Tables 4-104 and 4-105) and would contribute further to fragmentation and modification of sage-grouse designated habitats in the CIAA for this species.

Impacts on sage-grouse habitat supporting the Halfway Hollow population associated with development of Alternative COUT-A, Route Variation COUT-A-1, Alternative COUT-B, and the associated route variations would be in priority and core area habitat, as well as habitat within 4 miles of known leks. Much of the development of the COUT alternative routes, where they cross the Halfway Hollow area, would be parallel to an existing high-voltage transmission line.

Deadman’s Bench Population

Of the BLM-designated sage-grouse populations in Utah (Section 3.2.8, Map 3-4) in the CIAA for the species, core areas and priority habitats, as well as habitats within 4 miles of leks supporting the Deadman’s Bench population, would be affected directly by all the COUT alternative routes and route variations. Past and present actions that have affected sage-grouse core areas and priority habitats supporting the BLM-designated Deadman’s Bench population in the CIAA include mineral mining and oil and gas development. RFFAs in the CIAA for core and priority habitats include the construction of the TransWest Express Project as well as oil and gas development. The extent of development associated with implementation of the COUT alternative routes would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse designated habitats in the CIAA (Tables 4-104 and 4-105).

Project impacts on sage-grouse habitat supporting the Deadman’s Bench population associated with implementation of the COUT alternative routes and their route variations would be in priority and core area habitat as well as habitat within 4 miles of known leks. Some of the development of the COUT alternative routes, where they are anticipated to cross the Deadman’s Bench area, would be parallel to an existing EHV transmission line.

Strawberry/Fruitland Population

Of the BLM-designated sage-grouse populations in Utah (Section 3.2.8, Map 3-4) in the CIAA for the species, core areas and priority habitats as well as habitats within 4 miles of leks supporting the Strawberry/Fruitland population are directly affected by Alternative COUT-A and Route Variation COUT-A-1. Past and present actions that have affected sage-grouse core areas and priority habitats supporting the BLM-designated Strawberry/Fruitland population in the CIAA include residential and oil/gas development. RFFAs in the CIAA for core and priority habitats include the construction of the TransWest Express transmission Project, as well as oil and gas development. The extent of development associated with implementation of Alternative COUT-A and Route Variation COUT-A-1 would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse designated habitats in the CIAA (Tables 4-104 and 4-105).

Project impacts on sage-grouse habitat supporting the Strawberry/Fruitland population associated with implementation of Alternative COUT-A and Route Variation COUT-A-1 would be in priority and core area habitat as well as habitat within 4 miles of known leks. Much of the development of Alternative COUT-A and Route Variation COUT-A-1 would be parallel to an existing EHV transmission line, where they are anticipated to cross the Strawberry/Fruitland area.

Emma Park Population

Of the BLM-designated sage-grouse populations in Utah (Section 3.2.8, Map 3-4) in the CIAA for the species, core areas and priority habitats, as well as habitats within 4 miles of leks supporting the Emma Park population, would be affected directly by Alternatives COUT-B and COUT-C and their associated route variations, as well as Alternative COUT-I. Past and present actions that have affected sage-grouse core areas and priority habitats supporting the BLM-designated Emma Park population in the CIAA include fire management, coal and other mineral mining, residential and oil and gas development. RFFAs in the CIAA for core and priority habitats include the construction of the TransWest Express Transmission Project as well as coal mining.

The extent of development associated with implementation associated with Alternatives COUT-B and COUT-C (not including the associate route variations) would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse core areas and priority habitats as well as habitats within 4 miles of known leks in the CIAA (Tables 4-104 and 4-105).

The extent of development associated with implementation associated with implementation of Alternatives COUT-B and COUT-C route variations as well as Alternative COUT-I would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse core areas and priority habitats in the CIAA (Tables 4-104 and 4-105). However, Alternatives COUT-B and COUT-C route variations avoid habitats within 4 miles of known leks in core areas and priority habitats supporting the Emma Park population, which are assumed to be the areas of highest importance for maintaining existing sage-grouse populations in Utah. Alternative COUT-I crosses habitats within 4 miles of leks in core areas and priority habitat outside areas affected by past, present, or RFFAs in the sage-grouse CIAA (Tables 4-104 and 4-105) and would further contribute to fragmentation and modification of habitats within 4 miles of leks in sage-grouse core areas and priority habitats in the CIAA for this species.

Project impacts on sage-grouse habitat supporting the Emma Park population associated with Alternatives COUT-B, COUT-C, and their associated route variations, as well as COUT-I would be in priority and core area habitat as well as habitat within 4 miles of known leks. Much of the development of Where they cross the Emma Park area, Alternatives COUT-B and COUT-C and their associated route variations would be in areas of existing oil and gas development.

Anthro Mountain Population

Of the BLM-designated sage-grouse populations in Utah (Section 3.2.8, Map 3-4) in the CIAA for the species, core areas and priority habitats as well as habitats within 4 miles of leks supporting the Anthro Mountain population are directly affected by Alternatives COUT-C and the associated route variations, COUT-H, and COUT-I. Past and present actions that have affected sage-grouse core areas and priority habitats supporting the BLM-designated Anthro Mountain population in the CIAA include mineral mining and oil and gas development. The RFFA in the CIAA for core and priority habitats includes the construction of the TransWest Express Transmission Project. The extent of development associated with implementation of any of the Alternatives COUT-C and the associated route variations, COUT-H, and COUT-I would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse core areas and priority habitats in the CIAA (Tables 4-104 and 4-105).

Project impacts on sage-grouse habitat supporting the Anthro Mountain population associated with Alternative COUT-C and the associated route variations, COUT-H, and COUT-I would be in priority and core area habitat but not in habitats within 4 miles of known leks in priority and core areas.

Horn Mountain Population

Of the BLM-designated sage-grouse populations in Utah (Section 3.2.8, Map 3-4) in the CIAA for the species, core areas and priority habitats as well as habitats within 4 miles of leks supporting the Horn Mountain population are directly affected by Alternative COUT-I. Past and present actions that have affected sage-grouse core areas and priority habitats supporting the BLM-designated Horn Mountain population in the CIAA include fire management, coal mining, and oil/gas development. The RFFA in the CIAA for core and priority habitats includes the construction of the TransWest Express Transmission Project. The extent of development associated with implementation of any of the Alternative COUT-I would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse core areas and priority habitats in the CIAA (Tables 4-104 and 4-105).

Project impacts on sage-grouse habitat supporting the Horn Mountain population associated with Alternative COUT-I would be in core areas and priority habitat but not within 4 miles of known leks in core areas and priority habitat. Much of the development of Alternative COUT-I where they cross the Horn Mountain area, would be parallel to an existing EHV transmission line.

White-tailed Prairie Dog

The estimated area of cumulative development in potential white-tailed prairie dog habitat for COUT alternative routes is summarized in Table 4-106.

TABLE 4-106 WHITE-TAILED PRAIRIE DOG POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	2,398	263	155	159	550	1,848
COUT-A-1	2,398	263	155	159	550	1,848
Alternative COUT-B and Route Variations						
COUT-B	2,499	230	183	156	569	1,930
COUT-B-1	2,390	218	159	157	534	1,856
COUT-B-2	2,390	218	159	157	534	1,856
COUT-B-3	2,390	218	159	157	534	1,856
COUT-B-4	2,390	218	159	157	534	1,857
COUT-B-5	2,390	218	159	160	538	1,853
Alternative COUT-C and Route Variations						
COUT-C	1,799	141	31	186	358	1,441
COUT-C-1	1,691	130	6	188	324	1,367
COUT-C-2	1,691	130	6	188	323	1,368
COUT-C-3 (Agency Preferred Alternative)	1,691	130	6	189	325	1,366
COUT-C-4	1,692	130	6	189	325	1,367
COUT-C-5	1,692	130	6	183	319	1,373

TABLE 4-106 WHITE-TAILED PRAIRIE DOG POTENTIAL HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Habitat	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	1,715	133	8	179	320	1,394
COUT-I	2,122	132	28	227	387	1,735

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Past and present actions in the CIAA that have affected white-tailed prairie dog potential colonies in the CIAA include fire management, coal and other mineral mining, oil and gas development, residential and industrial development, and pipeline corridors. RFFAs in the CIAA for white-tailed prairie dog include the construction of the TransWest Express Transmission Project, the Victory Pipeline Project, and oil and gas development. The extent of development associated with implementation of any of the COUT alternative routes would be anticipated to contribute incrementally to fragmentation and modification of white-tailed prairie dog potential colonies in the CIAA. Potential white-tailed prairie dog colonies adjacent to existing human development and linear infrastructure are likely to have previously incurred some of the effects described in Section 3.2.8.4. The magnitude of development associate with implementation of COUT alternative routes in white-tailed prairie dog potential colonies could be reduced, relative to areas where development structures are absent, in areas where the alternative would be adjacent to the existing human development and infrastructure.

The majority of total available potential colonies for this species would not be developed by the Project or other cumulative actions (Table 4-106).

Black-footed Ferret

The estimated area of cumulative development in black-footed ferret management areas for COUT alternative routes is summarized in Table 4-107.

TABLE 4-107 BLACK-FOOTED FERRET MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-A and Route Variation						
COUT-A	11,417	511	281	19	812	10,605
COUT-A-1	11,417	511	281	19	812	10,605

TABLE 4-107 BLACK-FOOTED FERRET MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
		Past and Present Development	Reasonably Foreseeable Future Actions			
Alternative COUT-B and Route Variations						
COUT-B	11,417	511	281	19	811	10,605
COUT-B-1	11,417	511	281	19	812	10,605
COUT-B-2	11,417	511	281	19	812	10,605
COUT-B-3	11,417	511	281	19	812	10,605
COUT-B-4	11,417	511	281	19	812	10,605
COUT-B-5	11,417	511	281	20	812	10,604
Alternative COUT-C and Route Variations						
COUT-C	16,514	1,826	104	152	2,082	14,432
COUT-C-1	16,514	1,826	104	153	2,083	14,431
COUT-C-2	16,514	1,826	104	153	2,083	14,431
COUT-C-3 (Agency Preferred Alternative)	16,514	1,826	104	154	2,084	14,430
COUT-C-4	16,514	1,826	104	154	2,084	14,430
COUT-C-5	16,514	1,826	104	149	2,079	14,435
Alternatives COUT-H and COUT-I						
COUT-H (Applicant Preferred Alternative)	16,514	1,826	104	146	2,076	14,438
COUT-I	16,514	1,826	104	144	2,074	14,440
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

A past and present action in the CIAA that has affected black-footed ferret management areas in the CIAA includes fire management. The RFFA in the CIAA for black-footed ferret includes the construction of the TransWest Express Transmission Project.

The extent of development associated with implementation of the Alternatives COUT-A and COUT-B, and their associated route variations would be anticipated to contribute incrementally to fragmentation and modification of black-footed ferret management area in the CIAA.

The extent of development associated with implementation of Alternatives COUT-C (and its route variations), COUT-H, and COUT-I would be anticipated to contribute incrementally to fragmentation and modification of black-footed ferret management area in the CIAA.

The potential effects on black-footed ferret that could occur under the COUT alternative routes and the degree to which these effects would be mitigated or avoided are described in detail in Section 3.2.8.4. COUT alternative routes would intersect the Wolf Creek black-footed ferret management area. Black footed-ferret occurrences have not been recorded since a 2009/2010 plague affected the Wolf Creek ferret population, ferrets have not been located in the last 2 years, and reintroductions are not currently taking place (Ausmus 2012). However, if black-footed ferret reintroductions are resumed in the future, the COUT alternative routes could result in effects described in Section 3.2.8.4.

The majority of total available potential habitat for this species would not be developed by the Project or other cumulative actions (Table 4-107).

4.3.9 Fish and Aquatic Resources

The general approach for analysis of cumulative effects on aquatic habitats including the geographic and temporal scopes defined for analysis is presented in Table 4-3. This analysis relies on direct and indirect impacts from the Project detailed in Section 3.2.9 and are considered in conjunction with the past, present, and RFFAs listed in Tables 4-1 and 4-2.

Known occurrences of special status fish and aquatic species occurring within 1 mile of the reference centerlines, critical habitats for federally listed special status fish and aquatic species occurring within 1 mile of the reference centerlines, and general fish and aquatic habitats occurring within 300 feet of the reference centerlines are identified and quantitatively analyzed in Section 3.2.9.5.

The Project and other past, present, and RFFAs are not likely to result in direct effects on listed special status fish, amphibians, or designated critical habitats. This assumption is based on the premise that development of facilities in aquatic habitats or in proximity to aquatic habitats is undesirable from a constructability standpoint and because federal and state laws mandate the avoidance of impacts on aquatic habitats. Because the likelihood of direct impacts on fish and aquatic resources is improbable, a quantitative assessment of effects are analyzed in this section, rather a qualitative discussion of actions, which could result in cumulative and incremental effects on aquatic habitats including those designated as critical habitats for federally listed endangered fish species, will be the main focus of this section.

Given that water quality and aquatic habitats are highly interrelated, this section is supported by the quantitative assessment of impacts on surface-water quality, detailed in Section 4.3.4.3. The water resources cumulative effects analysis uses the ground disturbance model described in Section 2.5.1.2 and the quantitative direct and indirect impacts of the Project in conjunction with other past, present, and RFFAs in a particular subbasin on the water resources identified in Section 3.2.4.3.2 with a particular focus on how those actions would affect surface-water quality. Results of that analysis serve as supporting information for the qualitative discussion of indirect impacts on fish and aquatic resources, which are described in the following sections.

In addition to using the results of the water-resources quantitative analysis, this qualitative analysis of fish and aquatic resources will take into account the effects of the Project and other past, present, and RFFAs in subbasins particularly sensitive to ground-disturbing activities. These watersheds include areas with high erosion potential (refer to Section 3.2.2), impaired or outstanding waters (refer to Section 3.2.4), and areas known to support special status species and general aquatic habitats (refer to section 3.2.9).

4.3.9.1 Issues Identified for Analysis

Issues related to the effects of the Project and other past, present, and reasonably foreseeable future actions on fish and aquatic resources analyzed in this section were identified by the public and the Agency Interdisciplinary Team during scoping. Analysis was conducted using the best available data for fish and aquatic resources.

4.3.9.1.1 Potential Impacts on Federally Listed Endangered Fish and Designated Critical Habitats

Habitat quality is the primary limiting factor of any fish or aquatic species population and can be tied directly to recruitment and fecundity, as well as short- and long-term survivability. Federally listed species are particularly prone to disturbance, which can result in alterations and degradation of habitat

quality. The Determination of Critical Habitat for Colorado River Fishes (FWS 1994b) cites that “large-scale development and introduction of nonnative species” are the leading causal factors leading up to the 1994 listing and subsequent designation of critical habitat for the four native Colorado River fishes.

4.3.9.1.2 Potential Impacts on BLM, USFS, and State-listed Special Status Fish and Aquatic Species

Modification of habitat components which regionally rare or justifiably sensitive fish and aquatic species depend on can result in direct and indirect impacts on populations on the local level and/or across a species’ known range. Similar to species listed under the ESA; BLM, USFS, and state-listed special status species are highly prone to adverse impacts from project related disturbance resulting in habitat alteration.

4.3.9.1.3 Potential Impacts on Aquatic Habitats Supporting Fish, Amphibians, and Other Aquatic Organisms

Modification of aquatic habitats supporting fish, amphibians, and other aquatic organisms can result from direct and indirect impacts including ground disturbance, water draw down, and direct take from recreation.

4.3.9.2 Existing Condition

Residential, agricultural, and infrastructure development has influenced natural aquatic habitats throughout the CIAA. Development and expansion of residential areas can have an effect on fish and aquatic resources mainly due to an increase in the number of people living in a given area. As populations grow the need for and consumption of water in municipal areas increases. To accommodate peoples need for water, facilities have been constructed that affect the natural condition of aquatic habitats. These facilities range from water storage structures, modification of stream channels for flood control, sourcing and treatment of stream-born water for municipal use, and post-treatment of effluent which is then discharged into waterbodies. These modifications can result in both beneficial and adverse short- and long-term effects on fish and aquatic resources.

Agricultural practices in the Project area also have an effect on fish and aquatic resources. Two contributing factors that resulted in modification to natural aquatic habitats include the construction of water impoundments and the contribution of sediment and nutrients into aquatic habitats. Construction of impoundments has been a standard practice for centuries allowing farmers and ranchers to produce crops and livestock in areas where, without water-storage facilities such areas would not be conducive for agriculture. This has resulted in many natural lotic habitats being dammed, creating lentic habitats that support a far greater range of fish species while at the same time, limiting habitat available for native species dependent on lotic habitats. This cause-and-effect scenario has resulted in both adverse and beneficial impacts on fish and aquatic resources through modification of natural habitats.

Agricultural practices are also responsible for the degradation of aquatic habitats through the nonpoint and point discharge of nutrient and sediment-rich effluent. These adverse effects result from the application of herbicides, pesticides, and fertilizers to fields, which are transported to aquatic habitats as irrigation water is returned to canals, rivers, reservoirs, etc. Another nonpoint source of effluent is generated from dairies or areas heavily used for grazing livestock. Effluent mostly consists of sediment and nutrients that if uncontrolled can overload aquatic systems, modifying the abiotic and biotic processes necessary to maintain natural functioning aquatic conditions.

Agricultural processes that modify riparian and wetland habitats can affect aquatic habitats by decreasing soil stability and removing shade which in turn, results in higher water temperatures, decreased oxygen potential, and increased embeddedness of the substrate, which reduces breeding habitat that many species rely on for reproduction. The results of agricultural practices can include a shift in fish and aquatic species

inhabiting aquatic habitats, changes in water temperature and chemistry, and potential introduction of invasive species due to changes in riparian and wetland functionality, flow dynamics, water quality, and habitat availability.

Development of infrastructure can result in indirect and direct effects on fish and aquatic resources. The main contributing factor affecting fish and aquatic resources resulting from the development of infrastructure can be linked to ground disturbance that generates erosion and subsequent sedimentation to receiving waters. For the most part, projects are designed to protect water resources and aquatic habitats. There are, however, indirect impacts that cannot be planned for such as accidental, project-related discharge of sediment as well as other environmentally harmful materials that can result in detrimental or adverse effects on fish and aquatic resources, namely through the degradation of water quality.

The introduction of game fish, non-native invasive fish, non-native invasive plants, and other aquatic organisms also can lead to adverse, sometimes irreversible effects on fish and aquatic resources. Introduction of these organisms can limit the space and resources that endemic aquatic species depend on, resulting in competition for habitat and limiting available resources for species with a narrow habitat niche.

4.3.9.3 Results

4.3.9.3.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

Results of the cumulative effects analysis on aquatic habitats in the WYCO route grouping are summarized in Section 4.3.4, Table 4-37.

Aquatic habitats in the CIAA for the WYCO route grouping are distributed throughout nine subbasins (refer to Section 3.2.4) and include between 1,130,379 and 1,387,388 acres (refer to Table 4-37 in Section 4.3.4.3.1) of aquatic habitats depending on the route. Major perennial aquatic habitats in the area (detailed in Section 3.2.4.4) include, but are not limited to, the Medicine Bow, Upper North Platte, Little Snake, and White rivers, as well as Muddy Creek.

Ground-disturbing activities associated with past and present activities in the CIAA for the WYCO route group that may currently be affecting aquatic habitats include coal mines, historic fires since the year 2000, noncoal mines including the Sweetwater and Terry Hankins mines; oil and gas development, oil shale and tar sands development, pipelines including the Enterprise Mid-America and Western Expansion II pipelines; residential developments, vegetation management including fuel treatments, prescribed fires, habitat improvement projects, spike treatments, and mechanical treatments; and renewable energy facilities.

Past and present development has contributed to some level of ground disturbance that, over time, is expected to be reclaimed compliant with federal and state reclamation requirements. However, long-term impacts could result in removal or modification of riparian and wetland habitats and destabilization of soils in the watersheds feeding Muddy Creek and the Little Snake River in the Rawlins and Little Snake Field Offices where fragile soils are highly prone to erosion. Refer to Section 3.2.2 for a description and location of naturally erodible or otherwise fragile soils in the WYCO alternative route area. Where past and present development are not meeting reclamation requirements, some adverse effects could be impacting aquatic habitats by unreclaimed impacts on riparian, wetland, and/or aquatic habitats as well as increased sediment loading and water turbidity in the intermittent and perennial habitats proximal to the CIAA for the WYCO route grouping.

RFFAs in the CIAA for the WYCO route grouping include the proposed Project, the Rosebud coal mine, the Continental Divide-Creston Junction and Kerr-McGee oil and gas projects; the Gateway West and TransWest Express transmission projects, and the Hogback Ridge wind-energy project.

Ground disturbance from implementation of RFFAs, including the Project, would be expected to result in localized short-term, indirect adverse effects on fish and aquatic resources, namely through modification of habitats in the CIAA. Short-term impacts could include destabilization of sensitive or otherwise fragile soils and modification of upland, riparian, and wetland habitats potentially supporting amphibians and other aquatic or semi-aquatic species. These direct impacts on soils and vegetation could result indirectly in short-term elevated sediment loading in surface waters, increased water temperature, and decreased habitat availability; degrading the quality and availability of those habitats. However, implementation of design features of the Proposed Action and selective mitigation measures, including reclamation of disturbed areas would be required for RFFAs authorized and implemented on BLM-administered land, state land, and waters of the U.S. Following reclamation of project disturbance, adverse impacts on aquatic habitats would be mostly or completely mitigated, resulting in normalized levels of sediment loading and water turbidity and revegetation of disturbed habitats.

The Upper Platte River lies in the CIAA for the WYCO route grouping. During Agency Interdisciplinary Team meetings for this Project, the issue of potential Project and cumulative effects on Lower Platte River endangered fish species was raised as a potential concern. There is the potential that the Project and other past, present, and RFFAs could affect designated critical habitat for the Platte River endangered fishes. A determination of effect will be detailed in the Project Biological Assessment.

The incremental effect of Project development estimated for the alternative routes in the WYCO route grouping differ only slightly among alternative routes. The Project development would account for approximately 472 to 1,380 acres (0.1 to 0.7 percent) of the total estimated cumulative effect on aquatic habitats in the CIAA. Development of the Project when added to the past, present, and RFFAs could result in potential cumulative effects on 169,246 to 220,720 acres (9 to 15 percent) of the total available aquatic habitats in the CIAA (refer to Table 4-37 in Section 4.3.4.3.1). However, implementation of design features of the Proposed Action and selective mitigation measures, including reclamation of disturbed areas, may reduce or minimize cumulative impacts on fish and aquatic resources as well as the aquatic habitats on which they rely.

4.3.9.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

Results of the cumulative effects analysis on aquatic habitats in the COUT BAX route grouping are summarized in Section 4.3.4.3.2, Table 4-38.

Aquatic habitats in the CIAA for the COUT BAX route grouping are distributed throughout nine subbasins (refer to Section 3.2.4) and range between 1,503,678 and 1,709,251 acres depending on the route (refer to Table 4-38, Section 4.3.4.3.2). Major perennial aquatic habitats in the area (detailed in Section 3.2.4) include, but are not limited to, the Green, White, and San Pitch rivers as well as Currant, Huntington, Douglas, Salt, and West creeks.

Ground disturbance associated with past and present activities in the CIAA for the COUT BAX route group, which likely are affecting aquatic habitats include coal mines, recent forest fires (since 2000), noncoal mines, oil and gas developments, oil shale and tar sands development, pipelines including the Enterprise Mid-America and Western Expansion II projects; the Clear Creek residential development, and vegetation treatments ranging from fuels-management projects to habitat improvement projects.

Past and present development has resulted in some level of ground disturbance and/or alteration of upland, riparian, wetland, and aquatic habitats which could be contributing adverse impacts on fish and

aquatic resources in the CIAA of the COUT BAX route grouping. Where past and present projects are in proximity to aquatic habitats, there is the potential that ground disturbance has resulted in the removal of existing riparian and/or wetland vegetation especially in the Utah portion of the route grouping. Removal of riparian and wetland vegetation limits available habitat for semi-aquatic species that utilize terrestrial habitats for a portion of their life cycle (i.e., breeding, overwinter, etc.). Additionally, modification or removal of riparian or wetland vegetation can indirectly result in adverse impacts on water quality including increased sediment loads, increase water temperature, and changes in water chemistry. Ground disturbance is expected to be reclaimed compliant with federal and state reclamation requirements, mitigating adverse impacts. Beneficial effects of other past and present projects also could be affecting habitats utilized by fish and/or semi-aquatic species. Such effects would be attributed to habitat improvement projects where management of upland, riparian, wetland, and aquatic habitats could directly and indirectly improve habitat quality for those species.

Designated critical habitat for federally listed endangered Colorado River fishes is present in the CIAA for the COUT BAX route grouping. Past and present projects may have resulted in some short-term disturbance of upland habitats and potentially riparian and wetland habitats adjacent to the Green, White, and Yampa rivers. Those projects may have resulted in minor ground disturbance adjacent to critical habitats but because of the endangered status of those species, any incremental impacts from past and present projects since 1994 would have required Section 7 Consultation with the FWS and appropriate selective mitigation measures would have been identified to protect those species and their habitats. Long-term adverse impacts are not likely affecting the endangered Colorado River fishes from past and present projects.

RFFAs in the CIAA for the COUT BAX route grouping with assumed or implied ground disturbance would include the proposed Project, the Flat Canyon Coal tracts, the Narrows East Bench Diversion Dam and associated pipelines, proposed oil and gas developments, the TransWest Express transmission line, the Narrows Tunnel project, and the Shalom Electric Boulger timber salvage project.

Ground disturbance from implementation of RFFAs including the Project, would be expected to result in localized short-term, adverse cumulative effects on aquatic habitats in the CIAA. Short-term impacts could be attributed to ground-disturbing activities in proximity to aquatic habitats including designated critical habitat along the Green, Yampa, and White rivers as well as lentic and lotic habitats with a high probability of supporting BLM, USFS, and state-listed sensitive species. Impacts on upland, riparian, wetland, and aquatic habitats supporting fish and aquatic resources would result from project generated destabilization or compaction of soils and/or removal of upland, riparian, and wetland vegetation. Modification of soils and vegetation in proximity to aquatic habitats could result in short-term indirect adverse impacts on water quality by increasing the risk and severity of erosion caused sedimentation of waters or discharges into adjacent riparian and wetland areas. Increased water turbidity in the Green, White, and Yampa rivers is not expected to result in long-term adverse effects on federally listed endangered species namely because application of erosion control design features of the Proposed Action are expected to fully mitigate any potential discharge. Additionally, these rivers are known to convey large sediment loads and the fish inhabiting those habitats are accustomed to highly turbid waters. It is unlikely that, in the event erosion control design features of the Proposed Action were to fail, the minor amount of sediment that would reach these habitats would have any measureable effect.

Areas with steep slopes in proximity to aquatic habitats raises the potential that ground disturbance resulting from the Project as well as past, present, and RFFAs would discharge greater than normal volumes of sediment into aquatic habitats. Aquatic habitats in the COUT BAX route grouping support federally listed endangered fish and/or BLM, USFS, and/or state-listed special status fish as well as other aquatic species such as amphibians and macroinvertebrates. Increased sediment loads reduce habitat

quality and prove detrimental to fish and aquatic resources. Additional information regarding areas of fragile or otherwise highly erodible soils prone to erosion is provided in Section 4.3.4.

The incremental effect of Project development estimated for alternative routes in the COUT BAX route grouping differ only slightly between alternative routes. The incremental project development would account for approximately 1,586 to 1,962 acres (1.5 to 1.6 percent) of the total estimated cumulative effects on water resources in the CIAA. Development of the Project when added to the past, present, and RFFAs could result in potential cumulative effects on 106,510 to 119,603 acres (0.1 to 7.0 percent) of the total aquatic habitats in the CIAA (refer to Table 4-38, Section 4.3.4.3.2). However, implementation of design features of the Proposed Action and selective mitigation measures, including reclamation of disturbed areas, would minimize cumulative impacts on fish and aquatic resources as well as the aquatic habitats on which they rely.

4.3.9.3.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

Results of the cumulative effects analysis on aquatic habitats in the COUT route grouping are summarized in Section 4.3.4.3.3, Table 4-39.

Aquatic habitats in the CIAA for the COUT route grouping are distributed throughout nine subbasins (refer to Section 3.2.4) and range between 1,393,697 and 1,642,154 acres depending on the route (refer to Table 4-39, Section 4.3.4.3.3). Many perennial systems occur in the CIAA and include but are not limited to the Duchesne, Green, Lake Fork, Price, Strawberry, Uinta, and White rivers as well as Argyle, Hop, Indian, Red, Salt, Soldier, Sowers, Thistle, Tie Fork, and Willow creeks.

Ground disturbance associated with past and present activities in the CIAA for the COUT route grouping that currently may be affecting aquatic habitats include active coal mines, Central Utah Telephone Fiber Optic communication lines, the lower Duchesne River Wetlands Project, recent forest fires (since 2000), noncoal mine leases on SITLA lands, oil and gas development on BLM-administered land, as well as SITLA-administered land and private holdings; oil shale and tar sands projects, pipelines including the Roosevelt, Enterprise Mid-America, Western Expansion II and the Magnum Gas Storage project; the Carbon County proposed ATV trail, a number of residential developments, and vegetation management projects including fuel, weed, and habitat treatment projects on BLM-administered land in the Vernal and White River Field Office boundaries.

Impacts of past and present projects in the COUT route grouping on endangered Colorado River fishes and critical habitats are expected to be the same as those discussed for the COUT BAX route grouping.

RFFAs in the CIAA for the COUT route grouping with assumed or implied ground disturbance would include the proposed Project, the Flat Canyon and Long Canyon coal mine leases, the Narrows Reservoir, East Bench diversion dam, Narrows tunnel and associated Upper Cottonwood and Oak Creek pipelines; the Price industrial complex, oil and gas development from the Kerr-McGee and Monument Butte projects, the Woodside power-generation facility, the Narrows highway relocation project, the Shalom Electric Boulder timber salvage project, and the TransWest Express Transmission Project.

Impacts on federal and state-listed special status species, designated critical habitats, and other aquatic and semi-aquatic habitats resulting from implementation of RFFAs in the COUT route grouping are expected to be the same as those described under the COUT BAX route grouping.

The incremental project development estimated for alternative routes in the COUT route grouping would account from approximately 1,362 to 2,177 acres (1.5 to 2 percent) of the total estimated cumulative development in the CIAA. Development of the Project when added to the past, present, and RFFAs could result in potential cumulative effects on 92,140 to 123,620 acres (1.5 to 8 percent) of the total aquatic

habitats in the CIAA (refer to Table 4-39, 4.3.4.3.3). However, implementation of design features of the Proposed Action and selective mitigation measures, including reclamation of disturbed areas, would minimize cumulative impacts on fish and aquatic resources as well as the aquatic habitats on which they rely.

4.3.10 Land Use

The approach for analysis of cumulative effects on land-use resources (existing and future land uses), including the geographic and temporal scopes defined for analysis, is presented in Table 4-3. This analysis relies on the analysis of direct and indirect impacts from the Project (refer to Section 3.2.10) and considers them in conjunction with the past, present, and RFFAs listed in Tables 4-1 and 4-2.

The incremental effects of the Project cumulatively with other projects on existing land use are discussed cumulatively based on data for the current condition, the existing past and present actions, and RFFAs.

Existing land-use cumulative effects are included in the following discussions. For future land use, a list of the projects by alternative are presented, but no cumulative effects analysis was completed for this resource.

4.3.10.1 Issues Identified for Analysis

The following issues related to land use resources were identified.

4.3.10.1.1 Potential Impacts on Existing Land Uses or Land-management Objectives

Potential conflicts could include a variety of current and proposed land uses (e.g., agriculture, residential and industrial); these are discussed individually in this section. The conflicts would be more intense where the Project and other future and/or existing actions are occurring or planned to occur in the same geographic extent as various land use resources. These impacts would be intensified where existing actions have conflicted already with the uses that may have occurred in the past, or where an RFFA is proposed in the same area as the Project.

Whether the Project is compounding impacts on an existing use or RFFAs, the cumulative effect on an agricultural uses, for instance, may result in the need for relocation of operations or existing facilities related to agriculture. In addition, the Project may possibly require agricultural uses or related infrastructure to shift, in the short-term and long-term.

Land-use management objectives may require formal amendments or other provisions relevant to existing grazing allotments, state-managed leases, and in municipalities—commercial, industrial, and residential uses.

4.3.10.1.2 Potential Impacts on Existing and Future Land Uses

Potential impacts include crossing commercial, residential or agriculture uses; three examples of areas that may not be compatible with future utility projects. These impacts would be intensified where other existing actions have already affected the land uses, or an RFFA is proposed in the same area.

Whether the Project is directly or indirectly affecting an existing use or RFFAs, the cumulative effect on existing and future land uses may result in the overall land use changing or being modified based on all types of impacts and effects.

4.3.10.2 Existing Condition

4.3.20.2.1 Existing and Future Land Use

The predominant existing land uses in the Project area include grazing, rangeland, and agriculture. These, as well as commercial, industrial, public/quasi-public, school and educational, residential and communication facility land uses, occur in the geographic scope of the Project as past and present actions; however, commercial, public/quasi-public, school and educational, and communications facilities land uses would not occur in the Project right-of-way. Thus, cumulative impacts are not discussed for these uses in the results below. The future land uses and types of past and present projects occurring in the geographic scope include those listed for existing land use, as well as planned residential subdivisions, oil and gas exploration and production, mining, and the TransWest Express Transmission Project.

No separate analysis for cumulative effects was conducted for future land use because the projects are considered as RFFAs, and all resource types use these RFFAs as part of the cumulative effects analysis.

4.3.10.3 Results

The following sections discuss the results of cumulative effects analysis on existing land use for all alternative routes. Existing land uses are reported by use in Tables 4-108 through 4-114. The existing land use CIAA varies slightly from other resources analyzed for this Project. As discussed in Section 4.2, a combination of the existing land use inventory (Section 3.2.10.4.1), buffered transmission lines, pipelines, railroads, and roads were used to determine the spatial extent of existing development for all resources. To analyze the cumulative impacts for existing land use as an individual resource, the existing development layer was modified by extracting grazing/rangeland, agriculture, industrial, residential, and utilities from the existing inventory. Pipelines and transmission lines are used to determine the cumulative impacts on the five existing land uses discussed above but are not reported as part of the existing land use inventory. Roads are discussed qualitatively in Section 4.3.12. Individual roadway names are not discussed due to the volume of roads in the geographic scope for transportation and access.

For each land use resource discussed, a percentage of Project impact is provided if applicable. This percentage was calculated using the acreage of Project disturbance, divided by the total available resource acreage, resulting in the percentage of Project impact, as listed in the table above (and in each section following below).

As discussed previously, no analysis was conducted for future land use as these projects are being used in the analysis as the reasonably foreseeable future projects. For the future land use results section, refer to table (Table 4-3), with the list of the RFFAs by alternative route.

4.3.10.3.1 Existing Land Use Effects

The following sections summarize the cumulative effects on existing and future land use that would be crossed by all Project alternative routes (including route variations). A qualitative discussion follows each summary table. Each table lists by alternative route or route variation the total available resource, the development in acres (Project, past and present and RFFAs), the total amount of development, the percentage of Project impact, and the remaining resource. All results are displayed in acres and in some cases, in percentages. Percentages were calculated by dividing the acres of Project disturbance by the total available resource acres.

The qualitative discussion for each existing land use is summarized by route grouping. The discussion includes the past, present, and/or RFFAs that have occurred, or could occur, within the boundary of these existing land uses, in addition to the Project.

Grazing/Rangeland

TABLE 4-108 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (BUREAU OF LAND MANAGEMENT GRAZING/RANGELAND) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes							
Alternative WYCO-B and Route Variations							
WYCO-B (Applicant Preferred Alternative)	1,538,939	85,059	44,332	2,753	132,144	1,406,795	0.18
WYCO-B-1	1,538,939	85,059	44,332	2,768	132,159	1,406,780	0.18
WYCO-B-2 (Agency Preferred Alternative)	1,560,831	84,823	44,339	2,730	131,892	1,428,939	0.18
WYCO-B-3	1,538,939	85,059	44,332	2,703	132,094	1,406,845	0.18
Alternative WYCO-C and Route Variations							
WYCO-C	1,589,711	74,259	45,001	2,547	121,807	1,467,904	0.16
WYCO-C-1	1,589,711	74,259	45,001	2,563	121,823	1,467,889	0.16
WYCO-C-2	1,611,603	74,023	45,007	2,526	121,556	1,490,047	0.16
WYCO-C-3	1,589,711	74,259	45,001	2,498	121,757	1,467,954	0.16
Alternative WYCO-D and Route Variation							
WYCO-D	1,228,139	84,464	36,561	2,229	123,254	1,104,886	0.18
WYCO-D-1	1,228,139	84,464	36,561	2,186	123,211	1,104,929	0.18
Alternative WYCO-F and Route Variations							
WYCO-F	1,571,210	90,099	47,436	2,786	141,222	1,429,989	0.18
WYCO-F-1	1,571,210	90,099	47,436	2,801	141,237	1,429,973	0.18
WYCO-F-2	1,593,102	90,763	47,443	2,764	140,970	1,452,132	0.17
WYCO-F-3	1,571,210	90,999	49,436	2,737	141,172	1,430,038	0.17
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	1,386,521	79,790	6,509	2,690	88,989	1,297,533	0.19
COUT BAX-C	1,530,206	84,948	55,429	2,401	142,778	1,387,429	0.16
COUT BAX-E	1,523,411	89,812	35,433	2,713	127,958	1,395,453	0.18
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
Alternative COUT-A and Route Variation							
COUT-A	371,749	39,734	3,667	715	43,117	328,633	0.19
COUT-A-1	371,749	39,734	3,667	715	43,116	328,633	0.19
Alternative COUT-B and Route Variations							
COUT-B	410,390	40,736	3,632	708	45,076	365,314	0.17
COUT-B-1	402,962	40,036	3,625	736	44,397	358,564	0.18
COUT-B-2	402,962	40,036	3,625	823	44,484	358,477	0.20
COUT-B-3	402,962	40,036	3,625	778	44,439	358,523	0.19
COUT-B-4	402,962	40,036	3,625	822	44,484	358,478	0.20
COUT-B-5	402,962	40,036	3,625	796	44,457	358,504	0.20

TABLE 4-108 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (BUREAU OF LAND MANAGEMENT GRAZING/RANGELAND) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Alternative COUT-C and Route Variations							
COUT-C	856,714	125,994	6,723	1,140	133,856	722,858	0.13
COUT-C-1	854,407	125,989	6,753	1,211	133,953	720,454	0.14
COUT-C-2	854,407	125,989	6,753	1,300	134,043	720,365	0.15
COUT-C-3 (Agency Preferred Alternative)	854,407	125,989	6,753	1,265	134,007	720,400	0.15
COUT-C-4	854,407	125,989	6,753	1,376	134,118	720,289	0.16
COUT-C-5	854,407	125,989	6,753	1,286	134,028	720,379	0.15
Alternatives COUT-H and COUT-I							
COUT-H (Applicant Preferred Alternative)	874,896	135,386	6,634	1,094	143,114	731,782	0.13
COUT-I	949,505	134,313	10,871	1,709	142,893	806,612	0.18
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.							

TABLE 4-109 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (U.S. FOREST SERVICE GRAZING/RANGELAND) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	72,573	42,200	311	138	42,649	29,924	0.20
COUT BAX-C	72,573	42,200	311	135	42,647	29,926	0.19
COUT BAX-E	19,128	4,848	1,703	46	6,596	12,532	0.24
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
Alternative COUT-A and Route Variation							
COUT-A	156,860	14,549	1,201	229	15,979	140,881	0.15
COUT-A-1	161,462	14,579	1,203	233	16,015	145,446	0.14

TABLE 4-109 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (U.S. FOREST SERVICE GRAZING/RANGELAND) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Alternative COUT-B and Route Variations							
COUT-B	159,474	15,535	828	62	16,424	143,050	0.04
COUT-B-1	200,769	17,525	910	76	18,512	182,257	0.04
COUT-B-2	195,164	17,442	898	76	18,415	176,749	0.04
COUT-B-3	159,474	15,535	828	62	16,425	143,049	0.04
COUT-B-4	195,164	17,442	898	76	18,415	176,749	0.04
COUT-B-5	159,474	15,535	828	64	16,426	143,048	0.04
Alternative COUT-C and Route Variations							
COUT-C	138,488	14,224	552	65	14,841	123,646	0.05
COUT-C-1	179,782	16,215	635	80	16,929	162,853	0.04
COUT-C-2	174,178	16,131	623	79	16,833	157,345	0.05
COUT-C-3 (Agency Preferred Alternative)	138,488	14,224	552	66	14,842	123,645	0.05
COUT-C-4	174,178	16,131	623	80	16,834	157,344	0.05
COUT-C-5	138,488	14,224	552	64	14,840	123,648	0.05
Alternatives COUT-H and COUT-I							
COUT-H (Applicant Preferred Alternative)	19,128	4,848	1,703	51	6,602	12,526	0.30
COUT-I	72,573	42,200	311	145	42,656	29,916	0.20
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.							

TABLE 4-110 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (STATE GRAZING/RANGELAND) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes							
Alternative WYCO-B and Route Variations							
WYCO-B (Applicant Preferred Alternative)	10,892	515	783	211	1,509	9,382	2.00
WYCO-B-1	10,680	512	755	196	1,463	9,217	2.00
WYCO-B-2 (Agency Preferred Alternative)	10,892	515	783	211	1,509	9,383	2.00
WYCO-B-3	10,892	515	783	211	1,509	9,382	2.00
Alternative WYCO-C and Route Variations							
WYCO-C	11,447	598	932	213	1,743	9,703	2.00
WYCO-C-1	11,235	595	904	197	1,697	9,538	2.00
WYCO-C-2	11,447	598	932	213	1,743	9,704	2.00
WYCO-C-3	11,447	598	932	213	1,743	9,703	2.00
Alternative WYCO-D and Route Variation							
WYCO-D	18,679	2,270	619	312	3,201	15,478	2.00
WYCO-D-1	18,679	2,270	619	313	3,202	15,477	2.00
Alternative WYCO-F and Route Variations							
WYCO-F	11,452	561	828	205	1,595	9,858	2.00
WYCO-F-1	11,241	559	800	189	1,548	9,692	2.00
WYCO-F-2	11,452	561	828	204	1,594	9,858	2.00
WYCO-F-3	11,452	561	828	205	1,594	9,858	2.00
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	119,242	10,634	3,919	382	14,935	104,306	0.32
COUT BAX-C	128,277	12,076	6,175	183	18,434	109,843	0.14
COUT BAX-E	132,985	12,725	6,195	146	19,065	113,920	0.11
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
Alternative COUT-A and Route Variation							
COUT-A	16,782	1,088	238	97	1,423	15,359	0.60
COUT-A-1	16,782	1,088	238	97	1,423	15,359	0.60
Alternative COUT-B and Route Variations							
COUT-B	31,787	2,845	552	104	3,500	28,287	0.33
COUT-B-1	21,610	1,710	388	99	2,197	19,413	0.50
COUT-B-2	25,808	2,268	1,455	120	3,842	21,966	0.50
COUT-B-3	25,808	2,268	1,455	139	3,861	21,947	0.50
COUT-B-4	25,808	2,268	1,455	139	3,861	21,947	0.50
COUT-B-5	25,808	2,268	1,455	123	3,845	21,963	0.50

TABLE 4-110 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (STATE GRAZING/RANGELAND) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Alternative COUT-C and Route Variations							
COUT-C	68,200	41,232	574	113	41,919	26,281	0.20
COUT-C-1	60,156	40,708	554	108	41,370	18,786	0.20
COUT-C-2	61,215	41,180	1,467	130	42,777	18,438	0.20
COUT-C-3 (Agency Preferred Alternative)	61,215	41,180	1,467	131	42,778	18,437	0.20
COUT-C-4	63,474	40,691	1,477	225	42,393	21,080	0.40
COUT-C-5	63,474	40,691	1,477	218	42,386	21,088	0.30
Alternatives COUT-H and COUT-I							
COUT-H (Applicant Preferred Alternative)	57,660	40,811	345	100	41,256	16,404	0.20
COUT-I	95,086	42,580	975	199	43,754	51,332	0.20
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.							

Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes Grazing/Rangeland

The percentage of the Project alternative routes located in grazing allotments would be less than 1 percent for all WYCO alternative routes and route variations on BLM land. The percentage of the Project alternative routes located in grazing allotments would be approximately 2 percent for all WYCO alternative routes and route variations on state land. Various past and present actions and RFFAs would occur throughout the grazing allotments on BLM-administered and state lands. The short-term cumulative effects of the Project, in addition to the past and present actions and RFFAs would include construction activities of projects that would require gates being added to existing fences; construction related disturbances (noise, vehicles/equipment, personnel) associated with development of access roads, site grading, and building structures; and larger footprints of disturbance before restoration activities occur. The long-term cumulative effects would be reduced grazing/rangeland available where permanent disturbance/structures footprints would occur from the projects.

Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes Grazing/Rangeland

The percentage of the Project alternative routes located in agriculture areas would be less than 1 percent for all COUT BAX alternative routes on BLM-administered land. The percentage of the Project alternative routes located in agriculture areas would be less than 1 percent for all COUT BAX alternative routes on USFS-administered land. The percentage of the Project alternative routes located in grazing allotments would be less than 1 percent for all COUT BAX alternative routes and route variations on state land. Various past and present actions and RFFAs would occur throughout the grazing allotments on BLM-administered and state lands. The short- and long-term cumulative effects would be similar to those discussed for WYCO alternative routes.

Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes Grazing/Rangeland

The percentage of the Project alternative routes located in grazing allotments would be less than 1 percent for all COUT alternative routes and route variations on BLM-administered land. The percentage of the Project alternative routes located in grazing allotments would be less than 1 percent for all COUT alternative routes and route variations on USFS-administered land. The percentage of the Project alternative routes located in grazing allotments would be less than 1 percent for all COUT alternative routes and route variations on state land. Various past and present actions and RFFAs would occur throughout the grazing allotments BLM-administered and state lands. The short- and long-term cumulative effects would be similar to those discussed for WYCO alternative routes.

Agriculture

Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes Agriculture

The percentage of the Project alternative routes located in agriculture areas would be less than 1 percent for WYCO alternative routes and route variations. Past and present actions occurring in agricultural areas include: the Anadarko Atlantic Rim oil and gas development, BLM oil and gas units for the Little Snake and White River Field Offices, Colorado state land oil and gas leases, and Wyoming state land oil and gas leases. RFFAs proposed or planned in agricultural areas include TransWest Express, the Woodside power-generation facility, and the Continental Divide-Creston Junction oil and/or gas project. The short-term cumulative effects of the Project, in addition to the past and present actions and RFFAs could potentially limit access to fields or agriculture operations during construction of the projects. The long-term cumulative effects would be utility and industrial infrastructure that potentially could reduce the amount of and/or alter agriculture production lands.

TABLE 4-111 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (AGRICULTURE) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes							
Alternative WYCO-B and Route Variations							
WYCO-B (Applicant Preferred Alternative)	521	10	2	1	13	507	0.19
WYCO-B-1	521	10	2	1	13	507	0.19
WYCO-B-2 (Agency Preferred Alternative)	827	12	13	2	26	800	0.24
WYCO-B-3	521	10	2	1	13	507	0.19

TABLE 4-111 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (AGRICULTURE) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Alternative WYCO-C and Route Variations							
WYCO-C	518	10	2	1	13	505	0.19
WYCO-C-1	518	10	2	1	13	505	0.19
WYCO-C-2	824	11	13	2	26	798	0.24
WYCO-C-3	518	10	2	1	13	505	0.19
Alternative WYCO-D and Route Variation							
WYCO-D	14,857	332	241	61	634	14,223	0.41
WYCO-D-1	14,857	332	241	61	634	14,223	0.41
Alternative WYCO-F and Route Variations							
WYCO-F	519	10	2	1	13	506	0.19
WYCO-F-1	519	10	2	1	13	506	0.19
WYCO-F-2	825	11	13	2	26	799	0.24
WYCO-F-3	519	10	2	1	13	506	0.19
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	4,946	247	95	21	363	4,583	0.42
COUT BAX-C	4,946	247	95	21	363	4,583	0.42
COUT BAX-E	4,876	194	71	19	284	4,592	0.39
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
Alternative COUT-A and Route Variation							
COUT-A	11,919	1,164	184	75	1,423	10,496	0.63
COUT-A-1	11,919	1,164	184	75	1,423	10,496	0.63
Alternative COUT-B and Route Variations							
COUT-B	10,497	594	216	45	855	9,642	0.43
COUT-B-1	10,401	593	216	46	855	9,546	0.43
COUT-B-2	10,401	593	216	46	855	9,546	0.43
COUT-B-3	10,401	593	216	46	855	9,546	0.43
COUT-B-4	10,401	593	216	46	855	9,546	0.43
COUT-B-5	10,401	593	216	47	856	9,545	0.43
Alternative COUT-C and Route Variations							
COUT-C	2,364	150	45	9	204	2,160	0.38
COUT-C-1	2,183	149	40	9	203	1,985	0.38
COUT-C-2	2,183	149	40	9	203	1,985	0.38
COUT-C-3 (Agency Preferred Alternative)	2,183	149	40	9	203	1,985	0.38
COUT-C-4	2,265	149	45	9	203	2,061	0.38
COUT-C-5	2,265	149	45	9	203	2,062	0.38

TABLE 4-111 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (AGRICULTURE) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Alternatives COUT-H and COUT-I							
COUT-H (Applicant Preferred Alternative)	3,060	164	62	22	248	2,812	0.72
COUT-I	6,944	250	93	23	366	6,578	0.33
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.							

Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes Agriculture

The percentage of the Project located in agriculture areas would be less than 1 percent for COUT BAX alternative routes. Past and present actions occurring in agricultural areas include BLM oil and/or gas units for the Moab, Vernal and White River Field Offices; Anadarko Petroleum Corporation Ferron natural gas project, SITLA-administered active oil and gas leases, Central Utah telephone fiber optic line, historic fire perimeters (2000 to 2011, and 2012), Western Expansion II (Enterprise Mid-America) Pipeline, and the Hiawatha Complex coalmine. RFFAs proposed or planned in agricultural areas include the TransWest Express, Clouse No. 1 Exemption Plat and Simple Land Division, the Woodside power-generation facility, and the Narrows proposed reservoir and associated utilities. The short- and long-term cumulative effects would be similar to those discussed for WYCO alternative routes.

Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes Agriculture

The percentage of the Project located in agriculture areas would be less than 1 percent for COUT alternative routes and route variations. Past and present actions occurring in agricultural areas include BLM habitat projects for the Vernal Field Office, oil and gas units for the Vernal Field Office, Atlantic Rim oil and gas field, Bill Barrett Corporation Blacktail Ridge EDA oil and/or gas development, Greater Deadman Bench oil and gas, Newfield Gusher Development oil and/or gas development, SITLA-administered active oil and gas leases, Anadarko Petroleum Corporation Ferron natural gas project, UDOGM oil well pads, historic fire perimeters (2000 to 2011, and 2012), Central Utah Telephone Fiber Optic Line, Roosevelt Pipeline; and the Brad Knight, Highland Estates, Ioka Meadows, Sunrise Estates, View, Cedar Mountain #6A, Dale Gines, Fruitland Ranchettes, Hidden Meadow, Lazy JP Ranchettes, Ledge Rock Cove, River Breeze Estates, and Sunrise Estates residential developments. RFFAs proposed or planned in agricultural areas include the TransWest Express Transmission Project, Clouse No. 1 Exemption Plat and Simple Land Division, the Woodside power-generation facility, and the Narrows proposed reservoir and associated utilities. The short- and long-term cumulative effects would be similar to those discussed for WYCO alternative routes.

Industrial

TABLE 4-112 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (INDUSTRIAL) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes							
Alternative WYCO-B and Route Variations							
WYCO-B (Applicant Preferred Alternative)	1,423	26	98	0	124	1,299	0.00
WYCO-B-1	1,423	26	98	0	124	1,299	0.00
WYCO-B-2 (Agency Preferred Alternative)	1,423	26	98	0	124	1,299	0.00
WYCO-B-3	1,423	26	98	0	124	1,299	0.00
Alternative WYCO-C and Route Variations							
WYCO-C	1,048	42	97	1	141	908	0.01
WYCO-C-1	1,048	42	97	1	141	908	0.01
WYCO-C-2	1,048	42	97	1	141	908	0.01
WYCO-C-3	1,048	42	97	1	141	908	0.01
Alternative WYCO-D and Route Variation							
WYCO-D	1,182	41	48	8	97	1,085	0.67
WYCO-D-1	1,182	41	48	8	97	1,085	0.67
Alternative WYCO-F and Route Variations							
WYCO-F	1,362	20	100	0	120	1,242	0.00
WYCO-F-1	1,362	20	100	0	120	1,242	0.00
WYCO-F-2	1,362	20	100	0	120	1,242	0.00
WYCO-F-3	1,362	20	100	0	120	1,242	0.00
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	2,070	977	20	4	1,001	1,069	0.19
COUT BAX-C	2,027	937	20	4	961	1,066	0.19
COUT BAX-E	1,892	973	47	1	1,021	872	0.05
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
Alternative COUT-A and Route Variation							
COUT-A	4,516	1,377	78	6	1,461	3,055	0.13
COUT-A-1	4,516	1,377	78	6	1,461	3,055	0.13
Alternative COUT-B and Route Variations							
COUT-B	4,946	1,305	89	3	1,397	3,549	0.06
COUT-B-1	4,318	1,280	69	3	1,352	2,966	0.07
COUT-B-2	4,318	1,280	69	3	1,352	2,966	0.07
COUT-B-3	4,318	1,280	69	3	1,352	2,966	0.07
COUT-B-4	4,318	1,280	69	3	1,352	2,966	0.07
COUT-B-5	4,318	1,280	69	3	1,352	2,966	0.07

TABLE 4-112 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (INDUSTRIAL) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Alternative COUT-C and Route Variations							
COUT-C	5,591	1,669	97	1	1,767	3,823	0.02
COUT-C-1	4,963	1,644	77	1	1,722	3,241	0.02
COUT-C-2	4,963	1,644	77	1	1,722	3,241	0.02
COUT-C-3 (Agency Preferred Alternative)	4,963	1,644	77	1	1,722	3,241	0.02
COUT-C-4	4,963	1,644	77	1	1,722	3,241	0.02
COUT-C-5	4,963	1,644	77	1	1,722	3,241	0.02
Alternatives COUT-H and COUT-I							
COUT-H (Applicant Preferred Alternative)	5,160	1,720	80	1	1,802	3,358	0.02
COUT-I	5,522	1,745	79	2	1,826	3,696	0.04

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes Industrial

The percentage of the Project located in industrial areas would be less than 1 percent for WYCO alternative routes and route variations. Past and present actions occurring in industrial areas include BLM oil and gas units for White River and Little Snake Field Offices, BLM spike treatment/vegetation management and prescribed fires for the BLM Rawlins Field Office, Wyoming and Colorado state land oil and gas leases, prescribed burns completed by the field office, and the Atlantic Rim oil and gas field. The RFFAs proposed or planned in industrial areas include two proposed high-voltage transmission lines (the TransWest Express and Gateway West), the Whirlwind I wind-energy facility, and the Continental Divide-Creston oil and gas development. The short-term cumulative effects of the Project in addition to the past and present actions and RFFAs could potentially limit access and/or creating potential traffic conflicts with industrial uses during construction of the projects. No long-term cumulative effects are anticipated.

Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes Industrial

The percentage of the Project located in industrial areas would be less than 1 percent for COUT BAX alternative routes. Past and present actions occurring in industrial areas include BLM oil and gas units for the Grand Junction, Moab, White River and Little Snake Field Offices; historic fire perimeters (2000 to 2011, and 2012), Intermountain Power Agency Wildcat loadout coal operation, Deserado existing coal mine and mine expansion, Enterprise Mid-America Pipeline Western Expansion II Project, Anadarko Petroleum Corporation Ferron natural gas project; SITLA-administered leases for metalliferous mineral leases, oil and gas, potash, and sand and gravel; Utah Division of Natural Resources-Oil, Gas and Mining oil and/or gas development, Star Point waste-fuel coal mine, and the Whites Sands missile launch facility at Green River. RFFAs proposed or planned in industrial areas are the proposed TransWest Express high-

transmission project, and the Woodside power-generation facility. The short- and long-term cumulative effects on industrial uses would be similar to those discussed for WYCO alternative routes.

Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes Industrial

The percentage of the Project located in industrial areas would be less than 1 percent for COUT alternative routes and route variations. Past and present actions occurring in industrial areas include: BLM oil and gas units for the Price and Vernal Field Offices; Utah Division of Natural Resources-Oil, Gas and Mining development; Berry Petroleum South Unit oil and/or gas development, Anadarko Petroleum Corporation Ferron Natural Gas Project, Bill Barrett Corporation Blacktail Ridge EDA oil and/or gas development, EOG Resources, Inc. Chapita Wells-Stagecoach Area natural gas development, Questar Exploration and Production Company Greater Deadman Bench, Kerr-McGee Oil and Gas Onshore LP Greater Natural Buttes oil and/or gas development, Newfield Gusher Development oil and/or gas development, Encana North Chapita Wells Natural Gas Development, XTO Energy’s Riverbend directional infill oil and/or gas project, Gasco Energy, Inc. Uinta natural gas oil and/or gas development, Deer Creek coal mine, Deserado existing coal mine and mine expansion, Intermountain Power Agency Wildcat Loadout coal mine; SITLA leases for gilsonite, limestone, oil and gas, shale, and sand and gravel; BLM fuel-treatment/vegetation management and habitat projects for the Vernal Field Office, historic fire perimeters (2000 to 2011, and 2012), gilsonite mines; and the Clear Creek, Elk Tracks at Golden Eagle, Silver Moon, Vista Valley, Vonsville, Golden Eagle, Great Basin Estates I, and Cedar Mountain No. 8 and No. 9 in Duchesne County residential developments. RFFAs proposed or planned in industrial areas include TransWest Express, and the Kerr-McGee Oil and Gas Onshore LP Greater Natural Buttes oil and/or gas development. The short- and long-term cumulative effects on industrial uses would be similar to those discussed for WYCO alternative routes.

Residential

TABLE 4-113 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (RESIDENTIAL) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes							
Alternative WYCO-B and Route Variations							
WYCO-B (Applicant Preferred Alternative)	47	2	1	0	3	44	0.0
WYCO-B-1	47	2	1	0	3	44	0.0
WYCO-B-2 (Agency Preferred Alternative)	62	2	1	0	3	59	0.0
WYCO-B-3	47	2	1	0	3	44	0.0
Alternative WYCO-C and Route Variations							
WYCO-C	47	2	1	0	3	44	0.0
WYCO-C-1	47	2	1	0	3	44	0.0
WYCO-C-2	62	2	1	0	3	59	0.0
WYCO-C-3	47	2	1	0	3	44	0.0

TABLE 4-113 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (RESIDENTIAL) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Alternative WYCO-D and Route Variation							
WYCO-D	526	28	2	0	30	496	0.0
WYCO-D-1	526	28	2	0	30	496	0.0
Alternative WYCO-F and Route Variations							
WYCO-F	47	2	1	0	3	44	0.0
WYCO-F-1	47	2	1	0	3	44	0.0
WYCO-F-2	62	2	1	0	3	59	0.0
WYCO-F-3	47	2	1	0	3	44	0.0
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	721	43	5	0	48	674	0.0
COUT BAX-C	721	43	5	0	48	674	0.0
COUT BAX-E	767	51	5	0	56	711	0.0
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
Alternative COUT-A and Route Variation							
COUT-A	1,891	442	5	2	449	1,442	0.1
COUT-A-1	1,891	442	5	2	449	1,442	0.1
Alternative COUT-B and Route Variations							
COUT-B	1,265	177	3	0	180	1,085	0.0
COUT-B-1	1,293	177	4	0	181	1,112	0.0
COUT-B-2	1,266	177	3	0	180	1,086	0.0
COUT-B-3	1,266	177	3	0	180	1,086	0.0
COUT-B-4	1,266	177	3	0	180	1,086	0.0
COUT-B-5	1,266	177	3	0	180	1,086	0.0
Alternative COUT-C and Route Variations							
COUT-C	613	52	0	0	52	561	0.0
COUT-C-1	649	53	2	0	55	594	0.0
COUT-C-2	622	53	1	0	54	568	0.0
COUT-C-3 (Agency Preferred Alternative)	622	53	1	0	54	568	0.0
COUT-C-4	616	52	0	0	52	565	0.0
COUT-C-5	616	52	0	0	52	565	0.0
Alternatives COUT-H and COUT-I							
COUT-H (Applicant Preferred Alternative)	841	122	1	0	123	718	0.0
COUT-I	635	37	1	0	38	597	0.0

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes Residential

No cumulative effects are anticipated on residential areas.

Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes Residential

No cumulative effects are anticipated on residential areas.

Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes Residential

The percentage of the Project located in residential areas would be less than 1 percent for Alternative COUT-A and route variation. Past and present actions occurring in residential areas include BLM oil and/or gas units for the Price and Richfield Field Offices, Central Utah Telephone fiber optic line, Ferron natural gas project, SITLA-administered active oil and/or gas leases, sand and gravel permits, and historic fire perimeters (2000 to 2011, and 2012). RFFAs, proposed or planned, in residential areas include the TransWest Express, and the Narrows Dam and Reservoir Project (East Bench and Oak Creek Pipeline) in Sanpete County. The short-term cumulative effects of the Project in addition to the past and present actions and RFFAs could potentially limit and/or alter access to existing residential developments and produce noise during construction of the projects. The long-term cumulative effects could potentially restrict use of property where projects would occur on private lands.

Utilities

TABLE 4-114 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (UTILITIES) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes							
Alternative WYCO-B and Route Variations							
WYCO-B (Applicant Preferred Alternative)	3,235	1,099	183	41	1,323	3,195	1.27
WYCO-B-1	3,235	1,099	183	40	1,323	3,195	1.24
WYCO-B-2 (Agency Preferred Alternative)	3,235	1,099	183	40	1,323	3,195	1.24
WYCO-B-3	3,235	1,099	183	41	1,323	3,195	1.27
Alternative WYCO-C and Route Variations							
WYCO-C	3,797	1,538	209	41	1,789	3,756	1.08
WYCO-C-1	3,797	1,538	209	41	1,789	3,756	1.08
WYCO-C-2	3,797	1,538	209	41	1,789	3,756	1.08
WYCO-C-3	3,797	1,538	209	41	1,789	3,756	1.08
Alternative WYCO-D and Route Variation							
WYCO-D	5,422	1,172	1,196	71	2,440	5,350	1.31
WYCO-D-1	5,422	1,172	1,196	72	2,440	5,350	1.31

TABLE 4-114 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (UTILITIES) FOR ALL ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
		Past and Present Development	Reasonably Foreseeable Future Actions				
Alternative WYCO-F and Route Variations							
WYCO-F	3,379	1,100	186	41	1,327	3,338	1.21
WYCO-F-1	3,379	1,100	186	41	1,327	3,338	1.21
WYCO-F-2	3,379	1,100	186	41	1,327	3,338	1.21
WYCO-F-3	3,379	1,100	186	41	1,327	3,338	1.21
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	604	324	23	4	351	600	0.66
COUT BAX-C	606	324	23	4	351	602	0.66
COUT BAX-E	638	360	27	4	391	635	0.63
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
Alternative COUT-A and Route Variation							
COUT-A	356	159	21	6	186	350	1.69
COUT-A-1	356	159	21	6	186	350	1.69
Alternative COUT-B and Route Variations							
COUT-B	366	146	24	6	176	360	1.64
COUT-B-1	366	146	24	6	176	360	1.64
COUT-B-2	366	146	24	6	176	360	1.64
COUT-B-3	366	146	24	6	176	360	1.64
COUT-B-4	366	146	24	6	176	360	1.64
COUT-B-5	366	146	24	6	176	360	1.64
Alternative COUT-C and Route Variations							
COUT-C	860	317	83	2	401	858	0.23
COUT-C-1	860	317	83	2	401	858	0.23
COUT-C-2	860	317	83	2	401	858	0.23
COUT-C-3 (Agency Preferred Alternative)	860	317	83	2	401	858	0.23
COUT-C-4	860	317	83	2	401	858	0.23
COUT-C-5	860	317	83	2	401	858	0.23
Alternatives COUT-H and COUT-I							
COUT-H (Applicant Preferred Alternative)	977	364	87	1	452	976	0.10
COUT-I	931	318	82	2	402	929	0.21

NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes Utilities

The percentage of the Project located in the land-use category of utilities would be less than 2 percent for WYCO alternative routes and route variations. Past and present actions occurring in utility areas include: the Atlantic Rim oil and/or gas field final boundary, Chokeycherry Wind Farm Expansion, Colorado state land and Wyoming state land oil and/or gas leases, Seven Mile Hill wind-energy facility, and Spike

Treatment (Vegetation Management) for the BLM Rawlins Field Office. RFFAs, proposed or planned, in utility areas includes Continental Divide-Creston Junction oil and/or gas project, the Gateway West, and TransWest Express, Rosebud coal exploration (permit boundary), and Woodside power-generation facility. The short-term cumulative effects of the Project in addition to the past and present actions and RFFAs could include cathodic protection where existing and future pipelines may be affected by not only the Project but other new transmission lines. No long-term cumulative effects anticipated for utilities.

Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes Utilities

The percentage of the Project located in the category of utilities would be less than 1 percent COUT BAX alternative routes. Past and present actions occurring in utility areas include BLM oil and/or gas units for the Grand Junction, Moab and White River Field Offices; SITLA-administered active oil and/or gas, and potash leases; Ferron natural gas project, Enterprise Mid-America pipeline, historic fire perimeters (2000 to 2011, and 2012), Skyline Mine, and Western Expansion II (Enterprise Mid-America) pipeline TUA. RFFAs, proposed or planned, in utility areas includes the Shalom Electric Boulger Timber Salvage – Vegetation Management, and TransWest Express. The short- and long-term cumulative effects on utilities would be similar to those discussed for WYCO alternative routes.

Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes Utilities

The percentage of the Project located in the land-use category of utilities would be less than 2 percent for COUT alternative routes and route variations. Past and present actions occurring in utility areas include BLM oil and/or gas units for the Price and White River Field Offices; fuel treatments (vegetation management) and habitat projects for the Vernal Field Office; SITLA-administered active gilsonite, oil shale, and oil and/or gas leases; Berry Petroleum South Unit oil and/or gas development, Bill Barrett Corporation Blacktail Ridge EDA oil and/or gas development, Chapita Wells/Stagecoach oil and/or gas project, Gasco Energy Inc. Uinta natural gas oil and/or gas development, Gilsonite mining, Greater Deadman, Lake Canyon EDA Boundary, Encana North Chapita Wells natural gas development, XTO Energy's Riverbend directional infill oil and/or gas project, Greater Natural Buttes Area gas development project EIS, Skyline mine, historic fire perimeters (2012), and UDOGM gas well pads. RFFAs, proposed or planned, in utility areas includes the Kerr-McGee, Shalom Electric Boulger Timber Salvage – Vegetation Management, and TransWest Express. The short- and long-term cumulative effects on utilities would be similar to those discussed for WYCO alternative routes.

4.3.11 Parks, Preservation, and Recreation

The approach for analysis of cumulative effects on recreational uses and resources in parks and associated with other recreation resources, including the geographic and temporal scopes defined for analysis is presented in Table 4-3. This analysis relies on the analysis of direct and indirect impacts from the Project (refer to Section 3.2.11) and considers them in conjunction with the past, present, and reasonably foreseeable future development listed in Tables 4-1 and 4-2. Potential cumulative effects on the visual resources (i.e., scenery and views) are addressed in Section 4.3.16. Also, impacts on National Trails Systems are discussed in Section 4.3.17.

4.3.11.1 Issues Identified for Analysis

4.3.11.1.1 Potential Impacts on Recreational Uses and Areas

Potential conflicts with recreational uses and areas include providing recreational users opportunities to leave the designated use area and use the right-of-way for the Project, placement of a transmission line

supporting structure in a recreation area that requires open space, such as a snow-kiting play area, and structure placement in a designated SRMA with management restrictions on utility development.

4.3.11.2 Existing Condition

In general, almost all parks, preservation, and recreation areas have been affected by development from past and present actions. However, the natural environment has been altered in a manner that allows for past and present recreation actions as well as recreational uses, such as recreational infrastructure, trails, scenic byways, etc. to occur.

4.3.11.3 Results

4.3.11.3.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

Past, present, and RFFA in parks and recreation resource areas crossed by WYCO alternative routes are presented in Table 4-115, and the potential cumulative effects are discussed by parks and recreation resource below.

Effects

The following text summarizes the cumulative effects on recreational uses and resources in parks and associated with other recreation resources crossed by a WYCO alternative route or route variations, including what past and present actions and/or RFFAs in addition to the Project.

South Beach Public River Access Site

The Project would not contribute incrementally to cumulative effects on recreational uses at the South Beach Public River Access site because the Project would be located in an area of existing cumulative development for past actions. Also, the Project would be designed to span the site, so permanent infrastructure would not affect the site. Past and present actions that occur in the South Beach Public River Access site include oil and/or gas leases on Colorado state land, the Hayden to Artesia 345kV transmission line, the Bears Ears to Bonanza 345kV transmission line, two railroads, and Colorado State Highway 13. One RFFA is proposed in the CIAA, the TransWest Express Transmission Project. The short-term cumulative effects of the Project crossing the South Beach Public River Access site, in addition to the past, present, and RFFAs, would include limited and/or altered access and increased noise during construction of the transmission projects. The long-term cumulative effect would include the additional transmission lines spanning the site.

Yampa River State Park

The Project would not contribute incrementally to cumulative effects on the Yampa River State Park because the Project right-of-way would be located in an area of existing cumulative development for past actions. Also, the Project would be designed to span the site, so permanent infrastructure would not affect the site. Past and present actions in the Yampa River State Park include the South Beach Public River Access Site, two railroads, and Colorado State Highway 13. There are no RFFAs in the Yampa River State Park. The short-term cumulative effects of the Project and past and present actions would be limited and/or altered access and increased noise during construction of the Project. The long-term cumulative effect would be the additional transmission line spanning the state park.

Cherokee Historic Trail

The Project would not contribute incrementally to cumulative effects on Cherokee Historic Trail because the Project would be designed to span the trail, so permanent infrastructure would not affect the trail. Past and present actions that occur in the Cherokee Historic Trail include secondary roads. RFFAs proposed or

planned in the trail include the Continental Divide-Creston Junction oil and gas project and the TransWest Express Transmission Project. The short-term cumulative effects of the Project crossing the Cherokee Trail in addition to the RFFAs would be limited access to the trail and noise during construction would be increased. A long-term cumulative effect would be the additional transmission lines spanning the trail. Cumulative effects for the trail also are discussed in Section 4.3.17 and Section 4.3.18.

Overland Historic Trail

The Project would not contribute incrementally to cumulative effects on Overland Historic Trail because the Project would be designed to span the trail, so permanent infrastructure would not affect the trail. There are no past and present actions in the Overland Historic Trail. RFFAs in trail alignment include the Continental Divide-Creston Junction oil and gas project. The short-term cumulative effects of the Project crossing the Overland Historic Trail in addition to the RFFA would be limited access to the trail and increased noise occurring during construction. A long-term cumulative effect would be the additional transmission line spanning the trail. Cumulative effects for the trail also are discussed in Section 4.3.17 and Section 4.3.18.

Continental Divide National Scenic Trail

The Project would not contribute incrementally to cumulative effects on Continental Divide NST because the Project would be designed to span the trail, so permanent infrastructure would not affect the trail. Past and present actions in the Continental Divide NST include a secondary road aligned with the trail. A RFFA in the trail alignment is the Hogback Ridge wind energy project. The short-term cumulative effects of the Project crossing the Continental Divide NST in addition to the RFFA would be limited access to the trail and increased noise during construction of the projects. A long-term cumulative effect would be the additional transmission line spanning the trail. Cumulative effects for the trail also are discussed in Section 4.3.17.

Motorized Trails

The Project would not contribute incrementally to cumulative effects on motorized trails because the Project would be designed to span the trails, so permanent infrastructure would not be located directly on the trails. Past and present actions in the area traversed by the motorized trails include vegetation treatments completed by the BLM Little Snake Field Office and oil and/or gas leases on Colorado state lands. A RFFA in the area traversed by motorized trails would be the TransWest Express Transmission Project. The short-term cumulative effects of the Project crossing motorized trails in addition to the past and present actions and RFFAs would be limited access to the trails during construction. Long-term cumulative impacts on motorized trails would not be anticipated.

TABLE 4-115 PARKS AND RECREATION CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES									
Parks or Recreation Area	Managing Agency	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
				Past and Present Development	Reasonably Foreseeable Future Actions				
Wyoming									
North Platte Special Recreation Management Area	Bureau of Land Management (BLM) Rawlins Field Office	WYCO alternative routes and route variations	5,000	332	18	0	350	4,650	0
Outlaw Trail Loop Scenic Drive ²	Carbon County	WYCO-B, WYCO-C, and WYCO-F and route variations	3	0	0	2	2	1	–
		WYCO-D, WYCO-D-1	228	8	14	154	176	52	–
Cherokee Historic Trail ²	National Park Service/BLM Rawlins Field Office	WYCO-B, WYCO-C, and WYCO-D and route variations	4	0	0	2	2	2	–
		WYCO-F and route variations	10	0	2	4	6	4	–
Overland Historic Trail ²	National Park Service/BLM Rawlins Field Office	WYCO-B, WYCO-C, WYCO-D, and WYCO-F and route variations	3	0	0	2	2	1	–
Rawlins to Baggs Historic Road (historic trail) ²	BLM Rawlins Field Office	WYCO-B, WYCO-C, and WYCO-F and route variations	4	0	0	2	2	2	–
		WYCO-D, WYCO-D-1	16	6	0	5	11	5	–
Continental Divide National Scenic Trail ²	U.S. Forest Service	WYCO-B, WYCO-C, WYCO-D, and WYCO-F and route variations	4	0	0	2	2	2	–

TABLE 4-115 PARKS AND RECREATION CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES									
Parks or Recreation Area	Managing Agency	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
				Past and Present Development	Reasonably Foreseeable Future Actions				
Colorado									
South Beach Public River Access	Colorado Parks and Wildlife	WYCO-D, WYCO-D-1	164	164	0	0	164	0	0
Yampa River State Park	Colorado Parks and Wildlife	WYCO-D, WYCO-D-1	14	14	0	0	14	0	0
Juniper Mountain Special Recreation Management Area	BLM Little Snake Field Office	WYCO-D, WYCO-D-1	1,780	19	40	0	59	0	1,717
Motorized Trails ³	BLM Little Snake Field Office	WYCO-B, WYCO-C, and WYCO-F and route variations	36	3	3	16	22	14	–
		WYCO-D, WYCO-D-1	14	2	5	3	10	4	–
<p>NOTES:</p> <p>¹Zero in Incremental Project Development indicates the alternative route and associated right-of-way overlaps past and present actions.</p> <p>²Because of the length of the linear preservation and recreation features, cumulative effects on linear features are limited to the cumulative impact analysis area (CIAA). The percent of Incremental Project Development is reported for these features only in the CIAA.</p> <p>³Due to the number of motorized trails located in the CIAA, motorized trails were not analyzed individually.</p> <p>Acres are approximate and have been rounded to the nearest acre; therefore, the columns may not total.</p>									

Outlaw Trail Loop Scenic Drive

The Project would not contribute incrementally to cumulative effects on the Outlaw Trail Loop Scenic Drive because the Project would be designed to span the scenic highway, so no permanent infrastructure would be located directly on the scenic highway. No past or present actions have affected portions of the scenic highway easement in the CIAA for the WYCO alternative routes and route variations, except Alternative WYCO-D and route variation, and no RFFAs are in the CIAA. Cumulative effects of the Project crossing the Outlaw Trail Loop Scenic Drive for these alternative routes would be the same as what is described for direct and indirect impacts in Section 3.2.11 and Section 3.2.16.

For Alternative WYCO-D and route variation, past and present actions in the CIAA for the Outlaw Trail Loop Scenic Drive include the Atlantic Rim oil and/or gas field, spike treatments in the Rawlins Field Office, and Wyoming state land coal and oil and gas leases. RFFAs in the CIAA for the scenic highway include the Continental Divide-Creston Junction oil and gas project and the TransWest Express Transmission Project. The short-term cumulative effects of the Project crossing the scenic highway in addition to past and present actions and RFFAs would be increased traffic and potential delays for users or required detours during construction of the Project. A long-term cumulative effect would be the additional transmission line spanning the scenic highway. Cumulative effects for the scenic highway also are discussed in Section 4.3.16.

Rawlins to Baggs Historic Road

The Project would not contribute incrementally to cumulative effects on the Rawlins to Baggs Historic Road (historic trail) because the Project would be designed to span the historic trail, so no permanent infrastructure would be located directly on the historic trail. No past or present actions have affected portions of the historic trail in the CIAA for the WYCO alternative routes and route variations, except Alternative WYCO-D and route variation. A RFFA in the historic trail includes the Hogback Ridge wind-energy project. The short-term cumulative effects of the Project crossing the Rawlins to Baggs Historic Road in addition to the RFFA potentially could limit access to the historic trail and increase noise occurring during construction. The long-term cumulative effects would be increased industrialization spanning the trail.

For Alternative WYCO-D and route variation past and present actions in the Rawlins to Baggs Historic Road would include Wyoming state land coal and oil and/or gas leases. RFFAs proposed or planned in the historic road alignment include the Continental Divide-Creston Junction oil and gas project and the Hogback Ridge wind-energy project. The short-term cumulative effects of the Project crossing the historic trail in addition to the past and present actions and RFFAs would be potentially limiting access to the historic trail and increased noise during construction. The long-term cumulative effects would be increased industrialization spanning the historic trail.

Juniper Mountain SRMA

The Project would not contribute incrementally to cumulative effects on the Juniper Mountain SRMA because the Project right-of-way is located in an area that has past and present actions and an RFFA. Past and present actions in the SRMA include secondary roads. A RFFA proposed in the SRMA include the TransWest Express Transmission Project. The short-term cumulative effects of the Project, past and present actions, and RFFA would potentially limit and/or hinder access to and/or in the SRMA and increase noise during construction. The long-term cumulative effects would be additional industrial development in the SRMA, which potentially could limit some recreational opportunities.

North Platte SRMA

The Project would not contribute incrementally to cumulative effects on the North Platte SRMA because the Project right-of-way is located in an area that has past and present actions. Past and present actions in

the SRMA include the ConocoPhillips, El Paso Corporation, Kinder Morgan, Inc., and ONEOK, Inc. pipelines; the Seminole to Sinclair 115kV transmission line, prescribed fires in the Rawlins Field Office, the Chokecherry Wind Farm Expansion, and secondary roads. A RFFA proposed in the SRMA include the Gateway West Transmission Project. The short-term cumulative effects of the Project, past and present actions, and RFFA potentially would limit and/or alter access to and in the SRMA and increase noise during construction. The long-term cumulative effects would be additional industrial development in the SRMA, which potentially could limit some recreational opportunities.

4.2.11.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

Past and present actions and RFFAs located in parks, preservation, and recreation resource areas also are crossed by alternative routes considered in the COUT BAX route grouping are presented in Table 4-116 and the potential cumulative effects are discussed by parks, preservation, and recreation resource below.

Effects

Nephi Shooting Range

The Project would not contribute incrementally to cumulative effects on Nephi Shooting Range because the Project would be designed to span the site, so permanent infrastructure would not affect the site. Past and present actions that occur in the Nephi Shooting Range include the Fountain Green to Nebo 46kV transmission line. There are no RFFAs in the Nephi Shooting Range. The short-term cumulative effects of the Project crossing the Nephi Shooting Range in addition to the past and present actions would be limited access and operations of the shooting range during construction of the Project. The long-term effects on the Nephi Shooting Range are not anticipated.

Snow Kite Play Areas

The Project would not contribute incrementally to cumulative effects on the snow-kite play areas because the Project would be located in an area where other past and present actions are located. Past and present actions in the snow-kite play area include the Skyline Mine and secondary roads. RFFAs proposed or planned in the snow-kite play area include the TransWest Express Transmission Project and the Shalom Electric Boulder Timber Salvage vegetation management project. The short-term cumulative effects of the Project crossing the snow-kite play area in addition to the past and present actions and RFFAs would be minimal because construction actions would likely not occur in the area during the play area's peak use (winter). Long-term effects would be limited access to portions of the snow-kite play areas and an increased potential for user conflicts with above ground facilities associated with the proposed transmission facilities.

Old Spanish National Historic Trail

The Project would not contribute incrementally to cumulative effects on Old Spanish NHT because the Project would be designed to span the trail, so permanent infrastructure would not affect the trail. For Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E, past and present actions in the area traversed by the national historic trail include oil and/or gas leases in the BLM Moab Field Office, active SITLA-administered metalliferous mineral leases, active SITLA-administered potash leases, and the abandoned White Sands missile-launch facility at Green River, Utah. RFFAs do not occur in the area traversed by the trail for Alternative COUT BAX- E but Alternatives COUT BAX-B and COUT BAX-C have a RFFA proposed in the area traversed by the trail, the TransWest Express Transmission Project. Short-term cumulative effects of the Project crossing the Old Spanish NHT in addition to past and present actions and a RFFA would be limitation of access to the trail and increased noise during construction actions. A long-term cumulative effect would be increased industrialization spanning the trail alignment. Cumulative effects for the trail also are discussed in the Section 4.3.17 and Section 4.3.18.

TABLE 4-116 PARKS AND RECREATION CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES									
Parks or Recreation Area	Managing Agency	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
				Past and Present Development	Reasonably Foreseeable Future Actions				
Multi-State									
Dinosaur Diamond Scenic Byway ²	U.S. Department of Transportation, Federal Highway Administration	COUT BAX-B	13	2	0	6	8	5	–
		COUT BAX-C	21	4	2	9	16	5	–
		COUT BAX-E	26	6	6	8	20	6	–
Motorized Trails ^{2,3}	Bureau of Land Management (BLM) and U.S. Forest Service	COUT BAX-B	121	5	11	61	77	44	–
		COUT BAX-C	162	5	54	59	118	44	–
		COUT BAX-E	129	5	14	62	81	49	–
Colorado									
There are no parks, preservation, or recreation resources crossed by the COUT BAX alternative routes in Colorado.									
Utah									
Snow Kite Play Areas	Sanpete County	COUT BAX-E	723	710	0	0	710	13	0.000
Nephi Shooting Range	City of Nephi	All COUT BAX alternative routes	37	37	0	0	37	0	0.000
Labyrinth Canyon SRMA	BLM Price Field Office	All COUT BAX alternative routes	34,240	23	3	2	28	37,175	0.005
Labyrinth Rims/ Gemini Bridges SRMA	BLM Moab Field Office	All COUT BAX alternative routes	300,650	4,435	71	39	4,545	295,428	–
San Rafael Swell SRMA	BLM Price Field Office	COUT BAX-B	938,500	5,197	3,629	72	8,898	927,527	0.007
		COUT BAX-C		5,197	3,629	0	8,826	927,599	0.000
Skyline Drive Scenic Backway ²	Manti-La Sal National Forest	COUT BAX-B, COUT BAX-C	3	1	2	0	3	0	–
Energy Loop Scenic Byway ²	Manti-La Sal National Forest	COUT BAX-E	24	7	12	3	22	2	–
Wedge Overlook/ Buckhorn Draw Scenic Backway ²	BLM Price Field Office	COUT BAX-B, COUT BAX-C	19	2	17	0 ¹	19	0	–

TABLE 4-116 PARKS AND RECREATION CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES									
Parks or Recreation Area	Managing Agency	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
				Past and Present Development	Reasonably Foreseeable Future Actions				
Old Spanish National Historic Trail ²	National Park Service	COUT BAX-B	91	8	2	44	54	37	–
		COUT BAX-C	39	12	7	6	25	14	–
		COUT BAX-E	32	12	0	6	18	14	–
Maple Fork Trail ²	Manti-La Sal National Forest	COUT BAX-E	3	0	0	2	2	1	–
Booths Canyon Trail ²	Manti-La Sal National Forest	COUT BAX-B, COUT BAX-C	3	3	0	0	3	0	–

NOTES:
¹Zero in Incremental Project Development indicates the alternative route and associated right-of-way overlap past and present actions.
²Because of the length of the linear preservation and recreation features, cumulative effects on linear features are limited to the cumulative impact analysis area (CIAA). The percent of Incremental Project Development is reported for these features only in the CIAA.
³Due to the number of motorized trails located in the CIAA, motorized trails were not analyzed individually.
Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Booths Canyon Non-motorized Trail

The Project would not contribute incrementally to cumulative effects on Booths Canyon Non-motorized Trail because the Project would be designed to span non-motorized Trail, so permanent infrastructure would not affect the non-motorized trail. Past and present actions in the area traversed by the non-motorized trail include oil and/or gas leases in the BLM Richfield Field Office and the Millers Flat vegetation management project. A RFFA planned in the area traversed by the Booths Canyon Non-motorized Trail include a UDWR watershed restoration focus area. The short-term cumulative effects of the Project crossing the non-motorized trail in addition to the past and present actions and a RFFA could limit the access to the trail during construction actions. The long-term effects on the Booths Canyon Non-motorized trail would not be anticipated.

Maple Fork Non-motorized Trail

The Project would not contribute incrementally to cumulative effects on Maple Fork Non-motorized Trail because the Project would be designed to span Maple Fork Non-motorized Trail, so permanent infrastructure would not affect the trail. There are no past and present actions or RFFAs in the area traversed by the Maple Fork Non-motorized Trail. The cumulative effects of the Project crossing the trail would be same as the direct and indirect impacts described in the Section 3.2.11.

Motorized Trails

The Project would not contribute incrementally to cumulative effects on motorized trails because the Project would be designed to span the trails, so permanent infrastructure would not be located directly on the trails. Past and present actions in the area traversed by the motorized trails include BLM oil and/or gas leases in the Moab Field Office, the Ferron Natural Gas Project, SITLA-administered oil and/or gas leases, the Wildcat Loadout, and White River Field Office range-improvement fencing. RFFAs proposed or planned in the area traversed by the motorized trails include the TransWest Express Transmission Project, Twin Bridges Resources oil and/or gas development, the Woodside power-generation facility, and UDWR watershed-restoration focus areas. The short-term cumulative effects of the Project crossing motorized trails in addition to the past and present actions and RFFAs would be limited access to the trails during construction actions. Long-term cumulative impacts on motorized trails would not be anticipated.

Dinosaur Diamond Scenic Byway

For Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E, the Project would not contribute incrementally to cumulative effects on Dinosaur Diamond Scenic Byway because the Project would be designed to span the scenic byway, so permanent infrastructure would not be located directly on the scenic byway. Past and present actions in the area traversed by the scenic byway include oil and/or gas leases in the BLM Moab Field Office, active SITLA-administered oil and/or gas leases, the Woodside to Sphinx 46kV transmission line, and Mounds to Moab 138kV transmission line. There would be no RFFAs for Alternative COUT BAX-B but for Alternatives COUT BAX-C and COUT BAX-E, RFFAs proposed or planned in the area traversed by the scenic byway include the Woodside power-generation facility. The short-term cumulative effects of the Project crossing the scenic byway in addition to past and present actions and RFFAs would be increased traffic, potential delays for users and/or detours during construction actions. A long-term cumulative effect would be increased industrialization along the scenic byway. Cumulative effects for the scenic byway also are discussed in Section 4.3.16.

Energy Loop Scenic Byway

The Project would not contribute incrementally to cumulative effects on Energy Loop Scenic Byway because the Project would be designed to span the scenic byway, so permanent infrastructure would not be located directly on the scenic byway. Past and present actions in the area traversed by the scenic

byway include the Skyline Mine, oil and/or gas leases in the BLM Price Field Office, and a railroad line. A RFFA proposed in the area traversed by the scenic byway would be the TransWest Express Transmission Project. Short-term cumulative effects of the Project crossing the scenic byway, in addition to past and present actions and a RFFA, would be increased traffic, potential delays for users and/or detours during construction actions. Long-term cumulative effects would be increased industrialization along the scenic byway. Cumulative effects for the scenic byway also are discussed in Section 4.3.16.

Skyline Drive Scenic Backway

The Project would not contribute incrementally to cumulative effects on Skyline Drive Scenic Backway because the Project would be designed to span the scenic backway, so permanent infrastructure would not be located directly on the scenic backway. Past and present actions in the area traversed by the scenic backway include oil and/or gas leases in the BLM Richfield Field Office and Millers Flat vegetation maintenance actions. RFFAs proposed or planned in the area traversed by the scenic backway include the TransWest Express Transmission Project and UDWR watershed restoration focus areas. The short-term cumulative effects of the Project crossing the scenic backway, in addition to past and present actions and RFFAs, would be increased traffic, potential delays for users and/or detours during construction actions. The long-term cumulative effects would be increased industrialization along the scenic backway. Cumulative effects for the scenic backway also are discussed in Section 4.3.16.

Wedge Overlook/Buckhorn Draw Scenic Backway

The Project would not contribute incrementally to cumulative effects on the Wedge Overlook/Buckhorn Draw Scenic Backway because the Project would be designed to span the scenic backway, so permanent infrastructure would not be located directly on the scenic byway. Past and present actions in the area traversed by the scenic backway include the active SITLA-administered humic shale, metalliferous mineral, and oil and/or gas leases. RFFAs proposed or planned in the area traversed by the scenic backway include the TransWest Express Transmission Project and UDWR watershed restoration focus areas. The short-term cumulative effects of the Project crossing the scenic backway, in addition to past and present actions and RFFAs, would be increased traffic and potential delay to users and/or detours during the construction actions. The long-term cumulative effects would be increased industrialization along the scenic backway. Cumulative effects for the scenic backway are also discussed in Section 4.3.16.

Labyrinth Canyon Special Recreation Management Area

The Project would not contribute incrementally to cumulative effects on the Labyrinth Canyon SRMA. Past and present actions in the SRMA include the Enterprise Products Partners and Williams Companies pipelines; the Atlas to Moab 69kV, Book Cliffs to Moab 69kV, Moab to Hitch 138kV, Mounds to Moab 138kV, and the Huntington to Pinto 345kV transmission lines; active SITLA-administered metalliferous mineral and oil and/or gas leases; and secondary roads. RFFAs proposed or planned in the SRMA include the TransWest Express Transmission Project. The short-term cumulative effects of the Project, past and present actions, and RFFAs would be potentially limiting and/or hindering access to and/or in the SRMA and an increase of noise during construction actions. The long-term cumulative effects would be additional industrial development in the SRMA, potentially limiting some recreational opportunities.

Labyrinth Rim and Gemini Bridges Special Recreation Management Area

The Project would not contribute incrementally to cumulative effects on the Labyrinth Canyon and Gemini Bridges SRMA. Past and present actions in the SRMA include oil and/or gas leases in the BLM Moab Field Office and active SITLA metalliferous mineral, oil and/or gas, and potash leases; and secondary roads. RFFAs proposed or planned in the SRMA include the TransWest Express Transmission Project, the Grand County Arches Overlook, and UDWR watershed restoration focus areas. The short-term cumulative effects of the Project, past and present actions, and RFFAs would be potentially limiting and/or hindering access to and/or in the SRMA and an increase of noise during construction actions. The

long-term cumulative effects would be additional industrial development in the SRMA, potentially limiting some recreational opportunities.

San Rafael Swell Special Recreation Management Area

The Project would not contribute incrementally to cumulative effects on the San Rafael SRMA. Past and present actions in the SRMA include the Huntington to Pinto 345kV transmission line, historic wild fire activity from 2000 to 2011, active SITLA-administered building stone, metalliferous mineral, oil and/or gas leases; and secondary roads. RFFAs proposed or planned in the SRMA include the TransWest Express Transmission Project, a potential wind farm location, and UDWR watershed restoration focus areas. The short-term cumulative effects of the Project, past and present actions, and RFFAs potentially would limit and/or hinder access to and/or in the SRMA and an increase of noise during construction actions. The long-term cumulative effects would be additional industrial development in the SRMA, potentially limiting some recreational opportunities.

4.2.11.3.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

Past and present actions and RFFAs located in parks, preservation, and recreation resource areas also are crossed by alternative routes considered in the COUT route grouping are presented in Table 4-117, and the potential cumulative effects are discussed by parks, preservation, and recreation resource below.

Effects

Nephi Shooting Range

The Project would not contribute incrementally to cumulative effects on Nephi Shooting Range because the Project would be designed to span the site, so permanent infrastructure would not affect the site. Past and present actions that occur in the Nephi Shooting Range include the Fountain Green to Nebo 46kV transmission line. There are no RFFAs in the Nephi Shooting Range. The short-term cumulative effects of the Project crossing the Nephi Shooting Range in addition to the past and present actions would be limited access and operations of the shooting range during construction of the Project. The long-term effects on the Nephi Shooting Range would not be anticipated.

Private Motor-cross Track

The Project would not contribute incrementally to cumulative effects on a private motor-cross track because the Project would be designed to span the track, so permanent infrastructure would not affect the track. Past and present actions in the track include Uinta-Wasatch-Cache National Forest fencing. RFFAs proposed or planned include the UDWR watershed restoration focus areas. The short-term cumulative effects of the Project where it crosses the motor-cross track, in addition to the past and present actions, and RFFAs would be limiting access to the track during construction. Long-term cumulative effects on the private motor-cross track are not anticipated.

Snow Kite Play Areas

The Project would not contribute incrementally to cumulative effects on the snow-kite play areas because the Project would be located in an area where other past and present actions are located. Past and present actions in the snow-kite play area include secondary roads. There are no RFFAs proposed or planned in the snow-kite play area. The short-term cumulative effects of the Project crossing the snow-kite play area in addition to the past and present actions would be minimal because construction actions would likely not occur in the area during the play area's peak use (winter). Long-term effects would be limited access to portions of the snow-kite play areas and an increased potential for user conflicts with above ground facilities associated with the proposed transmission facilities.

TABLE 4-117 PARKS AND RECREATION CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES									
Parks or Recreation Area	Managing Agency	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
				Past and Present Development	Reasonably Foreseeable Future Actions				
Multi-State									
Dinosaur Diamond Scenic Byway ²	U.S. Department of Transportation Federal Highway Administration	COUT-A, COUT-A	6	1	2	2	5	1	–
		COUT-B and route variations	11	1	6	2	9	2	–
		COUT-C and route variations	3	1	0	1	2	1	–
		COUT-H	7	1	4	1	6	1	–
		COUT-I	6	1	0	3	4	2	–
Colorado									
There are no parks, preservation, or recreation resources crossed by the COUT BAX alternative routes in Colorado.									
Utah									
Private All-terrain Vehicle/Motor-cross Track	Private	COUT-B and COUT-C and route variations, COUT-I	71	71	0	0 ¹	71	0	0.0
Snow Kite Play Areas	Sanpete County	COUT-H	723	710	0	0 ¹	710	13	0.0
Nephi Shooting Range	City of Nephi	COUT-A, COUT-B, and COUT-C and route variations; COUT-H, COUT-I	37	37	0	0 ¹	37	0	0.0
Nine Mile Canyon Backway ²	U.S. Department of Transportation, Federal Highway Administration	COUT-C and route variations, COUT-H	3	0	3	0 ¹	3	0	–
		COUT-I	6	0	3	2	5	1	–

TABLE 4-117 PARKS AND RECREATION CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES									
Parks or Recreation Area	Managing Agency	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
				Past and Present Development	Reasonably Foreseeable Future Actions				
Indian Canyon Scenic Byway ²	U.S. Department of Transportation, Federal Highway Administration	COUT-B and COUT-C and route variations, except COUT-B-1, COUT-C-1	3	0	1	1	2	1	–
		COUT-B-1, COUT-C-1	13	2	0	7	9	4	–
		COUT-H	20	2	18	0 ¹	20	0	–
Reservation Ridge Scenic Backway ²	State of Utah	COUT-B-1, COUT-C-1	82	4	67	4	75	7	–
		COUT-B-2, COUT-B-4, COUT-C-2, COUT-C-4	37	1	32	0 ¹	33	4	–
Skyline Drive Scenic Backway ²	Manti-La Sal National Forest	COUT-I	3	1	2	0 ¹	3	0	–
Energy Loop Scenic Byway ²	Manti-La Sal National Forest	COUT-B, COUT-C, COUT-I	4	0	3	0 ¹	3	1	–
		COUT-H	24	7	12	3	22	2	–
White River/ Strawberry Road Scenic Backway ²	Uinta-Wasatch-Cache National Forest	COUT-A	6	1	2	1	4	2	–
		COUT-A-1	10	1	0	5	6	4	–
Blind Canyon Trail ²	Manti-La Sal National Forest	COUT-A, COUT-B, and COUT-C and route variations	3	0	0	2	2	1	–
French Hollow Trail ²	Uinta-Wasatch-Cache National Forest	COUT-A and route variation	4	0	0	3	3	1	–
Maple Fork Trail ²	Manti-La Sal National Forest	COUT-H	3	0	0	2	2	1	–
Quitchampau Trail ²	Ashley National Forest	COUT-B and route variations	4	1	3	0	4	0	–

TABLE 4-117 PARKS AND RECREATION CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES									
Parks or Recreation Area	Managing Agency	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
				Past and Present Development	Reasonably Foreseeable Future Actions				
Willow Creek South Trail ²	Uinta-Wasatch-Cache National Forest	COUT-A and route variation	3	0	2	1	3	0	–
Booths Canyon Trail ²	Manti-La Sal National Forest	COUT-I	3	3	0	0	3	0	–
Semi-Primitive Non-Motorized Recreation Opportunity Spectrum	Bureau of Land Management (BLM) Price Field Office	COUT-C, COUT-H, COUT-I	6,492	21	40	0	61	6,431	0.0
		COUT-C-4		21	40	51	112	6,380	0.8
		COUT-C-5		21	40	49	110	6,382	0.8
Motorized Trails ^{2,3}	BLM/U.S. Forest Service	COUT-A	30	5	10	10	25	5	–
		COUT-A-1	27	3	7	11	21	6	–
		COUT-B and route variations, except COUT-B-1	12	4	8	0	12	0	–
		COUT-B-1	21	5	16	0	21	0	–
Motorized Trails ^{2,3}	BLM/U.S. Forest Service	COUT-C and route variations, except COUT-C-1	10	0	5	4	9	1	–
		COUT-C-1	20	1	13	4	18	2	–
		COUT-H	71	5	50	11	66	5	–
		COUT-I	18	0	5	9	14	4	–

NOTES:
¹Zero in Incremental Project Development indicates the alternative route and associated right-of-way overlaps past and present actions.
²Because of the length of the linear preservation and recreation features, cumulative effects on linear features are limited to the cumulative impact analysis area (CIAA). The percent of Incremental Project Development is reported for these features only in the CIAA.
³Due to the number of motorized trails located in the CIAA, motorized trails were not analyzed individually.
 Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Blind Canyon Non-motorized Trail

The Project would not contribute incrementally to cumulative effects on Blind Canyon Non-motorized Trail because the Project would be designed to span the non-motorized trail, so permanent infrastructure would not affect the non-motorized trail. There are no past and present in the area traversed by the Blind Canyon Non-Motorized trail. RFFAs planned in the area traversed by the non-motorized trail include a UDWR watershed restoration focus area. The short-term cumulative effects of the Project crossing the non-motorized trail would be potentially limiting access to the trail during construction actions. Long-term cumulative effects on the Blind Canyon Non-motorized trail are not anticipated.

Booths Canyon Non-motorized Trail

The Project would not contribute incrementally to cumulative effects on Booths Canyon Non-motorized Trail because the Project would be designed to span the non-motorized trail, so permanent infrastructure would not affect the non-motorized trail. Past and present actions that occur in the area traversed by the non-motorized trail include oil and/or gas leases in the BLM Richfield Field Office and Millers Flat vegetation management maintenance actions. A RFFA planned in the area traversed by the non-motorized trail would be a UDWR watershed restoration focus area. The short-term cumulative effects of the Project crossing the non-motorized trail in addition to the past and present actions and a RFFA would be limiting the access to the trail during construction actions. The long-term effects on the Booths Canyon Non-motorized Trail would not be anticipated.

French Hollow Non-motorized Trail

The Project would not contribute incrementally to cumulative effects on French Hollow Non-motorized Trail because the Project would be designed to span the non-motorized trail, so permanent infrastructure would not affect the non-motorized trail. There are no past and present actions or RFFAs in the area traversed by the non-motorized trail. The cumulative effects of the Project crossing the trail would be same as direct and indirect impacts described in Section 3.2.11 and Section 3.2.16.

Maple Fork Non-motorized Trail

The Project would not contribute incrementally to cumulative effects on Maple Fork Non-motorized Trail because the Project would be designed to span the non-motorized trail, so permanent infrastructure would not affect the non-motorized trail. There are no past and present actions or RFFAs in the area traversed by the Maple Fork Non-motorized Trail. The cumulative effects of the Project crossing the non-motorized trail would be same as direct and indirect impacts described in Section 3.2.11.

Quitchampau Non-motorized Trail

The Project would not contribute incrementally to cumulative effects on Quitchampau Non-motorized Trail because the Project would be designed to span the non-motorized trail, so permanent infrastructure would not affect the non-motorized trail. Past and present actions in the area traversed by the non-motorized trail include the Berry Petroleum South Unit oil and/or gas project and the Upalco to Panther 138kV transmission line. RFFAs proposed or planned in the area traversed by the non-motorized trail include the TransWest Express Transmission Project and UDWR watershed restoration focus areas. The short-term cumulative effects of the projects crossing the non-motorized trail would include potentially limiting access to the trail during construction actions. Long-term cumulative effects on the Quitchampau Non-motorized Trail are not anticipated.

Willow Creek South Non-motorized Trail

The Project would not contribute incrementally to cumulative effects on Willow Creek South Non-motorized Trail because the Project would be designed to span the non-motorized trail, so permanent

infrastructure would not affect the non-motorized trail. Past and present actions that occur in the area traversed by the non-motorized trail include the Lake Canyon oil and/or gas project. The RFFA proposed in the area traversed by the non-motorized trail is the TransWest Express Transmission Project. The short-term cumulative effects of the Project crossing the non-motorized trail in addition to past and present actions and a RFFA potentially would limit access to the trail during construction actions. Long-term cumulative effects on the Willow Creek South Non-motorized Trail are not anticipated.

Motorized Trails

The Project would not contribute incrementally to cumulative effects on motorized trails because the Project would be designed to span the trails, so permanent infrastructure would not be located directly on the trails past and present actions in the area traversed by the motorized trails include oil and/or gas leases in the BLM Price Field Office, Sheep Creek vegetation management, active SITLA oil and/or gas leases, the Wildcat Loadout project, and Uinta-Wasatch-Cache National Forest rangeland fences and gates. RFFAs proposed or planned in the area traversed by the motorized trails include the TransWest Express Transmission Project, and UDWR watershed restoration focus areas. The short-term cumulative effects of the Project crossing motorized trails in addition to the past and present actions and RFFAs would be limited access for users to the trails during construction. Long-term cumulative effects on motorized trails would not be anticipated.

Dinosaur Diamond Scenic Byway

For Alternatives COUT-A, COUT-B, COUT-C, COUT-H, and COUT-I (including route variations), the Project would not contribute incrementally to cumulative effects on Dinosaur Diamond Scenic Byway because the Project would be designed to span the scenic byway, so permanent infrastructure would not be located directly on the scenic byway. Past and present actions in the area traversed by the scenic byway include the active SITLA-administered oil and/or gas leases, historic wildfires from 2000 to 2011, and range improvements in the BLM White River Field Office. RFFAs proposed or planned in the area traversed by the scenic byway include the TransWest Express Transmission Project, Victory Pipeline, and UDWR watershed restoration focus areas. The short-term cumulative effects of the Project crossing the scenic byway in addition to past and present actions and RFFAs would be increased traffic, potential delays for users and/or detours during construction actions. A long-term cumulative effect would be increased industrialization along the scenic byway. Cumulative effects for the scenic byway also are discussed in Section 4.3.16.

Energy Loop Scenic Byway

The Project would not contribute incrementally to cumulative effects on Energy Loop Scenic Byway because the Project would be designed to span the scenic byway, so permanent infrastructure would not be located directly on the scenic byway. There are no past and present actions on Alternatives COUT-B, COUT-C, and COUT-I. For Alternative COUT-H, past and present actions in the area traversed by the scenic byway include the Skyline Mine, oil and/or gas leases in the BLM Price Field Office, the Ferron Natural Gas Project, active SITLA-administered oil and/or gas leases, and a railroad line. RFFAs proposed or planned in the area traversed by the scenic byway include TransWest Express Transmission Project and UDWR watershed restoration focus areas. Short-term cumulative effects of the Project crossing the scenic byway, in addition to past and present actions and a RFFA, would be increased traffic, potential delays for users and/or detours during construction actions. Long-term cumulative effects would be increased industrialization along the scenic byway. Cumulative effects for the scenic byway also are discussed in Section 4.3.16.

Indian Canyon Scenic Byway

For Alternatives COUT-B (including route variations), COUT-H, and COUT-I, the Project would not contribute incrementally to cumulative effects on Indian Canyon Scenic Byway because the Project

would be designed to span the scenic byway, so permanent infrastructure would not be located directly on the scenic byway. There are no past and present actions on Alternative COUT-B (including all route variations except COUT-B-1) and Alternative COUT-C (including all alternative route variations except COUT-C-1). Past and present actions for Alternatives COUT-B-1, COUT-C-1, and COUT-H in the area traversed by the scenic byway include active SITLA-administered oil and/or gas leases. There are no RFFAs for Alternatives COUT-B-1 and COUT-C-1. For Alternatives COUT-B and COUT-C (including the remaining alternative route variations), and COUT-H, RFFAs proposed or planned in the area traversed by the scenic byway include the TransWest Express Transmission Project and UDWR watershed restoration focus areas. The short-term cumulative effects of the Project crossing the scenic byway in addition to past and present actions and RFFAs would be a potential for increased delays for users, and/or detours during construction actions. The long-term cumulative effects would be increased industrialization along the scenic byway. Cumulative effects for the scenic byway are also discussed in Section 4.3.16.

Nine Mile Canyon Backway

For Alternatives COUT-B (including route variations), COUT-H, and COUT-I, the Project would not contribute incrementally to cumulative effects on Nine Mile Canyon Scenic Backway because the Project would be designed to span the scenic backway, so permanent infrastructure would not be located directly on the scenic backway. Past and present actions in the area traversed by the scenic backway include the Gasco oil and/or gas development and the Carbon County ATV trail. RFFAs proposed or planned in the area traversed by the backway include the TransWest Express Transmission Project and UDWR watershed restoration focus areas. The short-term cumulative effects of the Project crossing the backway, in addition to past and present actions and RFFAs, would be increased traffic that would cause potential delay for users and/or detours during construction actions. The long-term cumulative effects would be increased industrialization along the backway. Cumulative effects for the scenic backway also are discussed in Section 4.3.16.

Reservation Ridge Scenic Backway

For Alternatives COUT-B and COUT-C (including route variations), the Project would not contribute incrementally to cumulative effects on Reservation Ridge Scenic Backway because the Project would be designed to span the scenic backway, so permanent infrastructure would not be located directly on the scenic backway. There are no past and present actions in the area traversed by the scenic backway. RFFAs proposed or planned in the area traversed by the scenic backway include the TransWest Express Transmission Project and UDWR watershed restoration focus areas. The short-term cumulative effects of the Project crossing the backway in addition to RFFAs would be increased traffic, potential delays for users, and/or detours during construction actions. The long-term cumulative effects would be increased industrialization along the backway.

Skyline Drive Scenic Backway

The Project would not contribute incrementally to cumulative effects on Skyline Drive Scenic Backway because the Project would be designed to span the scenic backway, so permanent infrastructure would not be located directly on the scenic backway. Past and present actions in the area traversed by the scenic backway include oil and gas leases in the BLM Richfield Field Office and Millers Flat vegetation maintenance actions. RFFAs proposed or planned in the area traversed by the scenic backway would be the TransWest Express Transmission Project and UDWR watershed restoration focus areas. The short-term cumulative effects of the Project crossing the backway, in addition to past and present actions and RFFAs, would be increased traffic and potential delays for users and/or detours during construction actions. The long-term cumulative effects would be increased industrialization along the backway. Cumulative effects for the scenic backway also are discussed in Section 4.3.16.

White River/Strawberry Road Scenic Backway

The Project would not contribute incrementally to cumulative effects on White River/Strawberry Road Scenic Backway because the Project would be designed to span the scenic backway, so permanent infrastructure would not be located directly on the scenic backway. A past and present action in the area traversed by the scenic backway would be the Mona to Bonanza 345kV transmission line. There are no RFFAs for Route Variation COUT-A-1 but for Alternative COUT-A, RFFAs proposed or planned in the area traversed by the scenic backway include the TransWest Express Transmission Project and UDWR watershed restoration focus areas. The short-term cumulative effects of the Project crossing the backway, in addition to the past and present action, would be a potential increase of traffic and delays for users and/or detours during construction actions. The long-term cumulative effects would be increased industrialization along the scenic backway.

Semi-Primitive Non-motorized Recreation Opportunity Spectrum Area

The Project would not contribute incrementally to cumulative effects on the Semi-Primitive Non-motorized ROS area in the Vernal Field Office. Past and present actions in this ROS classification include active SITLA-administered oil and/or gas leases. The RFFA proposed in this ROS classification would be the TransWest Express Transmission Project. The short-term cumulative effects of the Project crossing this ROS category, in addition to the past and present action and RFFA, potentially would be limited access to the ROS category and increased noise during construction actions. Long-term effects on the Semi-Primitive Non-motorized ROS area are not anticipated.

4.3.12 Transportation and Access

The approach for analysis of cumulative effects on transportation and access resources, including the geographic and temporal scopes defined for analysis, are presented in Table 4-3. This analysis relies on the analysis of direct and indirect impacts from the Project (refer to Section 3.2.12.4.2) and considers them in conjunction with the past, present, and RFFAs listed in Tables 4-1 and 4-2. The major transportation network and features are illustrated on MV-17a and MV-17b.

4.3.12.1 Issues Identified for Analysis

Issues that have been identified in relation to transportation and access (refer to Section 3.2.12.2) include concerns that the towers possibly would interfere with airport and landing strip operations, that small county roads crossed by the project would need to be maintained and not blocked or changed from uses defined in county transportation plans, and that conflicts between transportation/access users and the Project would occur during construction and potentially during operations and maintenance of the Project.

4.3.12.2 Existing Condition

Roadways, such as interstates, highways (U.S. and state), and secondary roads are parallel to and crossed by the alternative routes. These roadways occur throughout the Project area. Generally, these roadways are identified as past and present activities, with many of the other past and present activities being accessed by the roadways.

Small aviation facilities occur throughout the Project area on public and privately owned lands. Most of the airports are located on the outskirts of their associated cities or towns with airstrips associated with rural development and agricultural livestock operations occurring in less populated areas. These aviation facilities are considered as past and present activities and are associated with other existing land uses.

Railroad lines occur throughout the Project area, with portions of the alternative routes in Wyoming and Utah paralleling the rail lines. Similar to roadways and aviation facilities, these railroad lines are considered as past and present activities with some of the railroads supporting operations of other past and present actions (i.e., railroads from coal sources to power plants).

4.3.12.3 Results

4.3.12.3.1 Roadways

Potential environmental effects discussed in Section 3.2.12.4.2 form the basis for cumulative effects of the Project and RFFAs on the environment discussed below.

Effects

Existing roadways would be used to the extent practical to provide access for the Project and RFFAs (as identified in Table 4-1). There would be the potential that existing roadways could be used simultaneously by the Project and RFFAs, increasing the use of the roadways beyond localized use. Increased traffic on these existing roadways to access the Project and RFFAs would require increased maintenance, and temporary road closures/delays and detours during construction.

Where access to the Project and other RFFAs cannot be gained using existing roadways, new access and/or improved access would occur. In some instances new access and improved access would be used by the Project and RFFAs; however, the practicality of this is not known because the Project typically requires access to all its on-the-ground components (i.e., transmission structures, communication facilities, and series compensation stations) for construction, operation, and maintenance. Even though new access developed and existing access improved by the Project and RFFAs would be closed to the public, the potential for unauthorized users to access areas previously inaccessible could result in requirements for additional agency administrative considerations such as law enforcement, maintenance and associated costs, and emergency response.

4.3.12.3.2 Aviation Facilities

Aviation facilities potential environmental effects discussed in Section 3.2.12.4.2 form the basis for effects of the Project and RFFAs on the environment discussed below.

Effects

Construction of the Project and RFFAs (refer to Table 4-2) with above-ground components such as the TransWest Express Transmission Project, would be constructed considering requirements associated with existing aviation-facility operations. The addition of the Project and RFFAs also could increase safety concerns associated with operation of aviation facilities. The implementation of the Project and RFFAs also could result in limiting the expansion of these aviation facilities in the future.

4.3.12.3.3 Railroads

Railroads potential environmental effects discussed in Section 3.2.12.4.2 form the basis for effects of the Project and RFFAs on the environment discussed below.

Effects

Railroads would be crossed by the Project and some RFFAs (other linear RFFAs are included in Table 4-1). Operations of the railroads would be altered during construction and safety concerns would be increased with the location of the Project and RFFAs near the railroads such as a clearance issues and railroad set-back issues due to limited space. Implementation of the Project and RFFAs also could limit the ability of the railroads to expand/or reroute, should the need arise in the future.

4.3.13 Special Designation and Other Management Areas

The approach for analysis of cumulative effects on special designation and other management areas including the geographic and temporal scopes defined for analysis is presented in Table 4-3. This analysis relies on the results of direct and indirect impacts from the Project (refer to Section 3.2.13) and considers them in conjunction with the past, present, RFFAs listed in Tables 4-1 and 4-2.

4.3.13.1 Issues Identified for Analysis

The following issue that has been identified related to the special designations and other management areas section.

4.3.13.1.1 Potential Impacts on Special Designations and Other Management Areas

Potential conflicts include crossing conservation easements that prohibit future transmission lines from crossing them and crossing special designations that are exclusion or avoidance areas for future utility development. These impacts would be intensified where other existing actions have already affected a special designation and/or other management area or a RFFA is proposed in the same area. Whether the Project is compounding an existing or RFFA, the cumulative effect on the reason for the designation of a special designation and/or other management area may result in the area not being managed for what it was originally intended.

4.3.13.2 Existing Condition

Past and present actions generally occur on almost all special designation and other management areas in the geographic scope. The natural environment has been altered in a way that allows for past and present actions such as recreational infrastructure, oil and/or gas development, roads, pipelines, transmission lines, etc., but is still compatible with the natural feature for which the special designation or other management area was designated.

Past and present actions do not occur on some special designation and other management areas in the geographic scope. These areas are being protected for natural and undisturbed conditions. This would include some conservation easements, wildlife management areas, and URMCC-managed lands.

4.3.13.3 Results

4.3.13.3.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

Past and present actions and RFFAs located in special designations and other management areas and are crossed by the WYCO route grouping are presented in Table 4-118. Discussion of the potential cumulative effects on special designations and other management areas are presented below.

Effects

The following summarizes the cumulative effects on special designations and other management areas that would be crossed by WYCO alternative routes (including alternative route variations), including what past and present actions and/or RFFAs that have or could occur in the boundary of these special designations or other management areas in addition to the Project.

Red Rim-Daley Wildlife Habitat Management Area

The percentage of the Project in the Red Rim-Daley WHMA would be less than 1 percent. Past and present actions occurring in the Red Rim-Daley WHMA include the Anadarko Atlantic Rim natural gas development, a uranium mining lease on Wyoming state land, prescribed burns completed by the BLM

Rawlins Field Office, and I-80 with additional secondary roads (county and access roads). RFFAs proposed or planned in the Red Rim-Daley WHMA include two high-voltage transmission lines (TransWest Express and Gateway West transmission projects), the Hogback Ridge Wind Farm (formerly the Whirlwind I wind farm), and the BP Continental Divide-Creston Junction natural gas development. The short-term cumulative effects of the Project in addition to past and present actions, and other RFFAs proposed in this area would be increased noise from construction equipment, limited access to a portion of the WHMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects would include additional industrial development in the WHMA, which potentially would limit management actions associated with pronghorns and raptors in the WHMA.

Upper Muddy Creek Watershed/Grizzly Wildlife Habitat Management Area

The percentage of the Project in the Upper Muddy Creek Watershed/Grizzly WHMA would be less than 1 percent. Past and present actions that occur in the Upper Muddy Creek Watershed/Grizzly WHMA include the Anadarko Atlantic Rim natural gas development, the Power Company of Wyoming's Sierra Madre wind farm, prescribed burns completed by the Rawlins Field Office, Wyoming Highway 789, and additional secondary roads (access roads). RFFAs proposed or planned in the Upper Muddy Creek Watershed/Grizzly WHMA include the BP Continental Divide – Creston Junction natural gas development and TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and other RFFAs proposed in this area would be increased noise from construction equipment, limited access to a portion of the WHMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects would include additional industrial development in the WHMA, which potentially would limit management actions associated with fish habitat in the Muddy Creek watershed and elk and mule deer in the WHMA.

Adobe Town Wild Horse Herd Management Area

The percentage of the Project in the Adobe Town WHHMA would be less than 1 percent. Past and present actions in the Adobe Town WHHMA include oil and/or gas leases on Wyoming state land and prescribed burns completed by the Rawlins Field Office. RFFAs proposed or planned in Adobe Town WHHMA include the BP Continental Divide – Creston Junction natural gas development, Hiawatha Regional Energy Development oil and/or gas development, and TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and other RFFAs proposed in this area would be increased noise from construction equipment, limited access to a portion of the WHHMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects on management actions in the WHMA are not anticipated.

Moffat County Road #11 Land and Water Conservation Fund Site

The percentage of the Project in the Moffat County #11 LWCF site would be zero percent because the Project would span the site, resulting in no permanent infrastructure located on the site. Past and present actions on the LWCF site include oil and/or gas lease activity on Colorado state land. RFFAs proposed on the LWCF site include the TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and RFFAs proposed in this area would include increased noise from construction equipment, increased traffic, and potential delays for users and/or detours during construction actions. Long-term cumulative effects on management actions of this LWCF site are not anticipated.

TABLE 4-118 SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES										
Name	Managing Agency	Management Values	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
					Past and Present Development	Reasonably Foreseeable Future Actions				
Wyoming										
Red Rim-Daley Wildlife Habitat Management Area (WHMA)	Wyoming Game and Fish Department	Crucial winter habitat for pronghorn and nesting habitat for raptors	All WYCO alternative routes and route variations	11,100	1,347	514	47	1,909	24,082	0.400
Upper Muddy Creek Watershed/ Grizzly WHMA	Bureau of Land Management Rawlins Field Office/ Wyoming Game and Fish Department	Habitat for Colorado River fish species unique to Muddy Creek watershed and crucial winter habitat for elk and mule deer	WYCO-D and route variation	59,720	13,293	506	8	13,807	45,976	0.010
Adobe Town Wild Horse Herd Management Area	Bureau of Land Management Rawlins Field Office	To provide a protected area for up to 812 wild horses after foaling season	WYCO-B and route variations	472,812	7,289	1,166	216	8,671	468,953	0.050
			WYCO-C and route variations		7,289	1,166	129	8,584	469,040	0.030
			WYCO-F and route variations		7,289	1,166	9	8,464	469,160	0.002
			WYCO-F and route variations		2,459	948	22	3,428	17,128	0.110

TABLE 4-118 SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES										
Name	Managing Agency	Management Values	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
					Past and Present Development	Reasonably Foreseeable Future Actions				
Utah										
Moffat County Road #11 Land and Water Conservation Fund site	Moffat County, National Park Service (NPS)	Funding provided by NPS to construct the road	WYCO-D and route variation	590	38	3	1	42	548	0.000 ³
Yampa River Recreation Area Land and Water Conservation Fund site	Moffat County, NPS	Funding provided by NPS to develop a recreation area	All WYCO alternative routes and route variations	3,781	932	11	2	945	2,836	0.000 ³
Bitterbrush State Wildlife Area	Colorado Parks and Wildlife	Provides hunters and wildlife viewers opportunities to see mule deer, elk, and pronghorn	WYCO-D and route variation	8,057	450	104	0	554	7,525	0.000
Deerlodge Road entrance to Dinosaur National Monument	NPS	Provides the entrance to Dinosaur National Monument	WYCO-B-2, WYCO-C-2, WYCO-F-2	6732	101	5	1	107	565	0.100

TABLE 4-118 SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES										
Name	Managing Agency	Management Values	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
					Past and Present Development	Reasonably Foreseeable Future Actions				
Tuttle Ranch Conservation Easement	Colorado Parks and Wildlife	To protect white-tailed prairie dog complex by allowing the reintroduction of black-footed ferrets and conservation of sage-grouse leks	WYCO-B-1, WYCO-C-1, WYCO-F-1	15,000	2,929	155	43	3,128	12,019	0.300
			All other WYCO-B, WYCO-C, and WYCO-F alternative routes and route variations		2,929	155	0	3,085	12,061	0.000

NOTES:
¹The zero signifies the Project right-of-way is overlapping with past and present or reasonably foreseeable future actions and is included in the acreage of the past and present actions or reasonably foreseeable future actions column(s), as appropriate.
²The size only pertains to Deerlodge Road and not the entire Dinosaur National Monument.
³Area will be spanned resulting in zero percent disturbance
 Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Yampa River Recreation Area Land and Water Conservation Fund Site

The percentage of the Project in the Yampa River Recreation Area LWCF site would be zero percent because the Project would span the site, so no permanent infrastructure would affect the site. Past and present actions on the LWCF site include oil and/or gas lease activity on Colorado state land and the BLM Little Snake Field Office, Hayden to Artesia 138kV transmission line, the Bears Ears to Bonanza 345kV transmission line, two railroad lines, and Colorado State Highway 13. The RFFA proposed on the site would be the TransWest Express Transmission Project. The short-term cumulative effects of the Project crossing the LWCF site in addition to the past and present and the RFFA occurring on the LWCF site potentially would limit and/or hinder access and increase noise during construction of the projects. The long-term cumulative effects would be the presence of an additional transmission line spanning LWCF site.

Bitterbrush State Wildlife Area

The percentage of the Project in the Bitterbrush SWA would be zero percent because the Project right-of-way is located in an area that has past and present actions and an RFFA. Past and present actions that occur in the Bitterbrush SWA include pipelines and secondary roads (e.g., access roads, etc.). The RFFA proposed in the SWA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would be increased noise from construction equipment, limited access to a portion of the SWA during construction actions of the projects, and disturbance to the lands in the right-of-way. Long-term cumulative effects on management actions in the SWA are not anticipated.

Deerlodge Road Entrance to Dinosaur National Monument

The percentage of the Project in the Deerlodge Road entrance to Dinosaur National Monument would be less than 1 percent. In addition, the Project would span the site, so no permanent infrastructure would affect the site. Past and present actions that occur in the area traversed by Deerlodge Road include oil and/or gas lease activity on Colorado state land and prescribed fires and range improvements completed by the White River Field Office. The RFFA proposed for Deerlodge Road is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would be increased noise from construction equipment, increased traffic, potential delays for users, and/or detours during construction actions. The long-term cumulative effects would be increased industrialization along Deerlodge Road. Cumulative effects for Deerlodge Road are also discussed in Section 4.3.16.

Tuttle Ranch Conservation Easement

The percentage of the Project in the Tuttle Ranch Conservation Easement would be less than 1 percent. Past and present actions that occur in the Tuttle Ranch Conservation Easement include oil and/or gas leases in the BLM Little Snake Field Office and on Colorado state lands, range improvement projects completed by the White River Field Office, Bears Ears to Bonanza 345kV transmission line, Hayden to Artesia 138kV transmission line, and secondary roads (access roads, etc.). The RFFA proposed for Tuttle Ranch Conservation Easement is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would be increased noise from construction equipment, limited access to a portion of the conservation easement during construction actions of the projects, and disturbance to the lands in the right-of-way. Long-term cumulative effects would include additional industrial development in the conservation easement (which goes against the terms of the conservation easement).

4.3.13.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

Past and present actions and RFFAs located in special designations and other management areas and are crossed by the COUT BAX route grouping are presented in Table 4-119. Discussion of the potential cumulative effects on special designations and other management areas are presented below.

Effects

Piceance/East Douglas Wild Horse Herd Management Area

The percentage of the Project in the Piceance/East Douglas WHHMA would be less than 1 percent. Past and present actions in the WHHMA include oil and/or gas leases, vegetation treatments, and range improvement projects managed and prescribed by the BLM White River Field Office, and the Shell Frontier Oil and Gas, Incorporated Oil Shale Research, Development, and Demonstration Project. The RFFA proposed in the WHHMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and other RFFAs proposed in this area would be increased noise from construction equipment, limited access to a portion of the WHHMA during construction actions of the projects, and disturbance to the lands in the right-of-way. Long-term cumulative effects on management actions in the WHHMA are not anticipated.

Big Hole Rock Art Site Area of Critical Environmental Concern

The percentage of the Project located in the Big Hole Rock Art Site ACEC would be less than 1 percent but the Project would span the ACEC, so no permanent infrastructure would affect the ACEC. There is one existing 345kV line (Huntington to Pinto) and no RFFAs that occur in the ACEC. The cumulative effects of the Project crossing the ACEC would be same as direct and indirect impacts described in Section 3.3.13 and Section 3.2.18.

North Moroni Conservation Easement

The percentage of the Project in the North Moroni Conservation Easement would be less than 1 percent. Past and present actions that occur in the North Moroni Conservation Easement include active oil and/or gas leases on SITLA-managed land and secondary roads (as, etc.). The RFFA proposed for North Moroni Conservation Easement is the TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would include increased noise from construction equipment, limited access to a portion of the conservation easement during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects would include additional industrial development in the conservation easement.

Fountain Green Wildlife Management Area

The percentage of the Project in the Fountain Green WMA would be less than 1 percent. Past and present actions that occur in the WMA include active oil and/or gas leases on SITLA-managed land. The RFFA proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would be increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance of land in the right-of-way. Long term cumulative effects on management actions in the WMA are not anticipated.

TABLE 4-119 SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES										
Name	Managing Agency	Management Values	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
					Past and Present Development	Reasonably Foreseeable Future Actions				
Colorado										
Piceance/East Douglas Wild Horse Herd Management Area	Bureau of Land Management (BLM) White River Field Office	To provide habitat for between 135 and 235 wild horses	All COUT BAX alternative routes	190,130	20,293	25	11	20,328	169,507	0.006
Utah										
Big Hole Rock Art Site Area of Critical Environmental Concern	BLM Price Field Office	To protect Big Hole Rock Art site	COUT BAX-B	650	6	0	4	10	639	0.600
North Moroni Conservation Easement	Utah Division of Wildlife Resources (UDWR)	To protect crucial deer and elk winter range	COUT BAX-B, COUT BAX-C	1,100	120	17	9	146	1,059	0.800
Fountain Green Wildlife Management Area (WMA)	Utah Reclamation Mitigation and Conservation Commission (URMCC) and UDWR	To reserve forage for big game so to prevent them from feeding on adjacent farms and to improve upland game habitat.	COUT BAX-B, COUT BAX-C	2,445	1,254	6	1	1,260	1,184	0.040

TABLE 4-119 SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES										
Name	Managing Agency	Management Values	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
					Past and Present Development	Reasonably Foreseeable Future Actions				
Gordon Creek WMA	UDWR	To protect critical big game winter range	COUT BAX-E	22,600	1,774	272	0 ¹	2,046	17,045	0.000
Salt Creek WMA	URMCC and UDWR	To protect important nesting, resting, and feeding habitat for waterfowl	All COUT BAX alternative routes	5,254	845	10	5	860	1,218	0.100

NOTES:
¹The zero signifies the Project right-of-way is overlapping with past and present or reasonably foreseeable future actions and is included in the acreage of the past and present actions or reasonably foreseeable future actions column(s), as appropriate.
 Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

Gordon Creek Wildlife Management Area

The percentage of the Project in the Gordon Creek WMA would be zero percent because the Project right-of-way is located in an area that has past and present actions and an RFFA. Past and present actions that occur in the WMA include active oil and/or gas leases managed by BLM Price Field Office and SITLA. The RFFA proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would be increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects on big game management actions in the WMA are not anticipated.

Salt Creek Wildlife Management Area

The percentage of the Project in the Salt Creek WMA would be less than 1 percent. Past and present actions that occur in the WMA include active oil and/or gas leases on SITLA-managed lands. The RFFA proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would be increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects on waterfowl management actions in the WMA are not anticipated.

4.3.13.3.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

Past, present, and RFFAs located in special designation and other management areas that are crossed by the COUT alternative routes and route variations are presented in Table 4-120. Discussion of the potential cumulative effects on special designations and other management areas are presented below.

Effects

Lower Green River Corridor Area of Critical Environmental Concern

The percentage of the Project in the Lower Green River Corridor ACEC would be less than 1 percent. This ACEC also includes a portion of the Lower Green River Suitable Wild and Scenic River (described below). Past and present actions that occur in the ACEC include gilsonite mining on the eastern side of the river, active oil and/or gas and metalliferous mineral leases on SITLA-managed lands, the Gasco Energy, Inc. Uinta natural gas development, the Bill Barrett Corporation West Tavaputs Plateau oil and/or gas development, and one existing Questar pipeline. RFFAs proposed or planned in the ACEC are TransWest Express Transmission Project and Newfield's Monument Butte oil and/or gas development. The short-term cumulative effects of the Project in addition to past and present actions, and RFFAs proposed in this area would be increased noise from construction equipment and limited access to a portion of the ACEC during construction actions of the projects. Long-term cumulative effects on the management of riparian habitat in this ACEC are not anticipated. Cumulative effects for Lower Green River Corridor ACEC regarding scenery are discussed in Section 4.3.16.

Lower Green River Suitable Wild and Scenic River Segment

The percentage of the Project in the Lower Green River Suitable WSR would be zero percent because the Project right-of-way is located in an area that has past and present actions and RFFAs. In addition, the Project would span the suitable WSR, so no permanent infrastructure would directly affect the suitable WSR. Past and present actions that occur in the suitable WSR include gilsonite mining on the eastern side of the river, active oil and/or gas and metalliferous mineral leases on SITLA-managed land, oil and/or gas leases managed by the BLM Vernal Field Office, XTO Energy's Riverbend Directional Infill oil and/or gas development, the Gasco Energy, Inc. Uinta natural gas development, the Bill Barrett Corporation West Tavaputs Plateau oil and/or gas development, and one existing Questar pipeline. RFFAs proposed or planned in the suitable WSR are the TransWest Express Transmission Project and Newfield's

Monument Butte oil and/or gas development. The short-term cumulative effects of the Project in addition to past and present actions, and RFFAs proposed in this area would be increased noise from construction equipment and the potential for limited access to a portion of the suitable WSR during construction actions of the projects in the Fourmile Bottom area. Long-term cumulative effects on the management of outstandingly remarkable value of recreation for this suitable WSR are not anticipated. Cumulative effects on Lower Green River suitable WSR regarding the scenic classification are discussed in Section 4.3.16.

North Moroni Conservation Easement

The percentage of the Project in the North Moroni Conservation Easement would be less than 1 percent. Past and present actions that occur in the North Moroni Conservation Easement include active oil and/or gas leases on SITLA-managed lands and secondary roads (access roads, etc.). The RFFA proposed for North Moroni Conservation Easement is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would be increased noise from construction equipment, limited access to a portion of the conservation easement during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects would include additional industrial development in the conservation easement.

Utah Reclamation Mitigation and Conservation Commission Lands

The percentage of the Project located on URMCC-managed lands would be less than 1 percent. There are no past and present actions or RFFAs that are directly related to these lands but past, present, and RFFAs are in the WMAs that these lands are associated with. See Currant Creek and Tabby Mountain WMAs below for cumulative effects related to the URMCC-managed lands.

Birdseye/Lake Fork Wildlife Management Areas

The percentage of the Project in the Birdseye/Lake Fork WMAs would be zero percent because the Project right-of-way is located in an area that has past, present, and RFFAs. Past and present actions that occur in the WMA include active oil and/or gas leases located on SITLA-administered land. The RFFA proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would include increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance to the lands in the right-of-way. Long-term cumulative effects on management actions for big game and the threatened Deseret milkvetch to the WMA to are not anticipated.

Cottonwood Canyon Wildlife Management Area

The percentage of the Project in the Cottonwood Canyon WMA would be zero percent because the Project right-of-way is located in an area that has past and present actions and an RFFA. Past and present actions that occur in the WMA include the Lake Canyon oil and/or gas project and oil leases on Utah state lands. The RFFA proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would include increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects on management actions in the WMA to big game are not anticipated.

TABLE 4-120 SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES										
Name	Managing Agency	Management Values	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
					Past and Present Development	Reasonably Foreseeable Future Actions				
Colorado										
There are no special designations or other management areas crossed in Colorado for this route grouping.										
Utah										
Lower Green River Corridor Area of Critical Environmental Concern	Bureau of Land Management Vernal Field Office	To protect riparian habitat and scenery	COUT-C and route variations, COUT-H, COUT-I	9,347	689	41	1	731	8,616	0.01
Lower Green River Suitable Wild and Scenic River segment	Bureau of Land Management Vernal Field Office	Outstandingly remarkable values are recreation and fish with a tentative classification of scenic	COUT-C and route variations, COUT-H, COUT-I	11,968	735	32	0	767	11,201	0.00
North Moroni Conservation Easement	Utah Division of Wildlife Resources	To protect crucial deer and elk winter range	COUT-I	1,100	120	17	9	146	1,059	0.80

TABLE 4-120 SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES										
Name	Managing Agency	Management Values	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
					Past and Present Development	Reasonably Foreseeable Future Actions				
The Utah Reclamation Mitigation and Conservation Commission (URMCC) Property (adjacent to: Tabby Mountain and Currant Creek Wildlife Management Areas [WMA])	URMCC	Acquired as mitigation for the Central Utah Project (a water development project)	COUT-A and route variation	16,550	1,377	80	36	1,493	15,057	0.20
Birdseye/Lake Fork WMA	UDWR	To protect big game winter range and threatened Deseret milkvetch populations	COUT-A, COUT-B, and COUT-C and route variations	3,750	34	118	19	171	828	0.50
Cottonwood WMA	UDWR	To protect big game winter range and to increase public access in an area of predominately private land	COUT-B and route variations	6,700	238	44	0	282	6,466	0.00

TABLE 4-120 SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES										
Name	Managing Agency	Management Values	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
					Past and Present Development	Reasonably Foreseeable Future Actions				
Currant Creek WMA	UDWR	Acquired as mitigation for wildlife habitat loss for the Central Utah Project, has angler access and aquatic/terrestrial habitat protection	COUT-A and route variation	21,400	1,797	109	40	1,946	19,457	0.20
Dairy Fork WMA	UDWR	To protect and enhance mule deer and elk winter range	COUT-A and route variations	4,900	112	79	18	208	4,868	0.40
			COUT-B and COUT-C and route variations				33	224	4,854	0.70
Fountain Green WMA	URMCC and UDWR	To reserve forage for big game so to prevent them from feeding on adjacent farms and to improve upland game habitat.	COUT-I	360	2,813	6	1	2,819	1,184	0.30
Gordon Creek WMA	UDWR	To protect critical big game winter range	COUT-H	22,600	1,774	272	0	2,046	17,045	0.00

TABLE 4-120 SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES										
Name	Managing Agency	Management Values	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
					Past and Present Development	Reasonably Foreseeable Future Actions				
Rabbit Gulch WMA	UDWR	To protect important nesting, resting, and feeding habitat for waterfowl	COUT-A and route variations	9,407	2,050	103	58	2,210	6,983	0.60
Salt Creek WMA	URMCC and UDWR	To protect critical big game winter range	All COUT alternative routes and route variations	5,254	845	10	5	860	1,218	0.10
Spencer Fork WMA	UDWR	To protect big game winter range	COUT-A, COUT-B, and COUT-C and route variations	6,500	3,932	237	80	4,248	3,657	1.20
Starvation WMA	UDWR	To protect and enhance mule deer and elk winter range	COUT-B, COUT-C and route variations	5,700	287	23	0	310	7,778	0.00
Tabby Mountain WMA	URMCC and UDWR	To protect critical winter range for big game	COUT-A and route variation	51,432	1,237	125	10	1,408	6,718	0.02
<p>NOTES: ¹The zero signifies the Project right-of-way is overlapping with past and present or reasonably foreseeable future actions and is included in the acreage of the past and present actions or reasonably foreseeable future actions column(s), as appropriate. Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.</p>										

Currant Creek Wildlife Management Area

The percentage of the Project in the Currant Creek WMA would be less than 1 percent. Past and present actions that occur in the WMA include the Bill Barrett Lake Canyon Oil and/or Gas Project and vegetation treatments in the BLM Vernal Field Office. The RFFA proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would include increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance to the lands in the right-of-way. Long-term cumulative effects on management actions in the WMA are not anticipated.

Dairy Fork Wildlife Management Area

The percentage of the Project in the Dairy Fork WMA would be less than 1 percent. There are no past and present actions that occur in the WMA. The RFFA proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to an RFFA proposed in this area would include increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects on management actions in the WMA for elk and mule deer are not anticipated.

Fountain Green Wildlife Management Area

The percentage of the Project in the Fountain Green WMA would be less than 1 percent. Past and present actions that occur in the WMA include active oil and/or gas leases on SITLA-managed lands. The RFFA proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would include increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance to the lands in the right-of-way. Long-term cumulative effects on management actions in the WMA are not anticipated.

Gordon Creek Wildlife Management Area

The percentage of the Project in the Gordon Creek WMA would be zero percent because the Project right-of-way is located in an area that has past and present actions and an RFFA. Past and present actions that occur in the WMA include active oil and/or gas leases managed by BLM Price Field Office and SITLA. The RFFA proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would include increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects on big game management actions in the WMA are not anticipated.

Rabbit Gulch Wildlife Management Area

The percentage of the Project in the Rabbit Gulch WMA would be less than 1 percent. Past and present actions that occur in the WMA include active oil and/or gas development and oil development on Utah state land. The RFFA proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would include increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance to the lands in the right-of-way. Long-term cumulative effects on big game management actions in the WMA are not anticipated.

Salt Creek Wildlife Management Area

The percentage of the Project in the Salt Creek WMA would be less than 1 percent. Past and present actions that occur in the WMA include active oil and/or gas leases on SITLA-managed lands. The RFFA

proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would include increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects on waterfowl management actions in the WMA are not anticipated.

Spencer Fork Wildlife Management Area

The percentage of the Project in the Spencer Fork WMA would be approximately 1 percent. There are no past and present actions that occur in the WMA. The RFFA proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would include increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects on big game management actions in the WMA are not anticipated.

Starvation Wildlife Management Area

The percentage of the Project in the Starvation WMA would be zero percent because the Project right-of-way is located in an area that has a past and present action and an RFFA. Past and present actions that occur in the WMA include Sheep Creek vegetation management. The RFFA proposed in the WMA is TransWest Express Transmission Project. The short-term cumulative effects of the Project in addition to past and present actions, and an RFFA proposed in this area would include increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects on management actions in the WMA to mule deer and elk habitat are not anticipated.

Tabby Mountain Wildlife Management Area

The percentage of the Project in the Tabby Mountain WMA would be less than 1 percent. Past and present actions that occur in the WMA include Bill Barrett Corporation Blacktail Ridge oil and/or gas development and habitat management actions managed by the BLM Vernal Field Office. RFFAs proposed or planned in the WMA are TransWest Express Transmission Project and Bill Barrett Corporation Blacktail Ridge 12-well oil and/or gas project. The short-term cumulative effects of the Project in addition to past and present actions, and RFFAs proposed or planned in this area would be increased noise from construction equipment, limited access to a portion of the WMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects on management actions in the WMA are not anticipated.

4.3.14 Wilderness Areas, Wilderness Study Areas, and Non-wilderness Study Area Lands with Wilderness Characteristics

The approach for analysis of cumulative effects on non-WSA lands with wilderness characteristics or natural areas, including the geographic and temporal scopes defined for analysis is presented in Table 4-3. The cumulative effects on wilderness areas and wilderness study areas are not discussed in this section because these areas are not affected directly by the Project. This analysis relies on the results of direct and indirect impacts from the Project (refer to Section 3.2.14) and considers them in conjunction with the past, present, reasonably foreseeable future developments listed in Tables 4-1 and 4-2.

4.3.14.1 Issues Identified for Analysis

The following issue was identified for analysis of cumulative effects on lands with wilderness characteristics in the CIAA.

- **What are the impacts on the wilderness characteristics or management of lands with wilderness characteristics?** Potential conflicts include noncompliance with management prescriptions established for lands with wilderness characteristics or adversely impacting the wilderness characteristics for which a land with wilderness characteristics was considered for future wilderness designation (e.g., disrupting the naturalness of the environment, etc.). These conflicts would be intensified where the Project and other future and/or existing activities are occurring in the same land with wilderness characteristics.

4.3.14.2 Existing Condition

Past and present actions occur on almost all lands with wilderness characteristics in the geographic scope. This includes lands with wilderness characteristics in the BLM Rawlins, Little Snake, Moab, and White River Field Offices. The natural environment has been altered in a way that allows for past and present actions such as recreational infrastructure, oil and/or gas development, roads, pipelines, transmission lines, etc., but is still compatible with the wilderness characteristics for which the lands with wilderness characteristics were inventoried.

4.3.14.3 Results

4.3.14.3.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

Potential cumulative effects from past, present, and RFFAs located on non-WSA lands with wilderness characteristics, crossed by alternative routes considered in the WYCO route grouping, are summarized below by inventoried area.

Non-wilderness Study Area Lands with Wilderness Characteristics in the BLM Rawlins Field Office

Due to existing oil and gas development and areas leased for development, the BLM elected to manage non-WSA lands with wilderness characteristics for multiple-use because of valid existing lease rights; therefore, implementation of management actions to protect identified wilderness characteristics would be prohibited.

Non-wilderness Study Area Lands with Wilderness Characteristics in the BLM Little Snake Field Office

West Sevenmile

Wilderness characteristics for this inventoried area (refer to Section 3.2.14.5) have been minimally influenced by past and present development including historic uses, vegetation treatments conducted by the Little Snake Field Office, and potential oil and gas development on Colorado State Land Board leases. The introduction of the Project (Alternatives WYCO-B, WYCO-C, and WYCO-F) and the proposed TransWest Express Project would dominate the wilderness characteristics along the eastern portion of West Sevenmile; however the remaining area would be intact. Opportunities for solitude would be influenced further into the inventoried area by these projects due to their vertical prominence. Effects on the wilderness values could be reduced if the proposed transmission line projects were colocated, to the extent practicable, to consolidate modifications in the inventoried area.

Lower Little Snake

Wilderness characteristics for this inventoried area have been minimally influenced by past and present development including agricultural uses on private lands adjacent to the Little Snake River. The Project (Alternatives WYCO-B, WYCO-C, and WYCO-F) and the proposed TransWest Express Project would cross this area, influencing wilderness characteristics adjacent to the Little Snake River. However, effects on wilderness characteristics in the core of the Lower Little Snake area, northwest of the Little Snake River, would be limited due to topographic screening offered by Sevenmile Ridge. All route variations except WYCO-B-1, WYCO-C-1, and WYCO-F-1 would cross an approximate 300-foot-wide section that connects two larger portions of the area. The introduction of the Project and the development of the TransWest Express Project within the core of the Lower Little Snake Area would begin to dominate the wilderness area. The effects could be reduced by colocating the two transmission line projects across the connection of the two portions of the Lower Little Snake area.

Simsberry Draw

Wilderness characteristics for this inventoried area have been minimally influenced by past and present development including historic use, vegetation treatments conducted by the Little Snake Field Office, and potential oil and gas development on Colorado State Land Board leases. The introduction of the Project (Alternatives WYCO-B, WYCO-C, and WYCO-F) and the proposed TransWest Express Project would dominate these characteristics since the transmission line projects would bisect this inventoried area on Godiva Rim. Due to the prominence of Godiva Rim, these projects would be skylined and further influence opportunities for solitude and primitive recreation in this area. Because the two proposed transmission line projects would bisect the area, the resulting areas would be less than the 5000-acre threshold for the management of non-WSA lands with wilderness characteristics.

4.3.14.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

Potential cumulative effects from past, present, and RFFAs located on non-WSA lands with wilderness characteristics crossed by alternative routes in the COUT BAX route grouping are summarized below by inventoried area.

Lands with Wilderness Characteristics in BLM White River Field Office

Coal Ridge

Wilderness characteristics for the Coal Ridge area (refer to Section 3.2.14.5) have been minimally influenced by past and present development. The introduction of the Project (Alternatives COUT BAX-B, COUT-BAX-C, and COUT BAX-E) and the proposed TransWest Express Project would influence wilderness characteristics along the western edge of Coal Ridge. However, topographic screening offered by Coal Ridge would reduce the effects of the Project on the wilderness characteristics of the core area. Effects on these wilderness values could be further reduced if the proposed transmission line projects were colocated outside of the area or located where views from the core area of this inventoried area could be further screened by topography.

Gilsonite Hills

Wilderness characteristics for this inventoried area have been minimally influenced by past and present development including potential oil and gas development on the BLM White River Field Office leases adjacent to the area, as well as a series of pipelines that form the southern boundary and influence wilderness values in the area. The introduction of the Project (Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E) along the eastern edge of the Gilsonite Hills area would further influence and begin to dominate the wilderness characteristics of the area, while effects on the core of the area would be limited due to the topographic screening offered by the highly dissected terrain. The proposed TransWest Express Project would not traverse this inventoried area. Effects on the wilderness

values could be reduced if the Project was located east of Dragon Road rather than crossing the road twice and traversing the inventoried area.

Oil Spring Mountain Wilderness Study Area (addition)

Wilderness characteristics for the Oil Spring Mountain WSA addition have been minimally influenced by past and present development including potential oil and gas development on the BLM White River Field Office leases in the area. If developed, oil and gas activities could begin to dominate the wilderness characteristics of this area. The introduction of the Project (Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E) and the proposed TransWest Express Project along the western edge of this inventoried area would further influence and begin to dominate the wilderness characteristics of the area. Effects on these wilderness values could be reduced if the proposed transmission line projects were collocated and sited further to the west outside of the inventoried area.

Bluejay Creek

Wilderness characteristics for this inventoried area have been influenced by past and present development including oil and gas pads located at the end of cherry-stemmed roads and a series of pipelines which form the southern boundary of the area. The BLM White River Field Office has leased areas for oil and gas development adjacent to the northeast and southwest edges of the Bluejay Creek area. If developed, oil and gas activities could begin to dominate the local area. The introduction of the Project (Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E) and the proposed TransWest Express Project along the northwestern edge of this inventoried area would further influence and begin to dominate the wilderness characteristics of the area. Effects on these wilderness values could be reduced if the proposed transmission line projects were collocated and sited further to the northwest outside of the inventoried area.

Whiskey Canyon

Wilderness characteristics for this inventoried area have been influenced by past and present development that includes a series of pipelines which form the eastern boundary of the area and encroach on the boundary. The BLM White River Field Office has leased areas for oil and gas development adjacent to the northern and western edges of this inventoried area. If developed, oil and gas activities could influence the characteristics of the area. The introduction of the Project (Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E) along the western edge of this inventoried area would further influence and begin to dominate the wilderness characteristics of the area. The proposed TransWest Express Project would not traverse Whiskey Canyon. Effects on the wilderness values could be reduced if the Project was sited further to the west outside of the inventoried area.

Lands with Wilderness Characteristics in BLM Grand Junction Field Office

Spring Canyon

Wilderness characteristics for this inventoried area (refer to Section 3.2.14.5) have been influenced by past and present development that include a series of pipelines that form the western boundary of this area and a number of cherry-stemmed roads, which influence opportunities for solitude and primitive recreation even though the roads are not within the boundary of the inventoried area. The BLM Grand Junction Field Office has leased areas for oil and gas development on several parcels in Spring Canyon. If developed, oil and gas activities could influence the wilderness characteristics of the area. The introduction of the Project (Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E) and the proposed TransWest Express Project along the western edge of this inventoried area would further influence and begin to dominate wilderness values of the local area. Effects on these wilderness values could be reduced if the proposed transmission line projects were collocated and sited further to the west outside of this inventoried area.

Lands with Wilderness Characteristics in BLM Moab Field Office

Harley Dome

Wilderness characteristics for the Harley Dome area (refer to Section 3.2.14.5) have been minimally influenced by past and present development that includes I-70 adjacent to the southeastern boundary of the area and potential oil and gas development on Utah SITLA leases along the northern boundary. The introduction of the Project (Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E) and the proposed TransWest Express Project along the southeastern boundary of the area would further influence and begin to dominate the wilderness characteristics of the area. Due to limited screening opportunities, the influence of these projects would extend further into the core of the area. Effects on these wilderness values could be reduced if the proposed transmission line projects were collocated adjacent to I-70, which would increase impacts on views for motorists on this high-use highway.

Floy Canyon

Wilderness characteristics for this inventoried area have been minimally influenced by past and present development that includes I-70, the D&RGW Railroad, and an existing power line adjacent to the southern boundary of the area. The BLM Moab Field Office has leased this entire area for oil and gas development. If developed, oil and gas activities could dominate the wilderness characteristics of this area. The introduction of the Project (Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E) and the proposed TransWest Express Project in the area south of Hatch Mesa would further influence wilderness values, where wilderness characteristics are not as intact as the area north of Hatch Mesa. Effects on these wilderness values could be reduced if the proposed transmission line projects were collocated with the existing rail line and I-70, which would consolidate disturbances as viewed from Floy Canyon.

Lands with Wilderness Characteristics in BLM Price Field Office

Desolation Canyon

Wilderness characteristics for this inventoried area (refer to Section 3.2.14.5) have been minimally influenced by past and present development that includes U.S. Highway 6, the D&RGW Railroad, and an existing 138kV transmission line adjacent to the western boundary of the area. Additionally, potential oil and gas development on Utah SITLA leases adjacent to the southeast and northwest portions of this area could influence wilderness values in the inventoried area. Due to limited screening opportunities, the introduction of the Project (Alternatives COUT BAX-C, and COUT BAX-E) along the western portion of this inventoried area would further influence and begin to dominate the area which would extend the influence of the Project further into the core of the area. The proposed TransWest Express Project would not traverse this inventoried area. Effects on these wilderness values could be reduced if the Project was sited in closer proximity to U.S. Highway 6, which would increase impacts on views for motorists on this designated scenic road.

Never Sweat Wash

Wilderness characteristics for this inventoried area have been minimally influenced by past and present development that includes the Green River Cutoff Road, which separates Never Sweat Wash from the Lost Spring Wash area, and potential oil and gas development on Utah SITLA leases on lands within the area's boundary. The introduction of the Project (Alternative COUT BAX-C), the proposed TransWest Express Project, and the Twin Bridges Oil and Gas Project would dominate the wilderness characteristics adjacent to Green River Cutoff Road and areas where views of these proposed projects would limit opportunities for solitude and primitive recreation within the core area. Effects on wilderness values could be reduced if the proposed transmission line projects were collocated and sited adjacent to existing modifications, to consolidate disturbances within and adjacent to this area.

Lost Spring Wash

Wilderness characteristics for this inventoried area have been minimally influenced by past and present development that includes the Green River Cutoff Road, which separates Lost Spring Wash from the Never Sweat Wash area, oil and gas development on Utah SITLA leases on lands within the area, and an existing 345kV transmission line adjacent to the southwest edge of the area. The introduction of the Project (Alternatives COUT BAX-B and COUT BAX-C), the proposed TransWest Express Project, and the Twin Bridges Oil and Gas Project would dominate the wilderness characteristics adjacent to the Green River Cutoff Road (Alternative COUT BAX-C), and to a lesser degree along Cottonwood Wash (Alternative COUT BAX-B), as well as in areas where views of these proposed projects would limit opportunities for solitude and primitive recreation. Effects on wilderness values could be reduced if the proposed transmission line projects were colocated and sited adjacent to existing modifications, to consolidate disturbances within and adjacent to this area.

Price River

Wilderness characteristics for this inventoried area have been minimally influenced by past and present development that include potential oil and gas development on Utah SITLA leases. The introduction of the Project (Alternative COUT BAX-E) and the proposed TransWest Express Project would influence wilderness characteristics along the northern edge of this area but there would be limited effects on these characteristics within the core of this inventoried area due to topographical screening offered by the canyon walls adjacent to the Price River. Effects on wilderness values could be reduced if the proposed transmission line projects were colocated and sited further to the north, outside of the inventoried area.

4.3.14.5.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

Potential cumulative effects from past, present, and RFFAs located on non-WSA lands with wilderness characteristics, crossed by alternative routes considered in the COUT route grouping, are summarized below by inventoried area.

Lands with Wilderness Characteristics in BLM White River Field Office

Coal Oil Gulch

Wilderness characteristics for this inventoried area (refer to Section 3.2.14.5) have been minimally influenced by past and present development that includes two existing transmission lines located approximately 1,000 feet north of the area and extensive oil and gas development adjacent to the southern boundary. The introduction of the Project (Alternatives WYCO-B, WYCO-C, and WYCO-F) and the proposed TransWest Express Project along the northern portion of the inventoried area would further influence wilderness characteristics. Since these projects are located in proximity to existing development, wilderness values within the core of the inventoried area would be minimally affected. Effects on wilderness values could be further reduced if the proposed transmission line projects were colocated with the existing transmission lines, to the extent practicable.

4.3.15 Inventoried Roadless Areas and Unroaded/Undeveloped Areas

The approach for analysis of cumulative effects on IRAs and unroaded/undeveloped areas units, including the geographic and temporal scopes defined for analysis, is presented in Table 4-3. This analysis relies on the identified direct and indirect impacts from the Project (refer to Section 3.2.15) to IRAs and unroaded/undeveloped areas, and considers these impacts in conjunction with the past, present, and RFFAs listed in Tables 4-1 and 4-2.

4.3.15.1 Issues Identified for Analysis

The following are the issues identified related to IRAs and unroaded/undeveloped areas.

4.3.15.1.1 Potential Impacts on Inventoried Roadless Areas and Unroaded/Undeveloped Areas

Potential impacts of the Project on IRAs and unroaded and undeveloped areas would be the potential inability of the USFS to continue to manage these areas for the wilderness attributes and roadless characteristics for which they were originally designated.

4.3.15.2 Existing Condition

The existing conditions in each of these areas are discussed in Section 3.2.1.5. No IRAs or unroaded/undeveloped areas in Wyoming or Colorado are in the alternative route study corridors.

These wilderness and roadless values have been influenced by past and present actions including recreational infrastructure, oil and/or gas development, roads, pipelines, and transmission lines. These modifications, in general, are compatible with the values identified for each IRA and unroaded/undeveloped area. Many of the areas where land has been leased for oil and/or gas development have not yet been constructed; therefore, the existing condition may appear more natural than would be present after the development of these approved projects.

4.3.15.3 Results

4.3.15.3.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

There are no IRAs or unroaded/undeveloped areas crossed by the WYCO alternative routes including route variations.

4.3.15.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

Past and present actions and RFFAs potentially crossing IRAs and unroaded and undeveloped areas also crossed by alternative routes considered in the COUT BAX route grouping are presented in Table 4-121. IRAs and/or unroaded/undeveloped areas are not analyzed for Colorado because none of these areas are crossed by alternative routes or route variations considered for the Project.

Effects

The following summarizes the effects of past, present, and RFFAs for each IRA and unroaded/undeveloped area crossed by the Project.

TABLE 4-121 INVENTORIED ROADLESS AND UNROADED/UNDEVELOPED AREAS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES								
Unit Name and Type	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development ¹	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
			Past and Present Development	Reasonably Foreseeable Future Actions				
Utah								
Manti-La Sal National Forest								
East Mountain Unroaded/ Undeveloped Area	COUT BAX-B, COUT BAX-C	28,303	18,734	0	0	18,734	9,569	66.0
Oak Creek Unroaded/ Undeveloped Area	COUT BAX-E	5,359	6	0	24	30	5,329	0.6
NOTES: ¹ To avoid overestimating impacts when the Project right-of-way overlaps past and present activities or other reasonably foreseeable future actions (RFFA). A zero incremental project development is assumed. Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total. There is potential for overlap between the Project right-of-way, Past and Present, and RFFA columns								

Manti-La Sal National Forest

IRAs

There are not any IRAs crossed by the COUT BAX alternative routes in the Manti-La Sal National Forest.

Unroaded/Undeveloped Areas

East Mountain Unroaded/Undeveloped Area

Wilderness values for this area have been influenced by past and present development including areas leased for oil and/or gas development in the BLM Richfield and Price Field Offices, the Ferron Natural Gas Project, the Deer Creek Coal Lease, and an existing 345kV transmission line which parallels the southwestern boundary of the area. Since the majority of development is associated with leases that have not yet been explored, there are limited modifications present in the unroaded/undeveloped area but when developed, these activities may dominate opportunities for solitude and primitive recreation opportunities in this area. The Project (Alternatives COUT BAX-B and COUT BAX-C) and the TransWest Express Project would further influence these wilderness values through the introduction of transmission structures and right-of-way vegetation clearing along the western boundary of this unroaded/undeveloped area.

Oak Creek Unroaded/Undeveloped

Wilderness values in this area have been minimally influenced by development. Since there are no other planned future activities in this area, effects on these values resulting from the Project (Alternative COUT BAX-E) would be the same as those described in Chapter 3 including the short-term impacts on natural processes and views dominated by the Project from the Maple Fork Trail.

4.3.15.3.3 Colorado to Utah – U.S. Highway 40 to Clover (COUT)

Current projects and other RFFAs potentially crossing IRAs and/or unroaded/undeveloped areas also crossed by alternative routes considered in the COUT route grouping are presented in Table 4-122, and are discussed by National Forest (Ashley, Manti-La Sal, and Uinta) for each alternative route. There are no IRAs or unroaded/undeveloped areas analyzed for Colorado because none of these areas are crossed by the Project.

Effects

The following summarizes the past, present, and RFFAs for each IRA and unroaded/undeveloped area crossed by the COUT route grouping.

Ashley National Forest

Inventoried Roadless Area

IRA 0401010

Wilderness and roadless values for this area have been influenced by past and present development including the Berry Petroleum South Unit oil and/or gas project, oil and/or gas leases administered by the BLM Vernal Field Office, and an existing 138kV transmission line paralleling the northwest boundary of the IRA. Since these oil and gas projects are leased areas, which have not been developed to date, there are limited modifications present in the IRA but when developed, these activities may dominate opportunities for solitude and primitive recreation opportunities in this area. The introduction of the Project (Alternative COUT-B) and the TransWest Express Project would further influence these values along the northwestern boundary of the IRA adjacent to Sowers Canyon Road.

TABLE 4-122 INVENTORIED ROADLESS AND UNROADED/UNDEVELOPED AREAS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES								
Unit Name and Type	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development ¹	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
			Past and Present Development	Reasonably Foreseeable Future Actions				
Utah								
Ashley National Forest								
0401010 Inventoried Roadless Area	COUT-B and route variations	21,869	1,367	113	0	1,480	20,155	7.0
0401011 Inventoried Roadless Area	COUT-B and route variations	30,039	5,178	24	0	5,202	24,837	17.0
0401012 Inventoried Roadless Area	COUT-B-1, COUT-B-2, COUT-B-4, COUT-C-1, COUT-C-2, COUT-C-4	46,363	503	5	0	508	45,855	1.0
0401013 Inventoried Roadless Area	COUT-B-1, COUT-B-2, COUT-B-4, COUT-C-1, COUT-C-2, COUT-C-4	11,900	1,618	0	0	1,618	10,281	14.0
Cottonwood Unroaded/ Undeveloped Area	COUT-B and route variations	25,989	4,428	25	0	4,453	21,536	17.0
Right Fork Indian Canyon Unroaded/ Undeveloped Area	COUT-B-1, COUT-C-1	37,473	393	0	0	394	37,080	1.0
Sowers Canyon Unroaded/ Undeveloped Area	COUT-B and route variations	17,028	1,105	98	0	1,203	15,826	7.0
Manti-La Sal National Forest								
Cedar Knoll Inventoried Roadless Area	COUT-A, COUT-B, and COUT-C and route variations	22,484	3,192	25	0	3,218	19,267	14.0
Cedar Knoll Unroaded/ Undeveloped Area	COUT-A and COUT-B and route variations	28,351	3,879	46	18	3,943	24,409	14.0
	COUT-C and route variations		3,879	46	19	3,944	24,408	14.0

TABLE 4-122 INVENTORIED ROADLESS AND UNROADED/UNDEVELOPED AREAS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES								
Unit Name and Type	Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development ¹	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
			Past and Present Development	Reasonably Foreseeable Future Actions				
East Mountain Unroaded/Undeveloped Area	COUT-I	28,303	18,734	0	0	18,734	9,569	66.0
Oak Creek Unroaded/Undeveloped Area	COUT BAX-E	5,359	6	0	27	33	5,326	0.6
Uinta-Wasatch-Cache National Forest								
Chipman Creek (418008) Inventoried Roadless Area	COUT-A	9,360	94	212	0	306	9,054	3.0
	COUT-A-1		94	212	51	357	9,002	4.0
Willow Creek (418009) Inventoried Roadless Area	COUT-A	18,049	161	1	0	162	17,887	0.9
Solider Summit (418019) Inventoried Roadless Area	COUT-B-1, COUT-B-2, COUT-B-4, COUT-C-1, COUT-C-2, COUT-C-4	6,848	72	32	0	104	6,744	2.0
NOTES: ¹ To avoid overestimating impacts when the Project right-of-way overlaps past and present activities or other reasonably foreseeable future actions (RFFA). A zero incremental project development is assumed. Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total. There is potential for overlap between the Project right-of-way, Past and Present, and RFFA columns								

IRA 0401011

Wilderness and roadless values for this area have been influenced by past and present development including the Berry Petroleum South Unit oil and/or gas project, oil and/or gas leases administered by the BLM Vernal Field Office, and an existing 138kV transmission line paralleling the southeast boundary of the IRA. Similar to the discussion for IRA 0401010, since the majority of these actions are leases that have not been developed, there are limited existing modifications present in the IRA. Through the introduction of the Project (Alternative COUT-B) and the TransWest Express Project, these values would be further influenced by development adjacent to Sowers Canyon Road along the southeast boundary of the IRA.

IRA 0401012

Wilderness and roadless values for this area have been influenced by past and present development in the northeast corner of the IRA associated with oil and/or gas leases administered by the BLM Vernal Field Office. Since these leases have not yet been developed, there are limited existing modifications in this area. The introduction of the Project (Route Variations COUT-B-1, COUT-B-2, COUT-B-4, COUT-C-1, COUT-C-2, and COUT-C-4) and the TransWest Express Project would dominate solitude and primitive recreation values adjacent to the Reservation Ridge Scenic Backway but these values within the steeply sloped canyons would be minimally affected by these projects. Since these projects would traverse the edge of the IRA, other wilderness and roadless values within the IRA would be minimally modified.

IRA 0401013

Due to the limited extent of past and present development in the IRA, the wilderness and roadless values for this area have been minimally influenced. The introduction of the Project (Route Variations COUT-B-1, COUT-B-2, COUT-B-4, COUT-C-1, COUT-C-2, and COUT-C-4) and the TransWest Express Project would minimally affect these values since only the right-of-way, and associated vegetation clearing activities, would occur within the IRA. Opportunities for solitude would be modified along the southern boundary of the IRA where these primitive recreation opportunities are limited.

Unroaded/Undeveloped Areas**Cottonwood Unroaded/Undeveloped Area**

Wilderness values for this area have been influenced by past and present development including the Berry Petroleum South Unit oil and/or gas project, oil and/or gas leases administered by the BLM Vernal Field Office, and an existing 138kV transmission line paralleling the northwest boundary of the area. Since these oil and gas projects are leased areas, which have not been developed to date, there are limited modifications present in the area but when developed, these activities may dominate opportunities for solitude and primitive recreation opportunities in this area. The introduction of the Project (Alternative COUT-B) and the TransWest Express Project would further influence these values along the northwestern boundary of the area adjacent to Sowers Canyon Road.

Right Fork Indian Canyon Unroaded/Undeveloped Area

Wilderness values for this area have been influenced by past and present development including the Berry Petroleum South Unit oil and/or gas project, oil and/or gas leases administered by the BLM Vernal Field Office, and an existing 138kV transmission line paralleling the southeast boundary of the area. Similar to the discussion for the Sowers Canyon Unroaded/Undeveloped Area, since the majority of these actions are leases that have not been developed, there are limited existing modifications present in the area. Through the introduction of the Project (Alternative COUT-B) and the TransWest Express Project, these

values would be further influenced by development adjacent to Sowers Canyon Road along the southeast boundary of the area.

Sowers Canyon Unroaded/Undeveloped Area

Wilderness values for this area have been influenced by past and present development in the northeast corner of the area by oil and/or gas leases administered by the BLM Vernal Field Office. Since these leases have not yet been developed, there are limited existing modifications in this area. The introduction of the Project (Route Variations COUT-B-1, COUT-B-2, COUT-B-4, COUT-C-1, COUT-C-2, and COUT-C-4) and the TransWest Express Project would dominate solitude and primitive recreation values adjacent to the Reservation Ridge Scenic Backway but these values within the steeply sloped canyons would be minimally affected by these projects. Since these projects would traverse the edge of the unroaded/undeveloped area, other wilderness and roadless values within the area would be minimally modified.

Manti-La Sal National Forest

Inventoried Roadless Areas

Cedar Knoll IRA

Wilderness and roadless values for this area have been influenced by active SITLA-administered oil and/or gas leases and an existing 345kV transmission line adjacent to the western boundary of the IRA, which also crosses the area for a short distance. Through the introduction of the Project (Alternatives COUT-A, COUT-B, and COUT-C) and the TransWest Express Project, these values would be further influenced by development but since only the right-of-way for these projects would traverse the IRA, there would be limited effects on these values.

Unroaded/Undeveloped Areas

Cedar Knoll Unroaded/Undeveloped Area

Wilderness values for this area have been influenced by active SITLA-administered oil and/or gas leases and an existing 345kV transmission line adjacent to the western boundary of the area. The introduction of the Project (Alternatives COUT-A, COUT-B, and COUT-C) and the TransWest Express Project, which both cross the boundary of this area, would affect wilderness values along the southwest corner of the unroaded/undeveloped area in proximity to the existing 345kV transmission line. Opportunities for solitude and primitive recreation would be influenced by these projects in an area with limited existing recreation opportunities.

East Mountain Unroaded/Undeveloped Area

Wilderness values for this area have been influenced by past and present development including areas leased for oil and gas development in the BLM Richfield and BLM Price Field Offices, the Ferron Natural Gas Project, the Deer Creek Coal Lease, and an existing 345kV transmission line which parallels the southwestern boundary of the area. Since the majority of this development is associated with leases that have not yet been developed, there are limited modifications present in the unroaded/undeveloped area but when developed, these activities may dominate opportunities for solitude and primitive recreation opportunities in this area. The introduction of the Project (Alternatives COUT-I) and the TransWest Express Project would further influence these wilderness values through the introduction of transmission structures and right-of-way vegetation clearing along the western boundary of this unroaded/undeveloped area.

Oak Creek Unroaded/Undeveloped Area

Wilderness values in this area have been minimally influenced by development. Since there are no other planned future activities in this area, effects on these values resulting from the Project (Alternative COUT-H) would be the same as those described in Chapter 3 including the short-term impacts on natural processes and views dominated by the Project from the Maple Fork Trail.

Uinta-Wasatch-Cache National Forest

Inventoried Roadless Areas

Chipman Creek IRA (418008)

Wilderness and roadless values in the IRA have been minimally influenced by past and present development except for an existing 345kV transmission line which forms the southern boundary of the area and influences opportunities for solitude and primitive recreation along the southern edge of the IRA. Through the introduction of the Project (Alternative COUT-A) and the TransWest Express Project, there would be increased modifications adjacent to the IRA but through micrositing of towers, the IRA could be spanned therefore minimizing effects on these values. Route Variation COUT-A-1 would introduce additional effects in the IRA, as described in Chapter 3, since the Project would traverse the IRA for 3.1 miles.

Willow Creek IRA (418009)

Wilderness and roadless values in the IRA have been influenced by past and present development along the northern boundary of the area where an existing 345kV transmission line traverses the IRA including more than 20 transmission structures and associated right-of-way vegetation clearing. The introduction of the Project (Alternative COUT-A) and the TransWest Express Project, would be further influenced these values by the presence of additional transmission lines but since only the right-of-way for these projects would traverse the IRA, there would be minimal effects on these values.

Solider Summit IRA (418019)

Wilderness and roadless values in the IRA have been minimally influenced by past and present development. The addition of the Project (Route Variations COUT-B-1, COUT-B-2, COUT-B-4, COUT-C-1, COUT-C-2, and COUT-C-4) and the TransWest Express Project would influence these values adjacent to Tabbyune Road where only the right-of-way would traverse the IRA. Due to the minimal project activities in the IRA, limited effects on these values are anticipated unless the TransWest Express Project alternative which traverses the IRA for approximately 1 mile is selected. This route would introduce additional cumulative effects on the values identified for this IRA which would be reduced by paralleling the Project's alignment, which also avoids steeper terrain north of Tabbyune Creek.

Unroaded/Undeveloped Areas

There are no unroaded/undeveloped areas crossed by the COUT alternative routes in the Uinta-Wasatch-Cache National Forest.

4.3.16 Visual Resources

Cumulative effects in context with visual resources would result from the incremental impacts on scenery and the viewsheds associated with public viewing areas based on the construction and operation of the Project in context with past, present, and RFFAs. The incremental impacts on these landscapes and viewsheds would result from changes to the existing landform through earthwork including road construction, alteration of existing vegetation patterns due to vegetation management, and the

introduction of man-made structures that typically would be incongruent or similar with existing features that define landscape character. The approach for analysis of cumulative effects on visual resources, including the geographic and temporal scopes defined for analysis, is presented in Table 4-3. This analysis relies on the assessment of impacts from the Project (refer to Section 3.2.16) in relation to the past, present, and RFFAs listed in Tables 4-1 and 4-2.

Cumulative effects for visual resources were evaluated and characterized in context with one, or a combination of, the three types of effects: (1) additive – the effects of the actions add together to make up the cumulative effect, (2) countervailing – the effects of some actions balance or mitigate the effects of other actions, and (3) synergistic – the effects of the actions together is greater than the sum of their individual effects (BLM 2008b). In general for visual resources in context with transmission line projects, if the Project is colocated with other existing or future linear projects, cumulative effects are synergistic because the form, line, color and texture of the features of the facilities (i.e., access roads, earthwork, and facilities) are similar and form a cohesive, united feature in the landscape. If new projects are located outside the context of existing corridors, landscapes (i.e., scenic quality rating units) would be further divided and the cumulative effect becomes strongly additive. In terms of effects on views, the larger corridor could be more dominant based on site-specific viewing conditions, separation of facilities, and other elements. However, if the projects are sited in context with existing transmission lines and they are similar in scale, form, line, color and texture, the cumulative effect would be reduced due to the synergistic relationship of the Project's features.

4.3.16.1 Issues Identified for Analysis

4.3.16.1.1 Scenery

As described in Section 3.2.16, scenery is defined as a continuous unit of land comprised of harmonizing features that result in and exhibit a distinct landscape character. A cumulative effect on scenery would result from the industrialization of natural appearing landscapes through the construction of multiple projects and the alteration of existing landscape's characteristics including landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modification. In general, those areas where transmission line projects would be colocated such that they are visually related, effects would be reduced. Matching spans to the extent practicable and sharing construction and maintenance access roads would further reduce cumulative effects of such projects. In forested areas where projects would have a limited visual relationship with one another, or the projects deviate from using the same corridor, cumulative effects generally increase as the landscape become more fragmented and thus the industrial nature of transmission line projects would have a stronger effect on landscape character.

4.3.16.1.2 Views

Viewing locations represent places where the public would have the potential to view the Project and typically include residences, travel routes, recreation areas, and special designations. Cumulative effects would occur where viewers would perceive the alteration of the landscape components of landform, vegetation, and structure through the introduction of the Project in addition to existing disturbances and RFFAs. Multiple transmission lines and/or other energy facilities (e.g., wind farms, natural gas wells, etc.) seen in context with the Project would dominate views from viewing locations with moderate to high concern for changes in the landscape. Generally, the dominance of the aggregation of a project is reduced when the project features are visually similar (i.e., transmission lines seen in context with other transmission lines). Inversely, if the aggregate of the projects are incongruent (i.e., a mixture of natural gas wells, with transmission lines, and other modifications), cumulative effects are greater.

4.3.16.2 Existing Condition

Residential and industrial development in general has altered the existing landscape character associated with scenic quality rating units (refer to Maps 3-8a and 3-8b for SQRUs crossed by the Project) and views from identified viewing locations throughout the Project study area. Below is a summary of the major areas of development in each state traversed by the Project.

Throughout the Wyoming portion of the Project area, industrial development, primarily associated with oil and gas production, dominates the existing landscape character. In particular, the area between the I-80 corridor and the Wyoming-Colorado border has extensive oil and gas development that has resulted in visual alterations that are co-dominant with the natural landscape features. Few existing transmission lines occur in this area except for an existing 230kV transmission line connecting Hanna and Rock Springs, which has similar design characteristics as the Project, but due to the scale of the existing transmission line, it does not dominate the existing natural landscape features.

In Colorado, existing development primarily is located along Colorado State Highway 13 and U.S. Highway 40, and is associated with rural, dispersed residences and agricultural development, which are generally subordinate to the natural landscape features. South of Rangely toward Baxter Pass, numerous areas of oil and gas development are located along Rio Blanco County Road 23 and along the floor of West Salt Creek Canyon south of Baxter Pass, which begin to dominate the natural landscape features. Several existing transmission lines, with similar design characteristics as the Project, run from the Craig Power Station, adjacent to U.S. Highway 40, to the Colorado-Utah border south of the community of Dinosaur and begin to dominate the natural landscape features.

Oil and gas development has modified and is co-dominant with the landscape character in several areas in Utah including the Uinta Basin, Castle Valley, and northwest of Cisco. There are three existing 345kV transmission lines corridors, with similar design characteristics as the Project, located adjacent to Project alternative routes including: (1) from Green River through the San Rafael Swell and over the Wasatch Plateau to Mona; (2) from the Utah-Colorado border through the Uinta Basin and Uinta-Wasatch-Cache National Forest to Mona; and (3) two lines from the Huntington Power Station to Spanish Fork Canyon, which each locally dominate the natural landscape features. In addition to the existing 345kV transmission lines, several smaller 138kV transmission lines occur adjacent to Project alternative routes including: parallel to U.S. Highway 6 between Green River and Price, from Sowers Canyon through Argyle and Willow Creek canyons to the Carbon Power Station, Spanish Fork Canyon, and from the Bonanza Power Station to the community of Vernal. These lower-voltage transmission lines have similar design characteristics as the Project except they are smaller in scale and as such, they influence but do not dominate the existing natural landscape features. Several power plants are located adjacent to Project alternative routes including the Bonanza, Huntington, and Carbon power plants, which dominate the local landscape character and influence adjacent views. In addition to these industrial modifications, dispersed residences and agricultural development have modified the existing landscape character in the Uinta Basin, Castle Valley, Sanpete Valley, and Juab Valley but generally are subordinate to the natural landscape features.

4.3.16.3 Results

4.3.16.3.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

Scenery

Table 4-123 lists the cumulative effects for the WYCO alternative routes.

TABLE 4-123 SCENERY CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Scenery Units not Influenced by Development
		Past and Present Development	Reasonably Foreseeable Future Actions				
Alternative WYCO-B and Route Variations							
WYCO-B (Applicant Preferred Alternative)	4,550,600	3,063,600	396,200	4,300	3,464,200	1,086,500	23.9
WYCO-B-1	4,550,600	3,063,600	396,200	6,300	3,466,100	1,084,500	23.8
WYCO-B-2 (Agency Preferred Alternative)	4,569,800	3,070,500	396,400	4,300	3,471,200	1,098,600	24.0
WYCO-B-3	4,550,600	3,063,600	396,200	4,300	3,464,200	1,086,400	23.9
Alternative WYCO-C and Route Variations							
WYCO-C	4,929,800	3,250,100	565,500	3,200	3,818,800	1,111,000	22.5
WYCO-C-1	4,929,800	3,250,100	565,500	5,200	3,820,800	1,109,100	22.5
WYCO-C-2	4,949,000	3,257,000	565,600	3,200	3,825,800	1,123,200	22.7
WYCO-C-3	4,929,800	3,250,100	565,500	3,200	3,818,800	1,111,000	22.5
Alternative WYCO-D and Route Variation							
WYCO-D	4,683,600	3,389,400	208,800	14,900	3,613,200	1,070,400	22.9
WYCO-D-1	4,683,600	3,389,400	208,800	14,900	3,613,200	1,070,400	22.9
Alternative WYCO-F and Route Variations							
WYCO-F	4,495,900	3,147,200	370,100	2,900	3,520,100	975,800	21.7
WYCO-F-1	4,495,900	3,147,200	370,100	4,800	3,522,100	973,800	21.7
WYCO-F-2	4,515,100	3,154,100	370,200	2,900	3,527,200	987,900	21.9
WYCO-F-3	4,495,900	3,147,200	370,100	2,900	3,520,100	975,800	21.7
NOTES: ¹ Area of scenery units not influenced by development Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.							

Issue Areas

Scenery issues, as described in the direct Project effects discussion in Chapter 3, include the following landscapes (SQRUs):

- Adobe Town Region
- Little Snake River Valley
- Yampa River

In addition through the analysis of cumulative effects on scenery, the Flat Tops SQRU (i.e., Flat Top Mountain) as well as Elk Springs SQRU were identified as landscapes where the Project’s influence area includes many areas not influenced by past, present, or other future actions.

Effects

Due to the large amount of existing industrial development, including expansive oil and gas fields, many of the landscapes north and east of Flat Top Mountain in the Rawlins Field Office have been influenced visually by these landscape modifications. South of Flat Top Mountain to U.S. Highway 40, the TransWest Express Transmission Project would modify primarily the same landscapes that would be influenced by the Project. Therefore, if the TransWest Express Transmission Project and the Project were

not colocated, these two projects would influence additional areas whereas being colocated would consolidate the areas of modification. As such, many landscapes (SQRUs) would be completely influenced by past, present, and future projects, as analyzed, including: Atlantic Rim, Bolton Ranch, Cedar Breaks, Chalk Bluff, Continental Divide, Creston, Delaney Rim, Doty Mountain, Fortification Rocks, Muddy Creek, Platte North, Rawlins/Sinclair, Red Rim, Sage Creek, and The Sand Hills. It is important to note that Alternative WYCO-D and its route variation would influence an additional 10,000 acres when compared to other alternative routes in this route grouping. This distinction is primarily a result of the TransWest Express Transmission Project alternative in this area not being colocated with the Project south of Baggs, Wyoming. To reduce cumulative effects in this area, the two transmission projects should be colocated to the extent practicable.

Adobe Town Region

The Adobe Town SQRU has approximately 30 percent of its area influenced by existing development including oil and gas development as well as several existing pipelines located adjacent to the alignment of Alternative WYCO-C. These elements have introduced landscape character deviations through modification of the landscape's landforms and vegetation patterns, in particular, the geometric features associated with the existing pipeline rights-of-way. In addition to the structures associated with existing oil and gas development, the TransWest Express Transmission Project would introduce transmission line structures adjacent to the proposed alignment for Alternative WYCO-C through this landscape. As such, only Alternative WYCO-C and its route variations would extend the influence of development further into the western portion of the Adobe Town Region by approximately 300 acres.

Little Snake River Valley

The area around Baggs, Wyoming, known as the Little Snake (River) Valley, has been influenced by existing development including several pipelines, adjacent oil and gas development, and widespread dispersed residences which have modified the existing character of the landscape. It is important to note the presence of dispersed residences in this valley produces a strong rural character which has been minimally influenced by industrial development. The introduction of the TransWest Express Transmission Project into this landscape would produce a more industrialized landscape character, which if Alternative WYCO-D, and to a lesser degree Alternative WYCO-F, were chosen would extend this area of development. This industrialization would be produced by the introduction of transmission line structures, clearing of vegetation in the rights-of-way, and the development of construction access roads which would modify the existing landscape's form, line, color, and texture. To reduce cumulative effects on the character of this landscape, potential mitigation would include collocation of the two transmission projects to the extent practicable.

Yampa River

The Yampa River is represented by several landscape units as delineated by the BLM Little Snake Field Office through their SQRU inventory. These include, from east to west, the Yampa River Valley/Hayden, Duffy Valley, Juniper Hot Springs, Juniper Mountain (northern edge), Maybell, and Cross Mountain Canyon. The eastern portion of the Yampa River traversed by Alternative WYCO-D, Yampa River Valley/Hayden, has been influenced by the development around Craig, Colorado including the Trapper Mine, Craig Power Plant, and multiple existing transmission lines and pipelines. Due to the extent of the existing development which has industrialized this area, as well as future development including the expansion of the Trapper Mine and the TransWest Express Transmission line, the Project would have minimal additional influence on this landscape's character. The next three portions of the Yampa River (Duffy Valley, Juniper Hot Springs, and Juniper Mountain) also are associated with Alternative WYCO-D where the Project would parallel multiple existing transmission lines as well as an alternative for the TransWest Express Transmission Project. In addition, an area of permitted oil and gas wells along the

western portion of the Duffy Valley landscape would further modify the character of this landscape. The next portion of the Yampa River, the Maybell landscape, would be crossed by Alternatives WYCO-B, WYCO-C, and WYCO-F with Alternative WYCO-D located approximately 0.5 mile away. The portion of the Maybell landscape crossed by Alternatives WYCO-B, WYCO-C, and WYCO-F has been minimally influenced by an existing pipeline and residences, but through the addition of the TransWest Express Transmission Project, would become more industrialized. Due to the Project and the TransWest Express Transmission Project being colocated in this area, the Project would not increase the influence of the development in this landscape but would produce more intense cumulative effects. Alternative WYCO-D crosses the Maybell landscape adjacent to multiple transmission lines in an area influenced by U.S. Highway 40 and dispersed residences. The final portion of the Yampa River in the study area, Cross Mountain Canyon, has been influenced minimally by existing development. Since the TransWest Express Transmission Project has an alternative route approximately 1.25 miles away from this landscape, whereas the Project on Alternatives WYCO-B, WYCO-C, and WYCO-F would be located approximately 2.5 miles away, the Project would have minimal additional influence on this landscape.

Flat Tops

The landscape known as Flat Top Mountain (or Flat Tops SQRU) has been influenced visually by existing oil and gas development along the northern portion of the landscape and pipelines corridors along the western edge. The remaining portions of this landscape have minimal influence from development and have a more intact landscape character. Through the development of RFFAs, including the TransWest Express Transmission Project and proposed future oil and gas development, this landscape would begin to become industrialized in character. The Project would have varying levels of influence on the industrialization of this landscape based on the alternative route selected. Alternatives WYCO-C, WYCO-D, and WYCO-F would have limited additional visual influence on Flat Top Mountain whereas Alternative WYCO-B would traverse this landscape across steep slopes. If both proposed transmission projects were to be located along the western portion of Flat Top Mountain (Alternative WYCO-B), this area would become further industrialized as a result of the presence of transmission line structures, right-of-way vegetation clearing, and the construction of access roads.

Elk Springs

A small SQRU located along the escarpment heading west from Elk Springs, as digitized by the BLM White River Field Office, would be the landscape most influenced by the Project, in this route grouping, where existing development has not yet influenced the landscape character. It is important to note that this additional influence is the expansion of development further to the northwest from the existing transmission lines adjacent to U.S. Highway 40. Since the alternative routes for the TransWest Express Transmission Project are located south of the existing transmission lines and the Project (all WYCO alternative routes) would be located north of the existing lines, an additional 8.3 percent of the Elk Springs SQRU would be influenced by the Project.

Cumulative effects associated with the route variations are similar to the main alternative routes except the first variation for Alternatives WYCO-B, WYCO-C, and WYCO-F where the route variation would be located further to the east at the Little Snake River crossing. This would locate the Project away from alternative routes for the TransWest Express Transmission Project, which would increase the Project's visual influence on the Seven Mile SQRU by approximately 2,000 acres in an area where there are limited past, present or future landscape character modifications.

Viewing Locations

Views from identified viewing locations would have a range of cumulative effects resulting from the addition of the Project in context with past, present, and future actions and to focus on the key issues, this analysis will focus on the 6 simulation locations identified in Table 4-124 along this route grouping.

Simulation Location (Key Observation Point) Number	Simulation Location (Key Observation Point) Name	Alternative Routes
52 ¹	Dispersed residences southwest of Craig	WYCO-D and route variation
66 ¹	Dispersed residence along Colorado State Highway 13	WYCO-D and route variation
197 ¹	Hanna residential	WYCO-D and route variation
220	North Platte River Special Recreation Management Area	WYCO-B, WYCO-C, WYCO-D, and WYCO-F and their route variations
225	Outlaw Trail Loop Scenic Drive(Wyoming Highway 789 north of Baggs)	WYCO-D and route variation
299	East Cross Mountain River Access	WYCO-B, WYCO-C, WYCO-D, and WYCO-F and their route variations
NOTES: ¹ Cumulative effect simulation not prepared since neither the TransWest Express Transmission Project or Gateway West 500kV Transmission Project would be visible in the area of the direct effect simulation Cumulative simulations are located in Appendix H.		

Key Observation Point Number 52 – Dispersed residences southwest of Craig

Views from these dispersed residences have already been modified as a result of existing transmission lines, development around Craig, and potentially through development of oil and gas lease areas. While not shown in the simulation, the Craig power plant is visible from this location when looking toward the southeast, which has an even greater influence on views for residences located further to the east. These existing modifications have introduced several industrial structures that begin to dominate views from these residences. Through the addition of the Project (Alternative WYCO-D and route variation), which has similar design characteristics to the existing transmission lines, as well as the TransWest Express Transmission Project (located south of this viewpoint out of view of the simulation), these views would be completely dominated by industrial development which due to the separation between these two transmission line projects, would extend the area viewed as modified to reduce this visible expansion of industrial development, potential mitigation would be to site the two transmission projects as close to the existing transmission line as practicable.

Key Observation Point Number 66 – Dispersed Residence along Colorado State Highway 13

Due to the limited extent of existing development in this area, including dispersed residential development and minor pipelines, views have been modified minimally by development. Through the introduction of the Project (Alternative WYCO-D and route variation) and the TransWest Express Transmission Project, views from dispersed residences along Colorado State Highway 13 would begin to be dominated by transmission lines. It is important to note as currently designed, the TransWest Express Transmission Project would not be visible in the simulation as it is located on the west side of Colorado State Highway 13. This separation between the two proposed transmission lines would place residences between both projects, as well as Colorado State Highway 13, which would create a tunnel-effect and

dominate views from these locations. To reduce the cumulative effect on these views, potential mitigation would include colocation of the two projects to the extent practicable.

Key Observation Point Number 197 – Hanna Residential

Views from residences in this portion of Hanna have views influenced by existing transmission lines and development south of Hanna. Due to the scale of the existing transmission lines and construction materials (wood), these features do not dominate views from Hanna. With the addition of the Project (Alternative WYCO-D and route variation), views would begin to be dominated by transmission line structures toward the west, in particular the Project’s skylined transmission structures. Note that the Gateway West 500kV Transmission Project does not have a collocated route in this area.

Key Observation Point Number 220 – North Platte River Special Recreation Management Area (simulation)

Views from the North Platte River SRMA have been minimally modified by development except for I-80, located 1.25 miles north of this viewpoint, and the series of pipelines, which are screened from view at this location. These existing modifications have increased dominance where viewers are located directly adjacent to these areas, but in general, views from in this recreation area are intact. Through the introduction of the Project (all alternative routes in this route grouping) as well as the Gateway West 500kV Transmission Project, views would become dominated by transmission lines, which may include transmission structures skylined on ridges which would further dominate views as shown in the cumulative effect simulation. To reduce the cumulative effect of these projects on views from the North Platte River SRMA, these two projects should be collocated in an area where they could be screened partially by topography, which would minimize their perceived dominance on views.

Key Observation Point Number 225 – Outlaw Trail Loop Scenic Drive (WY 789 north of Baggs) (simulation)

Motorists on this county-designated scenic drive have long duration views of existing oil and gas development as well as areas leased for oil and gas development. From the simulation location, these modifications are not readily apparent but through the expansion of future oil and gas leases areas as well as the introduction of the Project (Alternative WYCO-D and route variation) and the TransWest Express Transmission Project, views along this scenic drive would become dominated by industrial development. In particular, the introduction of transmission and oil and gas-related structures, that due to proximity to the road, may be skylined, which would further increase their dominance on these views as shown in the cumulative effect simulation. To reduce cumulative effects, potential mitigation would include colocation of the two transmission projects as far from this scenic road as practicable. Views from the scenic drive of Alternative WYCO-F and route variations would be similar to the description for Alternative WYCO-D except the Project would be located approximately 2.5 miles away in a location where views of the Project would be screened partially to fully by topography. It is important to note the other alternative routes in this route grouping cross the scenic drive further to the north, adjacent to I-80, in an area that is dominated by existing and planned future oil and gas development. Since the scenic drive would not be paralleled by the Project on those alternative routes, the additional cumulative effect introduced by the Project on those alternative routes would be minimal.

Key Observation Point Number 299 – East Cross Mountain River Access (simulation)

Views from this recreation area, specifically access to the site, generally are intact with few existing cultural modifications. Both the Project (Alternatives WYCO-B, WYCO-C, and WYCO-F including all route variations) as well as one alternative for the TransWest Express Transmission Project would be located nearly 3 miles away from this viewpoint with a portion of each of these two projects screened by

topography. A series of transmission structures, associated with the Project and the TransWest Express Transmission Project, would be skylined on the distant ridgeline and, therefore, influence but not dominate views from this area as shown in the cumulative effect simulation. If the alternative route for the TransWest Express Transmission Project located less than 0.5 mile from this viewpoint was developed, views would begin to be dominated by the TransWest Express Project, which may include additional skylined transmission structures.

4.3.16.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

Scenery

Table 4-125 lists the cumulative effects for the COUT BAX alternative routes.

Issue Areas

Scenery issues, as described in the direct Project effects discussion in Chapter 3, include the following landscapes (SQRUs):

- Book Cliffs
- Grand Valley
- Tavaputs Plateau
- Wasatch Plateau Alpine
- Wasatch Plateau
- Wasatch Plateau Parks landscape

In addition through the analysis of cumulative effects on scenery, the Big Horse Draw and Douglas Pass SQRUs were identified as landscapes where the Project’s area influence includes many areas not influenced by past, present, or other future actions.

Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Scenery Units not Influenced by Development
		Past and Present Development	Reasonably Foreseeable Future Actions				
COUT BAX-B	4,909,000	3,204,600	431,600	8,600	3,644,800	1,264,200	25.8
COUT BAX-C	4,924,000	3,192,400	463,900	8,600	3,665,000	1,259,000	25.6
COUT BAX-E	5,103,500	3,314,600	475,200	10,300	3,800,100	1,303,400	25.5

NOTES:
¹Area of scenery units not influenced by development
 Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.

Effects

Due to the presence of existing development and proposed future development, including but not limited to the TransWest Express Transmission Project, there are locations where entire scenery units would be influenced by past, present, and future projects. As analyzed these landscapes (SQRUs) include: Cedar Mountain, Education Creek, Hadden Hills/Oil Well Dome, Last Spring, and Prickly Pear Flat. In particular, Education Creek has been influenced by multiple pipelines which traverse this narrow landscape. The other four landscapes are located in the northern portion of the San Rafael Swell and have

been influenced by permitted oil and gas development on SITLA-administered land, existing transmission lines, and future energy production areas (Woodside site, Blue Castle Nuclear Power Plant, and a proposed wind facility on Cedar Mountain).

Big Horse Draw

The arid juniper hills southwest of Rangely were identified as the Big Horse Draw SQRU by the BLM White River Field Office. The majority of this landscape has been influenced by past, present, and future projects including areas of existing and permitted oil and gas development, several existing pipelines, and a proposed alternative route for the TransWest Express Transmission Project. Due to the separation between the Project (Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E) and the TransWest Express Transmission Project, additional areas (approximately 2.6 percent of the SQRU area) would be influenced visually by the Project where past, present, or future projects would not have a visual influence.

Book Cliffs

The area known as the Book Cliffs is made up of several smaller SQRUs including the Book Cliffs (BLM Grand Junction Field Office), Demaree WSA (BLM Grand Junction Field Office), Book Cliffs Bench (BLM Moab Field Office), and Green River/Book Cliffs (BLM Price Field Office). In the location where the Project would cross through the Book Cliffs in Colorado (along the edge of the Book Cliff and Demaree WSA landscapes), the scenery has been influenced by existing oil and gas development and a series of existing pipelines. This area would be influenced further by industrial development as a result of the TransWest Express Transmission Project, which would be located adjacent to Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E. Additional areas influenced by the presence of the Project would be minimal but due to the narrow canyon traversing through the Book Cliffs, where both of these transmission line projects would be located, these projects should be colocated to the extent practicable to avoid crossing steep slopes on the canyon walls. In Utah, the landscapes associated with the Book Cliffs (Book Cliff Bench and Green River/Book Cliff SQRUs) would not be crossed by the Project but are located in the area that would be influenced by the Project. Due to the location of existing modifications including Utah SITLA-administered oil and gas leases and underground coal mining, as well as future actions including the Woodside site, Blue Castle Nuclear Power Plant, and the TransWest Express Transmission Project, the Project would influence few areas not already influenced by these past and future projects. Through the cumulative development of all of these projects, the Book Cliffs would be located adjacent to increasingly industrialized landscapes.

Douglas Pass

Located between Douglas Pass and Baxter Pass (including the upper portion of Baxter Pass) this SQRU, as delineated by the BLM White River Field Office, includes areas of existing and permitted oil and gas development, communication facilities, and multiple pipelines located along both the east and west edge of this landscape which have visually influenced approximately half of the scenery unit. Similar to the Big Horse Draw SQRU, the separation between the Project and the TransWest Express Transmission Project would produce areas that would only be influenced by the presence of the Project.

Grand Valley

This valley includes the communities of Fruita and Grand Junction as well as the surrounding agricultural fields. Due to the extensive existing development located in the valley, which also includes several existing transmission lines, pipelines, and I-70; the Project (Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E) would minimally influence this landscape.

Tavaputs Plateau

The area known as the Tavaputs Plateau, or more specifically the East Tavaputs Plateau, is made up of several smaller SQRUs as delineated by the BLM White River and Grand Junction Field Offices including Baxter Pass, Big Horse Draw (previously discussed), Bitter Creek Canyon, Canyon Pintado, Douglas Pass (previously discussed), Education Creek, Oil Springs WSA, Park Mountain/Park Canyon, Rabbit Mountain, Rat Hole Ridge/Achee Uplands, Spring Creek, and Upper Bitter Creek/Bitter Creek. These landscapes have been modified by development including several pipelines as well as existing and permitted oil and gas wells. In addition to the existing modifications in these landscapes, the Project would parallel the proposed TransWest Express Transmission Project along Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E. The addition of the Project along with these past, present, and future projects would modify the existing landforms and vegetation patterns present in these landscapes as well as introduce a series of industrial structures associated with the two proposed transmission line projects and expanding oil and gas fields.

Wasatch Plateau Alpine

This scenery unit was digitized to represent the western ridgeline of the Wasatch Plateau above the community of Mount Pleasant. Other than an existing transmission line which crosses the ridge, there are few existing landscape character modifications. The majority of this area has been leased by the BLM Richfield Field Office for oil and gas development which would further modify the landscape character. The addition of the Project (Alternatives COUT BAX-B and COUT BAX-C) and the TransWest Express Transmission Project would begin to industrialize the area above Potters Pond through the presence of transmission line structures, access roads, and geometric right-of-way vegetation clearing. To reduce cumulative effects on this narrow scenery unit, the two proposed transmission lines should be located as close as practicable to the existing transmission line.

Wasatch Plateau

The scenery unit that comprises the northern portion of the Wasatch Plateau covers a large portion of the Manti-La Sal National Forest from U.S. Highway 6 to Joes Valley Reservoir. As such, there are areas of more intense existing development and areas with limited landscape character modifications. Existing modifications include surface facilities associated with underground coal mining, existing transmission lines and pipelines, and areas leased for oil and gas development. With the addition of the TransWest Express Transmission Project into this scenery unit, the Project, along Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E, would not visually influence additional areas that have not already influenced by past, present, or future actions including the TransWest Express Transmission Project. The presence of the Project, including the transmission line structures, access roads, and right-of-way vegetation clearing, would produce a more intense localized cumulative effect on scenery if the Project were colocated with TransWest Express and the existing transmission line along Alternatives COUT BAX-B and COUT BAX-C. Whereas if the Project and the TransWest Express Transmission Project were not colocated, there would be a more diffuse but widespread cumulative effect on the Wasatch Plateau landscape in context with other past, present, and future actions.

Wasatch Plateau Parks Landscape

There are two park landscapes located on the Wasatch Plateau with the area known as Scad Valley, which would be crossed by Alternatives COUT BAX-B and COUT BAX-C, and the park adjacent to Gooseberry Creek (Gooseberry Creek valley) which would be crossed by Alternative COUT BAX-E. Scad Valley has few existing cultural modifications except for the presence of an existing transmission line, but through development of oil and gas leased areas as well as coal lease areas, this landscape has the potential to become industrialized. In addition to the past and present development in Scad Valley, the

introduction of the Project and the TransWest Express Transmission Project would further industrialize the southern portion of this landscape unit through the presence of transmission line structures, access roads, and right-of-way vegetation clearing. The other park landscape, Gooseberry Creek valley, has fewer existing landscape character deviations than Scad Valley, except for areas leased for oil and gas areas development along the eastern edge of this scenery unit. An existing pipeline is located along the northern edge of the landscape which has modified the local character through geometric right-of-way vegetation clearing. Future development including industrial facilities associated with the Narrows Dam and Reservoir, TransWest Express Transmission Project, and the Project would further modify the landscape character through the introduction of industrial structures, access roads, and vegetation clearing.

Viewing Locations

Views from identified viewing locations would have a range of cumulative effects resulting from the addition of the Project in context with past, present, and future actions and to focus on the key issues, this analysis will focus on the 24 simulation locations identified in Table 4-126 along this route grouping.

Simulation Location (Key Observation Point) Number	Simulation Location (Key Observation Point) Name	Alternative Routes
32	Cedar Mountain Overlook (San Rafael Swell)	COUT BAX-B, COUT BAX-C
41 ¹	Dinosaur Diamond Scenic Byway (U.S. Highway 6)	COUT BAX-C, COUT BAX-E
152	Interstate 70 (I-70) Harley Dome Rest Area (Dinosaur Diamond Scenic Byway)	COUT BAX-B, COUT BAX-C, COUT BAX-E
193	I-70 Crescent Junction Rest Stop (Dinosaur Diamond Scenic Byway)	COUT BAX-B, COUT BAX-C, COUT BAX-E
195	Indian Creek Campground	COUT BAX-B, COUT BAX-C
217 ¹	Skyline Drive Scenic Backway	COUT BAX-B, COUT BAX-C
241	Dinosaur Diamond Scenic Byway in Canyon Pintado NHD (CO SH 139)	COUT BAX-B, COUT BAX-C, COUT BAX-E
244	Garfield County Road 201 (south of Baxter Pass)	COUT BAX-B, COUT BAX-C, COUT BAX-E
260	Energy Loop Scenic Byway (UT SR 31)	COUT BAX-E
261	Fairview residential	COUT BAX-E
262	Mount Pleasant dispersed residences	COUT BAX-B, COUT BAX-C
265	Interstate 15 (Nephi)	COUT BAX-B, COUT BAX-C, COUT BAX-E
279	Old Spanish National Historic Trail (near Thompson Springs, Utah)	COUT BAX-B, COUT BAX-C, COUT BAX-E
282	I-70 Thompson Welcome Center (Dinosaur Diamond Scenic Byway)	COUT BAX-B, COUT BAX-C, COUT BAX-E
284	Energy Loop Scenic Byway (UT SR 264)	COUT BAX-E

TABLE 4-126 CUMULATIVE EFFECTS SIMULATION LOCATIONS FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES		
Simulation Location (Key Observation Point) Number	Simulation Location (Key Observation Point) Name	Alternative Routes
305	Wedge Overlook Scenic Backway	COUT BAX-B, COUT BAX-C
306	Upper Colorado River Scenic Byway	COUT BAX-B, COUT BAX-C, COUT BAX-E
309 ¹	Bear Creek Campground	COUT BAX-B, COUT BAX-C
310	Crook’s Brand Rock Art Site	COUT BAX-B, COUT BAX-C, COUT BAX-E
319	Green River	COUT BAX-B, COUT BAX-C, COUT BAX-E
320	Junction of Road to Buckhorn Wash	COUT BAX-B, COUT BAX-C
322	U.S. Highway 6 Rest Area (Dinosaur Diamond Scenic Byway)	COUT BAX-E
323 ¹	Old Railroad Grade (adjacent to Mexican Mountain WSA)	COUT BAX-B
324	Dinosaur Diamond Scenic Byway (U.S. Highway 6 north of Woodside)	COUT BAX-E
NOTES: ¹ Cumulative effect simulation not prepared since the TransWest Express Transmission Project would not be visible in the extent of the direct effect simulation Cumulative simulations are located in Appendix H.		

Key Observation Point Number 32 – Cedar Mountain Overlook (San Rafael Swell) (simulation)

Superior views from the Cedar Mountain Overlook toward the San Rafael Swell have been modified minimally by development except for an existing transmission line, which has similar design characteristics as the Project, but due to its scale and material (wood) does not dominate these views. Through the introduction of the Project (Alternatives COUT BAX-B and COUT BAX-C) and the TransWest Express Transmission Project, views would begin to be dominated by transmission line structures as well as the geometric features produced by the construction of access roads and vegetation clearing adjacent to the transmission structures as shown in the cumulative effect simulation. Since the view from this overlook focuses on the distant San Rafael Swell landscapes, Alternative COUT BAX-B would have a lower additive effect on these views since it would be located further from the area of focused views. To minimize cumulative effects resulting from both of these transmission projects, potential mitigation would be to colocate with the existing transmission line to the extent practicable. In addition, there is a potential future wind farm located northeast of this viewpoint which would dominate views adjacent to this overlook and on views as recreationists walk back to their car or recreate at the adjacent picnic sites.

Key Observation Point Number 41 – Dinosaur Diamond Scenic Byway (U.S. Highway 6)

Long-duration views along this scenic byway have been influenced by existing modifications including a transmission line and railroad line, but due to the relative scale of these features, they do not dominate views from the scenic byway. Through the development of the Project (Alternatives COUT BAX-C and COUT BAX-E) and the TransWest Express Transmission Project, which have design characteristics in common with the existing transmission line, motorists traveling along this scenic backway would experience a tunnel-effect since these two proposed projects are located on opposite sides of the road. Since the direct-effect simulation does not include the area west of the road, where the TransWest

Express Transmission Project is located, this cumulative effect was not simulated. To minimize the expansion of the area viewed as a utility corridor, and as modified, mitigation would include colocation of the two transmission projects on the east of the existing transmission line to the extent practicable and share construction access if feasible. By placing these two transmission projects closer to the Book Cliffs landscape, the complex backdropping condition, based on strong topographical features, can be used to reduce the visual dominance of these projects.

Key Observation Point Number 152 – Interstate 70 Harley Dome Rest Area (Dinosaur Diamond Scenic Byway) (simulation)

Views from this rest area have few visible modifications to the northwest, toward the Project, but it is important to note, I-70 and the rest area's parking lot are located to the south of this viewpoint. The introduction of the Project (all alternative routes in this route grouping) and the TransWest Express Transmission Project, both located more than 1 mile away, would begin to dominate views from this rest area and overlook as shown in the cumulative-effect simulation. Due to intermittent topographic screening and backdropping by the distant Tavaputs Plateau landscape (including the Book Cliffs), the two proposed transmission line projects would not dominate these views.

Key Observation Point Number 193 – Interstate 70 Crescent Junction Rest Stop (Dinosaur Diamond Scenic Byway) (simulation)

Existing development has modified views from the Crescent Junction Rest Stop including I-70 as well as through the potential introduction of additional industrial structures, which would be expanded through further development of adjacent oil and gas lease areas. The Project (all alternative routes in this route grouping) and the TransWest Express Transmission Project would further industrialize this area through the construction of a series of transmission line structures which would begin to dominate views from this overlook as shown in the cumulative effect simulation. In particular the TransWest Express Transmission Project, which is located approximately 0.5 mile away, would further modify the landscapes adjacent to this viewpoint whereas the Project would be located approximately 1 mile away. To reduce the cumulative effect introduced by both of these projects, potential mitigation would be to colocate closer to the Book Cliffs to use the complex backdropping afforded by that landscape to the extent practicable.

Key Observation Point Number 195 – Indian Creek Campground (simulation)

Views from this campground are enclosed with the adjacent existing transmission line being mostly screened by vegetation, which produces a nearly intact appearing landscape character. If existing BLM Price Field Office oil and gas leases were to be developed, views may become more influenced by development if wells were located on ridges or other high points in view of the campground. Transmission structures associated with the Project (Alternatives COUT BAX-B and COUT BAX-C) and the TransWest Express Transmission Project would be visible over the trees, which screen views of the existing transmission line, due to the proximity of these projects to the campground and the height of the proposed structures as shown in the cumulative effect simulation. To reduce cumulative effects on these views, potential mitigation would be to colocate the two transmission projects as close to the existing transmission line as practicable. It is important to note that the alignment for the TransWest Express Transmission Project was modified to be located 1,500 feet south of the existing transmission line for the simulation due to multiple crossings of the Project alignment. As such, the simulation illustrates that the TransWest Express Transmission Project would be mostly screened from view.

Key Observation Point Number 217 – Skyline Drive Scenic Backway

From this viewpoint along the Skyline Drive Scenic Backway, views are modified minimally by existing development compared to the area approximately 0.75 mile south of this location where an existing

transmission line crosses the scenic road. Due to topographic screening, the existing transmission line has a localized effect on the scenic drive and based on the relative scale and construction materials (wood), the existing transmission line does not dominate these views. Similar to the description for Indian Creek Campground, the BLM Richfield Field Office has oil and gas leases in the area and if developed, would introduce additional structures inconsistent with the existing landscape character. Through the addition of the Project (Alternatives COUT BAX-B and COUT BAX-C) and the TransWest Express Transmission Project, which have design characteristics in common with the existing transmission line, the area north of the existing transmission line would become dominated by transmission lines including their associated construction access roads and right-of-way vegetation clearing. By expanding the area influenced by these utility projects, views may become industrialized along this portion of the Skyline Drive Scenic Backway. To reduce the cumulative effect on these views, the two transmission projects could be colocated with the existing transmission line in Dry Pole Fork Canyon to limit the visibility of transmission lines projects from this scenic road. Note that, based on the current alignment for the TransWest Express Transmission Project, which crosses the Project multiple times in this area, the TransWest Express Transmission Project was relocated 1,500 feet south of the existing transmission line and, therefore, would not be visible from this viewpoint.

Key Observation Point Number 241 – Dinosaur Diamond Scenic Byway in Canyon Pintado National Historic District (CO SH 139) (simulation)

Views along this portion of the Dinosaur Diamond Scenic Byway generally are intact with few visible cultural modifications as the existing transmission line is screened by the adjacent ridge landscapes. The introduction of the Project (all alternative routes in this route grouping) and the TransWest Express Transmission Project would dominate views from this location due to their proximity and visibility, in particular the Project which would be skylined on the ridge east of the scenic road as shown in the cumulative effect simulation. To reduce cumulative effects on the scenic road, as well as views from the Canyon Pintado NHD, potential mitigation would include colocation of the two transmission projects adjacent to the existing transmission line where existing topographic screening can be used to the extent practicable.

Key Observation Point Number 244 – Garfield County Road 201 (south of Baxter Pass) (simulation)

Views along Garfield County Road 201, which provides access to the Demaree and Oil Spring wilderness study areas, have been modified by the presence of existing pipelines which have produced areas of geometric right-of-way vegetation clearing adjacent to the road. Through the addition of the Project (all alternative routes in this route grouping) and the TransWest Express Transmission Project, views from this road would become dominated by the presence of industrial, utility development including the introduction of transmission structures, additional right-of-way vegetation clearing, and construction access roads as shown in the cumulative effect simulation. Due to the separation between the Project and the TransWest Express Transmission Project in the narrow West Salt Creek Canyon, one project would likely need to be located on top of the steep canyon walls instead of being located on flat canyon floor. The presence of skylined structures across the top of the canyon would further dominate views and to reduce cumulative effects on these views, potential mitigation would include colocation of the two transmission projects along the canyon floor to the extent practicable.

Key Observation Point Number 260 – Energy Loop Scenic Byway (UT SR 31) (simulation)

Motorists driving the Utah State Route 31 portion of the Energy Loop Scenic Byway would view areas along Cottonwood Creek that have been influenced minimally by development. Through the addition of the Project (Alternative COUT BAX-E) and the TransWest Express Transmission Project, views would begin to become dominated by transmission line facilities including transmission line structures,

associated access roads, and right-of-way vegetation clearing as shown in the cumulative effect simulation. Since the TransWest Express Transmission Project parallels the scenic byway for approximately 2.5 miles, whereas the Project crosses the road and is located approximately 0.5 mile away from the road where views toward the Project would be partially screened, potential mitigation would include colocation of the two projects north of the scenic byway to reduce the cumulative effect on these views.

Key Observation Point Number 261 – Fairview Residential (simulation)

Views from residences in the community of Fairview have been modified where existing development is located between the viewer and the Wasatch Plateau (as shown in the visual simulation). Other than the existing development in and around Fairview, the character of the Wasatch Plateau, as viewed from Fairview, has been modified minimally by development. Through the introduction of the Project (Alternative COUT BAX-E) and the TransWest Express Transmission Project, views from Fairview would be influenced by the associated transmission line structures, right-of-way vegetation clearing, and access roads as shown in the cumulative effect simulation. Due to the distance between the viewpoint and these projects, approximately 2 miles, these two projects would not dominate views from Fairview.

Key Observation Point Number 262 – Mount Pleasant Dispersed Residences (simulation)

The area of dispersed residences east of Mount Pleasant have views, which have been modified by the existing transmission line that traverses the Wasatch Plateau through the presence of transmission line structures and right-of-way vegetation clearing. Due to the relative scale and construction materials (wood) of the existing transmission line, it does not dominate views from these residences. Through the introduction of the Project (Alternatives COUT BAX-B and COUT BAX-C) and the TransWest Express Transmission Project into this area, which have design characteristics in common with the existing transmission line, views would become dominated by three transmission lines which would locate many residences between each subsequent transmission line as shown in the cumulative effect simulation. In other words, residences would have views of transmission lines looking both to the northeast and southwest, creating a type of tunnel-effect. As such, potential mitigation would be to colocate the two proposed transmission lines with the existing transmission line to the extent practicable to reduce cumulative effects on views from these residences.

Key Observation Point Number 265 – Interstate 15 (Nephi) (simulation)

Motorists driving I-15 near Nephi have views that have been modified by existing development including several transmission lines, development in and around Nephi, and the interstate highway itself. These existing modifications begin to dominate views, especially north of Nephi, producing a landscape character viewed as industrial in nature. Through the introduction of the Project (all alternative routes in this route grouping) and the TransWest Express Transmission Project, which have similar design characteristics compared to the existing transmission lines, views from I-15 north of Nephi would be dominated by transmission lines including several skylined transmission structures which further dominate views due to their visibility on ridges as shown in the cumulative effect simulation. To minimize cumulative effects on these views, the two proposed transmission projects could be collocated with the existing transmission lines and use topographic screening opportunities to the extent practicable.

Key Observation Point Number 279 – Old Spanish National Historic Trail (near Thompson Springs, Utah) (simulation)

Views from the Old Spanish NHT have been modified by the railroad line to the north and I-70 to the south. These modifications do not dominate views but have diminished the integrity of this area which may be further modified as a result of development of areas leased for oil and gas production. With the

addition of the Project (all alternative routes in this route grouping) and the TransWest Express Transmission Project, these views would be modified further and dominated by transportation and utility infrastructure including the presence of tall, transmission line structures as shown in the cumulative effect simulation. Views to the north, toward the Book Cliffs, offer a complex backdropping element, which reduces dominance of lattice transmission structures as they begin to blend visually with this landscape. To reduce cumulative effects further, the two transmission projects should be collocated north of the railroad line to the extent practicable to minimize the extent of the area viewed as a utility corridor along this nationally significant viewing location.

Key Observation Point Number 282 – Interstate 70 Thompson Welcome Center (Dinosaur Diamond Scenic Byway) (simulation)

Similar to the description for the adjacent KOP No. 279, views from the Thompson Welcome Center have been modified by the existing railroad line and interstate. Views from this location toward the north are partially screened by topography which would reduce the dominance of future development including the Project and the TransWest Express Transmission Project as shown in the cumulative effect simulation. Therefore, views north toward the Book Cliffs would begin to be dominated by development but would not be completely dominated.

Key Observation Point Number 284 – Energy Loop Scenic Byway (UT SR 264) (simulation)

Motorists driving the Utah State Route 264 portion of the Energy Loop Scenic Byway have views minimally modified by development except for the cluster of summer homes located to the south. Through the introduction of the Project (Alternative COUT BAX-E) and the TransWest Express Transmission Project, views along this portion of the Energy Loop Scenic Byway would begin to become dominated by transmission line structures and potentially through associated right-of-way vegetation clearing as shown in the cumulative-effect simulation. To minimize the cumulative effect on these views of two geometric cleared rights-of-way, potential mitigation would include collocation of the two transmission projects east of the aspen groves, visible in the simulation, to the extent practicable. It is important to note that a future reservoir is planned to be located in this area, the Narrows Reservoir, which would require the scenic byway to be relocated to the north. The future reservoir itself may increase landscape variety and be seen as a positive cumulative effect but based on the final alignment for the highway, this realignment may cause additional cumulative effects on views from the scenic byway as a result of longer duration views of the previously mentioned transmission line projects including the Project.

Key Observation Point Number 305 – Wedge Overlook Scenic Backway (simulation)

Views from this portion of the scenic backway have been minimally modified by development including an existing transmission line located approximately 2.5 miles away, which due to its scale and construction materials (wood), does not dominate these views. Future development in this area is limited mostly to the Project (Alternatives COUT BAX-B and COUT BAX-C) and the TransWest Express Transmission Project. Since these two transmission projects are planned to be located more than 2 miles from this viewpoint, the presence of these three transmission lines would begin to dominate views, but due to the backdropping afforded by Cedar Mountain, the structures would not completely dominate these views as shown in the cumulative effect simulation. To reduce cumulative effects on views from this scenic backway, potential mitigation would include collocation the two proposed transmission lines as close to the existing transmission line as practicable.

Key Observation Point Number 306 – Upper Colorado River Scenic Byway (simulation)

Motorists driving this portion of the Upper Colorado River Scenic Byway would have views modified by existing development including an adjacent communication facility, I-70, and a railroad line located approximately 0.5 mile away. If oil and gas wells are placed on active Utah SITLA-administered oil and gas leases adjacent to the scenic road, this area would be further influenced by infrastructure development. With the addition of the Project (all alternative routes in this route grouping) and the TransWest Express Transmission Project, views from this portion of the scenic byway would become dominated by development, in particular the introduction of several transmission line structures approximately 0.5 mile away as shown in the cumulative effect simulation. To minimize cumulative effects on these views, the two transmission projects could be colocated further to the north where the complex backdropping afforded by the distant Book Cliffs could be used to reduce dominance of the proposed transmission lines structures.

Key Observation Point Number 309 – Bear Creek Campground

Views from this campground have been modified by several transmission lines, the Huntington power plant, and existing and leased oil and gas development. It is important to note that due to the enclosed views from in the southern portion of the campground, where the simulation was developed, these existing modifications are not visible whereas views at the entrance of the campground are dominated by these existing features. Through the introduction of the Project (Alternatives COUT BAX-B and COUT BAX-C) and the TransWest Express Transmission Project, views would be affected minimally where the existing industrial modifications are visible but where enclosed views in the campground would only view the two proposed transmission projects in steep terrain approximately 2 miles away, these views would be influenced by energy-related development. In particular, repeating transmission lines structures, right-of-way vegetation clearing, and construction access roads would be visible near the ridgeline. Due to the overlap of the proposed alignments for the Project and the TransWest Express Transmission Project, the TransWest Express Transmission Project was relocated 1,500 feet south of the Project and, therefore, would not be visible from this viewpoint.

Key Observation Point Number 310 – Crook’s Brand Rock Art Site (simulation)

Views from this rock art site, including the associated recreation area, have been influenced by adjacent oil and gas development which may be enlarged through continued expansion of oil and gas wells onto existing lease areas. These existing features do not dominate views from this location and typically are screened by adjacent vegetation except from elevated viewpoints. With the addition of the Project (all alternative routes in this route grouping) approximately 0.5 mile away and the TransWest Express Transmission Project approximately 1 mile away, these two transmission lines would begin to dominate views from this site through the addition of tall transmission line structures which would rise above the pinyon-juniper vegetation present in this area as shown in the cumulative effect simulation. To minimize cumulative effects on views from this rock art site, the two projects should be colocated further from this site, to the extent practicable, which would reduce the visual dominance of these projects using additional screening and backdropping opportunities.

Key Observation Point Number 319 – Green River (simulation)

Recreationists along this portion of the Green River have views influenced by an existing transmission line, which due to its relative scale and construction materials (wood), does not dominate views. Adjacent areas leased for oil and gas development would further influence views along the Green River but would likely be screened from view in this area. With the addition of the Project (all alternative routes in this route grouping) and the TransWest Express Transmission Project, views would begin to be dominated by transmission line structures. In particular, structures may be skylined on high points, which would further

dominate views from the Green River as shown in the cumulative effect simulation. To reduce the cumulative effect on these views, potential mitigation would be to collocate the two proposed transmission lines with the existing transmission line, in an area where the number of skylined structures would be minimized, to the extent practicable.

Key Observation Point Number 320 – Junction of Road to Buckhorn Wash (simulation)

Similar to description for the adjacent KOP No. 305, this viewpoint has views influenced by an existing transmission line except due to the proximity to the existing transmission line, approximately 1 mile away; views are more dominated by the repeating pattern of transmission lines structures than from KOP No. 305. The backdropping afforded by Cedar Mountain would reduce the dominance of these proposed projects as the lattice structures would begin to blend with the complex forms found on the southern edge of Cedar Mountain as shown in the cumulative-effect simulation. To minimize cumulative effects on views in this area, through the addition of the Project (Alternatives COUT BAX-B and COUT BAX-C) and the TransWest Express Transmission Project, the three transmission lines should be collocated to the extent practicable, which would reduce the visual dominance of these transmission line structures.

Key Observation Point Number 322 – U.S. Highway 6 Rest Area (Dinosaur Diamond Scenic Byway) (simulation)

Views from this rest area have been modified by its associated facilities, U.S. Highway 6, and an existing transmission line located approximately 1 mile away. From this location, these features do not dominate views but through potential development of areas leased for oil and gas wells, existing development would have a more dominant effect on views. Through the introduction of the Project (Alternative COUT BAX-E) and the TransWest Express Transmission Project, which have design characteristics in common with the existing transmission line, views would be further modified and would begin to be dominated by infrastructure development as shown in the cumulative effect simulation. Due to the location of both of these transmission projects, located further from the viewer than the existing transmission line as well as opportunities for backdropping the structures, these two projects would not extensively expand the area viewed from this rest area as influenced by development. In addition, views from the rest area are screened intermittently toward the area potentially traversed by these two transmission lines projects which further reduces their anticipated level of dominance.

Key Observation Point Number 323 – Old Railroad Grade (adjacent to Mexican Mountain Wilderness Study Area)

Views from Cottonwood Wash Road, which parallels the Old Railroad Grade, have been modified by an existing transmission line. Due to the scale of the existing transmission line and construction materials (wood), views would begin to become dominated by this feature but would not completely dominate views. Construction of wells, and associated facilities, on lands leased for oil and gas development would be mostly screened by topography from this viewpoint. Due to adjacent topographic screening, views of the future power generation facility at the Woodside site would be screened from view and the only visible modification would be the associated plume during particular weather conditions. The addition of the Project (Alternative COUT BAX-B) would introduce additional transmission lines structures, which have similar design characteristics and when seen in context with the existing transmission line, would dominate views in this area as shown in the cumulative effect simulation. In particular, the transmission line structures running parallel with the road producing long duration views looking down the corridor. Please note the TransWest Express Transmission Project does not have a collocated route in this area.

Key Observation Point Number 324 – Dinosaur Diamond Scenic Byway (U.S. Highway 6 north of Woodside) (simulation)

Motorists driving this portion of U.S. Highway 6, part of the Dinosaur Diamond Scenic Byway, would have long duration views of an existing transmission line and railroad line, but due to the relative scale of these features, they do not dominate views from the scenic byway. Areas leased for oil and gas wells, if developed, would further influence views from the scenic byway. The future power generation facility at the Woodside site would dominate views along this portion of the scenic byway through the introduction of a large-scale industrial facility directly adjacent to the scenic byway. The Project (Alternative COUT BAX-E) and the proposed TransWest Express Transmission Project, which have design characteristics in common with the existing transmission line, would increase the level of dominance produced by energy-related development adjacent to the Dinosaur Diamond Scenic Byway as shown in the cumulative effect simulation. To minimize cumulative effects in this area, potential mitigation would be to collocate the two proposed transmission lines with the existing transmission line, instead of having one project located on each side of the highway as currently designed. To further reduce cumulative effects, the two projects should cross the highway adjacent to the proposed Woodside site so the scenic byway crossing would occur in this area of more intense potential industrial development instead of being in an area with less influence from industrial facilities.

4.3.16.3.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

Scenery

Table 4-127 lists the cumulative effects for the COUT alternative routes.

Issue Areas

Scenery issues, as described in the direct Project effects discussion in Chapter 3, include the following landscapes (SQRUs):

- Argyle Canyon
- Bad Land Cliffs
- Green River
- Strawberry River
- Tavaputs Plateau
- Wasatch Plateau Alpine
- Wasatch Plateau
- Wasatch Plateau Parks

In addition through the analysis of cumulative effects on scenery, Book Cliff Bench, Emma Park/Kyune, and Windy Ridge were identified as SQRUs where the Project's area influence includes many areas not influenced by past, present, or other future actions.

Effects

Due to the presence of existing development and proposed future development, including but not limited to the TransWest Express Transmission Project, there are locations where entire scenery units would be influenced by past, present, and RFFAs. As analyzed these landscapes (SQRUs) include Bonanza/Dripping Rock Creek, Flattop Butte, Fruitland, Pariette Bench, Red Wash/Kennedy Wash/Devil's Playground, Southern Bridgeland, Strawberry River, Walker Plateau West, and Wrinkles Road. These landscapes have been modified by existing and areas leased for oil and gas development, existing transmission lines and pipelines, and in the case of the Bonanza/Dropping Rock Creek SQRU, the Bonanza power plant.

TABLE 4-127 SCENERY CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES							
Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Scenery Units not Influenced by Development
		Past and Present Development	Reasonably Foreseeable Future Actions				
Alternative COUT-A and Route Variation							
COUT-A	3,301,500	2,679,100	74,700	1,200	2,755,000	546,500	16.6
COUT-A-1	3,301,500	2,679,100	74,700	900	2,754,700	546,800	16.5
Alternative COUT-B and Route Variations							
COUT-B	3,908,600	3,090,600	212,600	700	3,304,000	604,600	15.5
COUT-B-1	3,841,600	3,036,600	204,000	700	3,241,400	600,100	15.6
COUT-B-2	3,841,600	3,036,600	204,000	700	3,241,400	600,100	15.6
COUT-B-3	3,841,600	3,036,600	204,000	700	3,241,400	600,100	15.6
COUT-B-4	3,841,600	3,036,600	204,000	700	3,241,400	600,100	15.6
COUT-B-5	3,841,600	3,036,600	204,000	700	3,241,400	600,100	15.6
Alternative COUT-C and Route Variations							
COUT-C	4,010,700	2,909,500	248,900	400	3,158,900	851,800	21.2
COUT-C-1	3,943,700	2,855,600	240,300	500	3,096,400	847,300	21.5
COUT-C-2	3,943,700	2,855,600	240,300	500	3,096,400	847,300	21.5
COUT-C-3 (Agency Preferred Alternative)	3,943,700	2,855,600	240,300	400	3,096,400	847,300	21.5
COUT-C-4	3,943,700	2,855,600	240,300	400	3,096,400	847,300	21.5
COUT-C-5	3,943,700	2,855,600	240,300	400	3,096,400	847,300	21.5
Alternatives COUT-H and COUT-I							
COUT-H (Applicant Preferred Alternative)	4,352,300	3,237,500	255,200	300	3,493,000	859,300	19.7
COUT-I	4,363,200	3,219,600	277,600	11,300	3,508,600	854,600	19.6
NOTES: ¹ Area of scenery units not influenced by development Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.							

The alternative routes (including route variations), in this route grouping, are similar in regard to overall cumulative effects except for Alternative COUT-I. As described above due to the collocation on most alternative routes of the Project and the TransWest Express Transmission Project, most areas would already have been influenced by the TransWest Express Transmission Project and the addition of the Project would only intensify the cumulative effect on scenery. Since there is not an adjacent TransWest Express Transmission Project alternative route descending the Book Cliffs into Castle Valley, east of Wellington, Utah, the Project would extend the areas influenced by development through the construction and operation of the Project.

Argyle Canyon and Bad Land Cliffs

As delineated by the BLM Vernal and Price Field Offices, the Argyle Canyon and Jack Canyon WSA SQRUs contain Argyle Canyon and the Bad Land Cliffs, as well as a portion of Nine Mile Canyon east of Argyle Canyon and the area between Reservation Ridge and Emma Park. This landscape unit contains limited existing development except for a pipeline crossing the southeast corner of the landscape, a transmission line bisecting the landscape, and dispersed summer cabins. In addition, oil and gas leases are located on state-administered lands in this scenery unit which if developed, would modify the landscape

character through the introduction of additional structures and associated access roads. Due to several alternative routes for both the Project (Alternatives COUT-B, COUT-C, COUT-H, and COUT-I including all route variations) and the TransWest Express Transmission Project, a major portion of this landscape unit may become visually modified. By collocating the Project and TransWest Express with existing modifications along either Alternative COUT-B, COUT-C, COUT-H, or COUT-I, cumulative effects on this scenery unit would be minimized by limiting the expansion of areas influenced by development. Whereas either not collocating the two transmission projects or collocating along Route Variation COUT-B-1 or COUT-C-1, the area influenced by development would extend across a majority of this landscape unit.

Book Cliff Bench

This SQRU, as digitized by the BLM Price Field Office, would only be crossed by Alternative COUT-I and would be influenced by Alternative COUT-H. Existing development, including oil and gas (existing and leased areas) as well as a transmission line and pipeline, have visually influenced approximately 80 percent of this landscape. As stated earlier, since the TransWest Express Transmission Project does not have an alternative route adjacent to Alternative COUT-I, the Project would extend the influence of development in this landscape by approximately 8 percent through the introduction of transmission line structures, access roads, and right-of-way vegetation clearing. Due to the collocation of the Project on Alternative COUT-H with the TransWest Express Transmission Project, no additional areas would be influenced by the Project but instead, a more intense cumulative effect on scenery is anticipated due to the presence of two additional transmission lines in the Book Cliff Bench SQRU.

Emma Park/Kyune

This landscape represents the area known as Emma Park which is located between the Book Cliffs and Reservation Ridge and includes SQRUs delineated by the BLM Price, Vernal, and Salt Lake Field Offices. Similar to the description of existing and future development for the Book Cliffs Bench, existing and leased areas for oil and gas development, an existing pipeline, two existing transmission lines, and other industrial facilities have influenced the majority of this landscape. Due to the collocation of the Project with the TransWest Express Transmission Project in this area along Alternatives COUT-B (including route variations), COUT-C (including route variations), and COUT-H, there are no additional areas that would be influenced by the Project, which would not be influenced by past, present, or future actions. Similar to the Book Cliffs Bench SQRU, Alternative COUT-I would influence an additional 3 percent of this landscape due to there not being an adjacent TransWest Express Transmission Project alternative.

Green River

The BLM Vernal Field Office delineated two different SQRUs to represent the Green River—Horseshoe Bend and South Green River. Alternatives COUT-A (including route variation) and COUT-B (including route variations) cross the Horseshoe Bend unit and Alternatives COUT-C (including route variations), COUT-H, and COUT-I cross the South Green River unit. Both of these landscapes have been influenced visually by existing and areas leased for oil and gas development as well as existing major linear utilities (transmission line across the Horseshoe Bend landscape and multiple pipelines crossing the South Green River). In addition, the TransWest Express Transmission Project shares similar alternative routes with the Project and to minimize cumulative effects on the Green River, the two transmission project should be collocated to the extent practicable.

Strawberry River

The scenery adjacent to the Strawberry River from Solider Creek Dam to Starvation Reservoir was delineated as one scenery unit with landscape character modifications primarily located along the western portion of the landscape. These existing modifications include a transmission line and the Solider Creek Dam. It is important to note that the Bill Barrett Lake Canyon EDA, an area leased for oil and gas development, completely overlaps the Strawberry River scenery unit. As such, this landscape may become modified along its entire length through the introduction of oil- and gas-related facilities. In addition to the existing transmission line along the west side of this landscape, the Project (Alternative COUT-A) as well the TransWest Express Transmission Project would further industrialize the area adjacent to the Solider Creek Dam and modify the existing landscape character through the presence of several transmission line structures, access roads, and right-of-way vegetation clearing.

Tavaputs Plateau

The Tavaputs Plateau scenery unit contains a major portion of the Duchesne Ranger District on the Ashley National Forest as well as the lands north toward U.S. Highway 40 including the area north of Reservation Ridge. Existing development is primarily located along the northern portion of Sowers Canyon including oil and gas wells and a transmission line which have locally modified the landscape character. In addition, several oil and gas permitted areas overlap this landscape and if fully developed, would begin to produce an industrialized landscape character. This industrial character would be expanded through the introduction of the TransWest Express Transmission Project and the Project, especially along Alternative COUT-B, which bisects the scenery unit. Route Variations COUT-B-1 and COUT-C-1 would further influence the character of the Tavaputs Plateau along the top of Reservation Ridge through steep, forested terrain.

Wasatch Plateau Alpine

This scenery unit was digitized to represent the western ridgeline of the Wasatch Plateau above the community of Mount Pleasant. Other than an existing transmission line, which crosses the ridge, there are few existing landscape character modifications. The majority of this area has been leased by the Richfield Field Office for oil and gas development, which would further modify the landscape character. The addition of the Project (Alternative COUT-I) and the TransWest Express Transmission Project would begin to industrialize the area above Potters Pond through the presence of transmission line structures, access roads, and geometric right-of-way vegetation clearing. To reduce cumulative effects on this narrow scenery unit, the two proposed transmission lines should be located as close as practicable to the existing transmission line.

Wasatch Plateau

The scenery unit that comprises the northern portion of the Wasatch Plateau covers a large portion of the Manti-La Sal National Forest from U.S. Highway 6 to Joes Valley Reservoir. As such, there are areas of more intense existing development and areas with limited landscape character modifications. Existing modifications include surface facilities associated with underground coal mining, existing transmission lines and pipelines, and areas leased for oil and gas development. With the addition of the TransWest Express Transmission Project into this scenery unit, the Project along Alternatives COUT-H and COUT-I would not visually influence additional areas that have not already been influenced by past or present actions; whereas the other alternative routes in this routing group would visually influence approximately 200 additional acres. The presence of the Project, including the transmission line structures, access roads, and right-of-way vegetation clearing, would produce a more intense localized cumulative effect on scenery if the Project were colocated with TransWest Express and the existing transmission line along Alternative COUT-A (including route variation), COUT-B (including route variations), COUT-C

(including route variations), or COUT-I. Whereas if the Project and the TransWest Express Transmission Project were not colocated, there would be a more diffuse but widespread cumulative effect on the Wasatch Plateau landscape in context with other past, present, and future actions.

Wasatch Plateau Parks Landscape

There are two park landscape located on the Wasatch Plateau with the area known as Scad Valley, which would be crossed by Alternative COUT-I, and the park adjacent to Gooseberry Creek (Gooseberry Creek valley), which would be crossed by Alternative COUT-H. Scad Valley has few existing cultural modifications except for the presence of an existing transmission line but through development of oil and gas lease areas as well as coal lease areas; this landscape has the potential to become industrialized. In addition to the past and present development in Scad Valley, the introduction of the Project and the TransWest Express Transmission Project would further industrialize the southern portion of this landscape unit through the presence of transmission line structures, access roads, and right-of-way vegetation clearing. The other park landscape, Gooseberry Creek valley, has fewer existing landscape character deviations than Scad Valley, except for oil and gas lease areas along the eastern edge of this scenery unit. An existing pipeline is located along the northern edge of the landscape which has modified the local character through geometric right-of-way vegetation clearing. Future development including industrial facilities associated with the Narrows Dam and Reservoir, TransWest Express Transmission Project, and the Project would further modify the landscape character through the introduction of industrial structures, access roads, and vegetation clearing.

Windy Ridge

This landscape was delineated to represent a ridge between Roosevelt, Utah, and the Duchesne River. Adjacent oil and gas development has a limited visual influence on this landscape as there are no wells located on Windy Ridge. An existing transmission line has influenced approximately half of this scenery unit and with the addition of the Project (Alternatives COUT-A and COUT-B, including route variations) as well as the TransWest Express Transmission Project; the influence of development would be extended further into this landscape. Due to the separation between the Project and the TransWest Express Transmission Project, the Project would influence an additional 4 percent of this landscape as well as producing a more intense, industrialized landscape character along the northern portion of this landscape as a result of the presence of three transmission lines.

Viewing Locations

Views from identified viewing locations would have a range of cumulative effects resulting from the addition of the Project in context with past, present, and future actions and to focus on the key issues, this analysis will focus on the 22 simulation locations identified in Table 4-128 along this route grouping.

TABLE 4-128 CUMULATIVE EFFECTS SIMULATION LOCATIONS FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES		
Simulation Location (Key Observation Point) Number	Simulation Location (Key Observation Point) Name	Alternative Routes
87	Enron Recreation Area (on White River)	COUT-C and route variations, COUT-H, COUT-I
109 ¹	Dispersed residences south of Roosevelt	COUT-A and COUT-B and route variations
195	Indian Creek Campground	COUT-I
200 ¹	Argyle Canyon Road	COUT-C and route variations, COUT-H, COUT-I

TABLE 4-128 CUMULATIVE EFFECTS SIMULATION LOCATIONS FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES		
Simulation Location (Key Observation Point) Number	Simulation Location (Key Observation Point) Name	Alternative Routes
203	Fourmile Bottom	COUT-C and route variations, COUT-H, COUT-I
208	West Helper residential	COUT-H
211	Dinosaur Visitor Center	COUT-A, COUT-B, and COUT-C and route variations; COUT-H; COUT-I
217 ¹	Skyline Drive Scenic Backway	COUT-I
260	Energy Loop Scenic Byway (Utah State Route 31)	COUT-H
261	Fairview residential	COUT-H
262	Mount Pleasant dispersed residences	COUT-I
265	Interstate 15 (Nephi)	COUT-A, COUT-B, and COUT-C and route variations; COUT-H; COUT-I
266	U.S. Highway 6 (Spanish Fork Canyon)	COUT-A, COUT-B, and COUT-C and route variations
269 ¹	Fruitland residential	COUT-A and route variation
272	Sand Wash North Destination Route	COUT-C and route variations, COUT-H, COUT-I
274	Indian Canyon Scenic Byway (U.S. Highway 191)	COUT-H
284	Energy Loop Scenic Byway (Utah State Route 264)	COUT-H
285	Aspen Grove Campground	COUT-A and route variation
304	Sheep Creek Road (Forest Road 042)	COUT-A and route variation
309 ¹	Bear Creek Campground	COUT-I
325 ¹	Argyle Canyon residences	COUT-B and route variations
328	Indian Canyon Scenic Byway	Route variations COUT-A-1 and COUT-B-1
NOTES: ¹ Cumulative effect simulation not prepared since the TransWest Express Transmission Project would not be visible in the area of the direct effect simulation Cumulative effects simulations are located in Appendix H.		

Key Observation Point Number 87 – Enron Recreation Area (on White River) (simulation)

Recreationists at this campground and river put-in on the White River have views that have been minimally influenced by development due to the enclosed views in this area. Existing oil and gas development is located on the plateaus above the river but is screened from view at this recreation area. If wells, as part of permitted oil and gas leases, were to be developed adjacent to the river, views would become influenced by these wells including the introduction of industrial structures. Through the development of the Project (Alternatives COUT-C [including route variations], COUT-H, and COUT-I) and the TransWest Express Transmission Project, views would become dominated by transmission lines including the presence of multiple skylined transmission structures on adjacent ridgelines as shown in the cumulative effect simulation. To reduce cumulative effects on views from this recreation area, potential mitigation would include colocation of the two projects, maximizing the distance between transmission structures at the river crossing, to the extent practicable, to minimize the number and visibility of proposed transmission line structures.

Key Observation Point Number 109 – Dispersed Residences South of Roosevelt

Views from dispersed residences south of the community of Roosevelt have views modified by existing rural development including agricultural fields, dispersed residences, and associated utilities. Residences adjacent to the existing transmission line in this area have locally modified views that diminish based on distance from the existing transmission line as well as through topographic screening. In the location where the simulation was developed looking south, the existing transmission line is not visible and is located approximately 0.5 mile to the north. As such, views from this group of residences have been modified minimally by development. The introduction of the Project (Alternatives COUT-A and COUT-B including all route variations) and the TransWest Express Transmission Project (located north of the viewpoint and also not shown in the simulation), which both have design characteristics in common with the existing transmission line, would further modify views from dispersed residences and due to the separation between each subsequent transmission line, residences would be located in between transmission lines producing a wide area viewed as a transmission line corridor. To reduce cumulative effects on these dispersed residences, collocation of the two proposed transmission lines with the existing transmission line would intensify cumulative effects for some residences, located adjacent to the existing transmission line, but would diminish the overall extent of the cumulative effects through the widening of this transmission line corridor.

Key Observation Point Number 195 – Indian Creek Campground (simulation)

Views from this campground are enclosed with the adjacent existing transmission line being mostly screened by vegetation which produces a nearly intact appearing landscape character. If existing BLM Price Field Office oil and gas leases were to be developed, views may become more influenced by development if wells were located on ridges or other high points in view of the campground. Transmission structures associated with the Project (Alternative COUT-I) and the TransWest Express Transmission Project would be visible over the trees, which screen views of the existing transmission line, due to the proximity of these projects to the campground and the height of the proposed structures as shown in the cumulative effect simulation. To reduce cumulative effects on these views, potential mitigation would be to collocate the two transmission projects as close to the existing transmission line as practicable. It is important to note that the alignment for the TransWest Express Transmission Project was modified to be located 1,500 feet south of the existing transmission line for the simulation due to multiple crossings of the Project alignment. As such, the simulation illustrates that the TransWest Express Transmission Project would be mostly screened from view.

Key Observation Point Number 200 – Argyle Canyon Road

Views along this portion of the Argyle Canyon Road have been modified minimally by development except for a few dispersed residences and associated agricultural fields which produce a rural character in this area. The introduction of the Project (Alternatives COUT-C [including route variations], COUT-H, and COUT-I) and the TransWest Express Transmission Project (not visible in simulation since that project would cross the canyon 1 mile northeast of the simulation location) would produce highly modified views along this portion of Argyle Canyon Road. These modifications are a result of several skylined transmission structures, right-of-way vegetation clearing, and a complex network of roads to access the structure pads on very steep terrain. To minimize cumulative effects on views from the road, as well as adjacent residences, the two transmission project should be collocated and perpendicularly cross Argyle Canyon instead of paralleling the road for approximately 2 miles.

Key Observation Point Number 203 – Fourmile Bottom (simulation)

Recreationists at the Fourmile Bottom put-in, as well as floating this portion of the Green River, have views intermittently influenced by development. These include views of an existing pipeline corridor and

potential views of existing and/or areas leased for oil and gas development where the adjacent canyon walls are shorter and do not screen views from the river. Through the introduction of the Project (Alternatives COUT-C [including route variations], COUT-H, and COUT-I) and the TransWest Express Transmission Project, views at and adjacent to the Fourmile Bottom put-in would be modified by skylined transmission structures and access road construction in steep terrain as shown in the cumulative effect simulation. To reduce cumulative effects on these views, potential mitigation would include colocation of the two transmission projects and maximizing the distance between structures at the river crossing to the extent practicable. By placing the structures at the edge of the canyon walls, no structures would be placed adjacent to the river, which would decrease the cumulative effect on these views.

Key Observation Point Number 208 – West Helper Residential (simulation)

Views from residences in Spring Canyon, west of Helper, have been modified by existing utilities and an elevated railroad road line located west of this group of residences. These modifications influence but do not dominate the views from this location. The addition of the Project (Alternative COUT-H) and the TransWest Express Transmission Project would produce views which would begin to be dominated by transmission lines including a skylined transmission structure located on the ridge adjacent to these residences as well as through the construction of access roads and right-of-way vegetation clearing as shown in the cumulative effect simulation. To minimize cumulative effects on these views, the two transmission line projects could be colocated adjacent to the existing railroad line, which would offer partial screening opportunities and, therefore, reduce effects on views from these residences.

Key Observation Point Number 211 – Dinosaur Visitor Center (simulation)

Views from the Dinosaur National Monument Visitor Center in Colorado have been influenced by an existing transmission line and U.S. Highway 40, but these features do not dominate views from the visitor center. Note there is another, larger transmission line which is mostly screened by the ridge visible in the simulation but is seen in a skylined condition approximately 6 miles away. Through the addition of the Project (all alternative routes in this route group) and the TransWest Express Transmission Project, which have design characteristics in common with the existing transmission line, views would begin to become dominated by transmission lines, in particular through the introduction of skylined transmission structures 1.25 mile away as shown in the cumulative effect simulation. Alternatives COUT-C (including route variations), COUT-H, and COUT-I would have lower additive cumulative effects on views from the visitor center since the Project would be screened partially by the previously mentioned ridge. To reduce cumulative effects on views from the location, the two proposed transmission projects could be colocated south of the ridge to minimize their level of dominance on views from the Dinosaur National Monument.

Key Observation Point Number 217 – Skyline Drive Scenic Backway

From this viewpoint along the Skyline Drive Scenic Backway, views are modified minimally by existing development compared to the area approximately 0.75 mile south of this location where an existing transmission line crosses the scenic road. Due to topographic screening, the existing transmission line has a localized effect on the scenic drive and based on the relative scale and construction materials (wood), the existing transmission line does not dominate these views. Similar to the description for Indian Creek Campground, the BLM Richfield Field Office has oil and gas leases in the area and if developed, would introduce additional structures inconsistent with the existing landscape character. Through the addition of the Project (Alternative COUT-I) and the TransWest Express Transmission Project, the area north of the existing transmission line would become dominated by transmission lines including their associated construction access roads and right-of-way vegetation clearing. By expanding the area influenced by these utility projects, views may become industrialized along this portion of the Skyline Drive Scenic Backway. To reduce the cumulative effect on these views, the two transmission projects could be colocated with the existing transmission line in Dry Pole Fork Canyon to limit the visibility of transmission lines projects

from this scenic road. Please note based on the current alignment for the TransWest Express Transmission Project, which crosses the Project multiple times in this area, the TransWest Express Transmission Project was relocated 1,500 feet south of the existing transmission line and therefore would not be visible from this viewpoint.

Key Observation Point Number 260 – Energy Loop Scenic Byway (UT SR 31) (simulation)

Motorists driving the Utah State Route 31 portion of the Energy Loop Scenic Byway would view areas along Cottonwood Creek that have been influenced minimally by development. Through the addition of the Project (Alternative COUT-H) and the TransWest Express Transmission Project, views would begin to become dominated by transmission line facilities including transmission line structures, associated access roads, and right-of-way vegetation clearing as shown in the cumulative effect simulation. Since the TransWest Express Transmission Project parallels the scenic byway for approximately 2.5 miles, whereas the Project crosses the road and is located approximately 0.5 mile away from the road where views toward the Project would be screened partially, potential mitigation would include colocation of the two projects north of the scenic byway to reduce the cumulative effect on these views.

Key Observation Point Number 261 – Fairview Residential (simulation)

Views from residences in the community of Fairview have been modified where existing development is located between the viewer and the Wasatch Plateau (as shown in the visual simulation). Other than the existing development in and around Fairview, the character of the Wasatch Plateau, as viewed from Fairview, has been modified minimally by development. Through the introduction of the Project (Alternative COUT-H) and the TransWest Express Transmission Project, views from Fairview would be influenced by the associated transmission line structures, right-of-way vegetation clearing, and access roads as shown in the cumulative effect simulation. Due to the distance between the viewpoint and these projects, approximately 2 miles, these two projects would not dominate views from Fairview.

Key Observation Point Number 262 – Mount Pleasant Dispersed Residences (simulation)

The area of dispersed residences east of Mount Pleasant have views which have been modified by the existing transmission line that traverses the Wasatch Plateau through the presence of transmission lines structures and right-of-way vegetation clearing. Due to the relative scale and construction materials (wood) of the existing transmission line, it does not dominate views from these residences. Through the introduction of the Project (Alternative COUT-I) and the TransWest Express Transmission Project into this area, which have design characteristics in common with the existing transmission line, views would become dominated by three transmission lines, which would locate many residences between each subsequent transmission line as shown in the cumulative effect simulation. In other words, residences would have views of transmission lines looking both to the northeast and southwest, creating a type of tunnel-effect. As such, potential mitigation would be to colocate the two proposed transmission lines with the existing transmission line to the extent practicable reducing cumulative effects on views from these residences.

Key Observation Point Number 265 – Interstate 15 (Nephi) (simulation)

Motorists driving I-15 near Nephi have views that have been modified by existing development including several transmission lines, development in and around Nephi, and the interstate highway itself. These existing modifications begin to dominate views, especially north of Nephi, producing a landscape character viewed as industrial in nature. Through the introduction of the Project (all alternative routes in this route grouping) and the TransWest Express Transmission Project, which have design characteristics in common with the existing transmission lines, views from I-15 north of Nephi would be dominated by transmission lines including several skylined transmission structures which further dominate views due to

their visibility on ridges as shown in the cumulative effect simulation. To minimize cumulative effects on these views, the two proposed transmission projects could be colocated with the existing transmission lines and use topographic screening opportunities to the extent practicable.

Key Observation Point Number 266 – U.S. Highway 6 (Spanish Fork Canyon) (simulation)

Motorists on this portion of U.S. Highway 6 have views that are influenced, and in some locations dominated, by existing development including several transmission lines. The introduction of the Project (Alternatives COUT-A, COUT-B, and COUT-C including all route variations) and the TransWest Express Transmission Project would, in addition to the existing transmission lines which have similar design characteristics as the Project, dominate views along this portion of U.S. Highway 6 as shown in the cumulative effect simulation. This level of dominance is a result of skylined transmission lines, right-of-way vegetation clearing in overstory vegetation, and the construction of access roads in steep terrain. To reduce cumulative effects on these views, potential mitigation would include collocation of the two proposed transmission projects with the existing transmission line and minimizing additional skylined transmission structures to the extent practicable.

Key Observation Point Number 269 – Fruitland Residential

Views from residences in Fruitland have been influenced, and locally dominated, by the existing transmission line. Residences located adjacent to the transmission line have views dominated by transmission structures whereas residences located further away have less dominated views. These views have also been modified by U.S. Highway 40, as well as dispersed residences and associated agricultural lands, which create a rural character. Through development of areas leased for oil and gas wells, views may also become influenced by oil and gas development including structures and associated access roads. The addition of the Project (Alternative COUT-A and route variation) and the TransWest Express Transmission Project, which have design characteristics in common with the existing transmission line, would further extend the area dominated by transmission lines. The Project is colocated with the existing transmission line which would not considerably extend the area viewed as a transmission line corridor. The TransWest Express Transmission Project alternative route (not visible in the simulation) is located more than 1 mile from the existing transmission line which would extend the visual influence of transmission lines to larger number of residences in and around Fruitland. To minimize these cumulative effects, the two proposed transmission lines should be colocated with the existing transmission line to the extent practicable.

Key Observation Point Number 272 – Sand Wash North Destination Route (simulation)

Recreationists on this portion of Sand Wash Road, traveling to the Sand Wash put-in on the Green River, have views that have been minimally influenced by existing development when compared to the more extensive oil and gas dominated landscapes this road passes through to the north. Areas leased, but not yet developed, for oil and gas wells would introduce industrial facilities into a natural appearing landscape and would modify these views. Through the addition of the Project (Alternatives COUT-C [and route variations], COUT-H, and COUT-I) and the TransWest Express Transmission Project, these views would become dominated by energy-related infrastructure including a variety of different structures types and a network of access roads as shown in the cumulative effect simulation. To reduce cumulative effects on these views, potential mitigation would be to collocate the two proposed transmission lines to the extent practicable to minimize the additional effect of these projects, in context with expanding oil and gas fields, on views from this recreation destination route.

Key Observation Point Number 274 – Indian Canyon Scenic Byway (U.S. Highway 191) (simulation)

Motorists on this portion of the Indian Canyon Scenic Byway have views influenced by an existing transmission line but due to the scale of the existing transmission line and construction materials (wood); this feature does not dominate views from the scenic road. Existing oil and gas wells are located on the flat plateau lands above the canyon and as such, are not visible in this portion of the scenic byway. The addition of the Project (Alternative COUT-H) and the TransWest Express Transmission Project, which have design characteristics in common with the existing transmission line, would produce views dominated by transmission lines including a series of transmission structures paralleling the road, additional right-of-way vegetation clearing, and construction access roads as shown in the cumulative effect simulation. Due to the steep, forested slopes, the two proposed transmission projects should be colocated with the existing transmission line to the extent practicable to minimize cumulative effects through the expansion of the area viewed as a transmission line corridor.

Key Observation Point Number 284 – Energy Loop Scenic Byway (UT SR 264) (simulation)

Motorists driving the Utah State Route 264 portion of the Energy Loop Scenic Byway have views minimally modified by development except for the cluster of summer homes located to the south. Through the introduction of the Project (Alternative COUT-H) and the TransWest Express Transmission Project, views along this portion of the Energy Loop Scenic Byway would begin to become dominated by transmission line structures and potentially through right-of-way vegetation clearing as shown in the cumulative effect simulation. To minimize the cumulative effects on these views of a geometric cleared right-of-way, potential mitigation would include colocation of the two transmission projects east of the aspen groves, visible in the simulation, to the extent practicable. It is important to note that a future reservoir is planned to be located in this area, the Narrows Reservoir, which would require the scenic byway to be relocated to the north. The future reservoir itself may increase landscape variety and be seen as a positive cumulative effect but based on the final alignment for the highway, this realignment may cause additional cumulative effects on views from the scenic byway as a result of longer duration views of the previously mentioned transmission line projects including the Project.

Key Observation Point Number 285 – Aspen Grove Campground (simulation)

Views from the Aspen Grove Campground have been minimally influenced by development except for recreation based development including the adjacent marina, campground, and summer homes. The existing transmission line is screened from view in this area by topography and as such, does not influence views from this campground. Due to constraints resulting from the location of the existing transmission line and separation between the Project (Alternative COUT-A and route variation) and the TransWest Express Transmission Project, these transmission lines would be visible from the campground and would modify the associated views through the introduction of skylined transmission structures, right-of-way vegetation clearing, and potentially the construction of access roads as shown in the cumulative effect simulation. To minimize these cumulative effects on views, potential mitigation would be to collocate to two proposed transmission lines with the existing transmission line to the extent practicable to reduce the visibility of these features. In addition, a proposed residential development is planned to be located on the ridge which may modify views from the campground if residences are skylined on the ridge.

Key Observation Point Number 304 – Sheep Creek Road (Forest Road 042) (simulation)

Motorists driving Forest Road 042 in the Uinta-Wasatch-Cache National Forest have views influenced but not dominated by existing development including an existing transmission line which traverses the ridge and introduces a skylined transmission structure and geometric right-of-way vegetation clearing.

The addition of the Project (Alternative COUT-A and route variation) and the TransWest Express Transmission Project, which have design characteristics in common with the existing transmission line, would further modify these views and dominate views from this overlook through a series of skylined structures on the ridge and cleared right-of-ways as shown in the cumulative effect simulation. Alternative COUT-A would introduce additional cumulative effects, when compared to the route variation, since the Project would cross the existing transmission line and the TransWest Express Transmission Project in view of this overlook. This crossing may require taller structures and would benefit from micro-siting of structures to minimize cumulative effects on these views. To further reduce cumulative effects, the two transmission projects should be colocated with the existing transmission line to the extent practicable which would decrease the area viewed as a transmission line corridor.

Key Observation Point Number 309 – Bear Creek Campground

Views from this campground have been modified by several transmission lines, the Huntington Power Plant, and existing and leased oil and gas development. It is important to note that due to the enclosed views from in the southern portion of the campground, where the simulation was developed, these existing modifications are not visible whereas views at the entrance of the campground are dominated by these existing features. Through the introduction of the Project (Alternative COUT-I) and the TransWest Express Transmission Project, views would be minimally affected where the existing industrial modifications are visible but where enclosed views in the campground would only view the two proposed transmission projects in steep terrain approximately 2 miles away, these views would be influenced by energy-related development. In particular, repeating transmission lines structures, right-of-way vegetation clearing, and construction access roads would be visible near the ridgeline in the simulation. Due to the overlap of the proposed alignments for the Project and the TransWest Express Transmission Project, the TransWest Express Transmission Project was relocated 1,500 feet south of the Project and, therefore, would not be visible from this viewpoint.

Key Observation Point Number 325 – Argyle Canyon Residences

Views from residences and summer homes in this portion of Argyle Canyon have been influenced by an existing transmission line but due to its scale and materials (wood), as well as through vegetation screening, it does not dominate these views. The addition of the Project (Alternative COUT-B and route variations) and the TransWest Express Transmission Project would produce views beginning to be dominated by transmission lines including taller, steel structures which may rise above the trees screening the existing transmission line and introduce additional areas of vegetation clearing into these views. To minimize cumulative effects on views from these residences, potential mitigation would be to colocate the two proposed transmission lines with the existing transmission line where existing topography and vegetation can be used to partially, or if possible, completely screen views of these projects. Note that no cumulative effect simulation was prepared since the current alignments for the Project and the TransWest Express Transmission Project overlap and based on the proposed 1,500-foot separation between the projects; the TransWest Express Transmission Project would be located further to the south and would be screened by topography.

Key Observation Point Number 330 – Indian Canyon Scenic Byway

Motorists on this portion of the Indian Canyon Scenic Byway have views influenced by scattered recreation cabins and to the northeast of this viewpoint, an existing communication facility on Argyle Ridge, which does not dominate views along the scenic byway. Through the addition of the Project (Route Variations COUT-B-1 and COUT-C-1) and the TransWest Express Transmission Project, these views would begin to become dominated by utility development along this portion of the scenic road. These projects would include the introduction of skylined transmission structures, right-of-way vegetation clearing, and associated access roads, which are inconsistent with the existing landscape character viewed

from this location. To reduce the cumulative effect on these views, the two transmission projects could be colocated to the extent practicable in addition to limiting vegetation clearing in the projects' rights-of-way and using existing screening opportunities through tower micrositing.

4.3.17 National Trails System

The approach for analyzing cumulative effects on National Scenic and Historic Trails (including trails undergoing feasibility study) was based on direction provided in BLM Manual 6280 and through coordination with BLM National Trails' staff. Cumulative effects on National Trails would result from the incremental effects on trail-associated resources as well as future management of the trail through development of past, present, and RFFAs.

The geographic scope for analyzing cumulative effects on NSTs was identified as the extent of the trail alignment located in the BLM Field Offices traversed by the Project. For NHTs, the geographic scope was defined by the high potential route segments and high potential historic sites, or feasibility study alignments for trails under study, identified in the areas located adjacent to the Project. The temporal scope for analysis of cumulative effects on both NSTs and NHTs (including trails under feasibility study) was defined by the length of the agency right-of-way grant for the Project (50 years), but it is important to note that potential future right-of-way grant extensions may extend the life of the Project beyond 50 years. The cumulative effect analysis relies on the analysis of direct and indirect impacts from the Project (refer to Section 3.2.17) and considers them in context with the past, present, and RFFAs listed in Tables 4-1 and 4-2.

4.3.17.1 Issues Identified for Analysis

4.3.17.1.1 Effects on Trail's Resources, Qualities, Values, Associated Settings, or Primary Use(s)

Cumulative effects on a NST or NHT (including trails under feasibility study) may result from the development of past, present and RFFAs through the modification of the trail's resources, qualities, values, associated settings, or primary use(s). This analysis was completed in a manner consistent with the direct and indirect impact methodology described in Chapter 3 of this document. In general, those areas where transmission line projects would be colocated such that they are consolidated physically, as well as visually, effects would be reduced. Matching spans to the extent practicable and sharing construction and maintenance access roads would further reduce cumulative effects of such projects. In locations where projects would deviate from using the same corridor, cumulative effects generally increase as the trail's resource and settings become more fragmented and in regard to scenic resources specifically, the industrial nature of transmission line projects would have a stronger effect on the trail setting. In addition, if the past, present, and future projects are visually similar (i.e., transmission lines seen in context with other transmission lines); the dominance of the aggregate of projects is reduced. Inversely, if the aggregate of the projects are incongruent (i.e., a mixture of natural gas wells, with transmission lines, and other modifications), cumulative effects are greater. The following summarizes the resource values analyzed to determine cumulative effects on National Trails.

Scenic Resources

- Cumulative effects resulting in the incremental modification to the integrity of the associated settings and scenic values for which the National Trail was designated
- Cumulative effects on the naturally appearing landscapes associated with National Trails, regardless of scenic quality rating

Historic and Cultural Resources

- Cumulative effects on historic/cultural resources would include the loss of cultural artifacts, features, or sites that could have cultural significance or could yield important information about the National Trail
- Cumulative impacts on the trail’s setting and those characteristics that support the trail setting

Recreation (including travel management)

- Cumulative effects on high-quality recreation opportunities; relative freedom from intrusion; opportunities for vicarious experiences; and conservation, protection, and restoration of National Trail resources, qualities, values, and associated settings
- Cumulative effects on desired recreation setting characteristics
- Cumulative effects on the primary use or uses of the National Trail
- Cumulative effects on the travel systems in the area, including permanent access that could generate more movement in areas that would not have previously been accessible

Natural Resources and Other Landscape Elements

- Cumulative effects on natural resources (biological, geological, and scientific) relate to ground disturbance and the resulting loss of biological, geological, or other scientific resources
- Cumulative effects on the natural settings that are the geographic extent of the natural landscape elements that influence the trail experience and contribute to resource protection

4.3.17.2 Existing Condition

4.3.17.2.1 Continental Divide National Scenic Trail

The alignment for the Continental Divide NST was modified based on analysis completed for the Sierra Madre-Chokecherry Wind Farm Project which would have dominated the setting and experience of the scenic trail along its former alignment adjacent to Wyoming Highway 71. Based on these potential effects, the Continental Divide NST was relocated further to the west between Atlantic Rim and Coal Mine Ridge into an area with fewer existing cultural modifications. Due to the topographic screening afforded by these two ridges, views of the wind farm to the east and areas leased for oil and gas development to the west would be mostly screened from hikers using the new trail centerline. In the location where the trail descends into Eightmile Lake Basin, adjacent to other recreation opportunities, the setting would be modified through the construction and operation of the Sierra Madre-Chokecherry Wind Farm.

4.3.17.2.2 Old Spanish National Historic Trail

Adjacent to the congressionally designated alignment and trail traces for the Old Spanish NHT, development has modified the experience of the historic trail but these features do not dominate the setting. In particular for the Book Cliffs Analysis Unit, existing development is associated with I-70, several pipelines paralleling I-70, areas leased for oil and gas development by the State of Utah and the Moab Field Office, and intermittent industrial development. Further to the west, in the San Rafael Swell Analysis Unit of the Old Spanish NHT, there are fewer existing modifications than the Book Cliffs Analysis Unit. An existing transmission line has modified the character of adjacent areas but due to the smaller scale and construction materials (wood), the existing transmission line does not dominate the setting for the trail in the San Rafael Swell, though the natural integrity of portions of the trail have been compromised.. The State of Utah has leased areas for oil and gas development in the state-administered parcels adjacent to the Old Spanish NHT, which if developed, would further modify the trail’s setting.

4.3.17.2.3 Overland Historic Trail

As described in Chapter 3, there are two alignments for the Overland Historic Trail under feasibility study that diverge south of Rawlins: (1) the northern option turns north and parallels Wyoming Highway 71 toward Rawlins and (2) the southern option continues to the west toward Fort LaCledé. The northern option is located adjacent to Wyoming Highway 71 where existing development has influenced the area, which will be further modified by the construction and operation of the Sierra Madre-Chokecherry Wind Farm. The southern option traverses an area heavily influenced by oil and gas development, as well as associated pipelines, which begin to dominate the trail's existing setting.

4.3.17.2.4 Cherokee Historic Trail

Similar to the Overland Historic Trail, two alignments are under feasibility study by the NPS: (1) the 1849 route which parallels Wyoming Highway 71 toward Rawlins and (2) 1850 route which crosses Wyoming Highway 789 13 miles north of Baggs then crosses Flat Top Mountain before paralleling the Wyoming-Colorado border. Similar to the northern option of the Overland Historic Trail, the 1849 route would be located adjacent to existing development that has modified the trail's setting, which on the construction and operation of the Sierra Madre-Chokecherry Wind Farm; the trail's setting would be further modified. The 1850 route first traverses an area modified by oil and gas development adjacent to Wyoming Highway 789 before ascending Flat Top Mountain. The area from Flat Top Mountain to Powder Rim, adjacent to the Wyoming-Colorado border, has few existing modifications except for a series of pipelines crossing Powder Rim into Cherokee Basin. These existing modifications influence, but do not dominate, the setting for the Cherokee Historic Trail though the local integrity of the setting has been compromised.

4.3.17.3 Results

4.3.17.3.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

Continental Divide National Scenic Trail

The area associated with the Continental Divide NST, potentially traversed by the Project, has limited existing development. To the north, the city of Rawlins and adjacent development has modified the resource values for this scenic trail. South of the Project area in the Rawlins Field Office, the trail's values would be modified through the introduction of the Sierra Madre-Chokecherry Wind Farm directly adjacent to the trail alignment. Future development including all alternative routes and route variations for the Project, in addition to the Gateway West and TransWest Express transmission projects, would introduce transmission line structures adjacent to the trail in the enclosed landscape associated with Coal Mine Draw, where there are few visible intrusions. The right-of-way vegetation clearing associated with these proposed projects could result in geometric forms along the ground plane, as well as impact shrubland riparian habitat and related values along Coal Mine Draw. However, if the proposed transmission lines were constructed using shared access, similar color treatments (all dulled grey steel) and spans between towers where matched, cumulative effects could be reduced. In addition to these transmission line projects, a proposed wind farm (Hogback Ridge) would be located adjacent to the Continental Divide NST which could alter the distinctive Atlantic Rim setting and its associated natural features as well as dominate views from recreation areas in Eightmile Lake Basin (including Rim Lake Recreation Area). Motorists on Wyoming Highway 71, an access route for the Continental Divide NST and located in the Continental Divide NST SRMA, would experience views dominated by wind farms associated with the proposed wind farm and the Sierra Madre-Chokecherry Wind Farm being located on either side of the road. Even though no trail-associated cultural properties were identified as part of this study, the development of past, present, and future projects may affect future potential interpretation of cultural properties through degradation of the trail's setting.

Overland Historic Trail

Existing development in proximity to the northern option of the Overland Historic Trail (under feasibility study), adjacent to the Project, includes the Sierra Madre-Chokecherry Wind Farm, which will dominate views from the trail paralleling Wyoming Highway 71. Through development of the proposed Hogback Ridge Wind Farm and other future actions, including all Project alternative routes, this area would be increasingly influenced by energy infrastructure which would degrade the trail's setting and dominate views from identified recreation areas. The inventory of cultural properties in this area has not yielded any trail-associated sites but through development of past, present, and future projects, the future discovery of important trail-associated cultural sites could be affected.

Oil and gas development, as well as associated pipelines, have modified the areas adjacent to the southern option of the Overland Historic Trail, and all alternative routes in this route grouping, through the introduction of industrial structures, a network of access roads, and vegetation clearing. These modifications are also visible from trail-associated cultural sites including the Dug Springs Stage Station Ruins, Barrel Springs, Signature Rock, Duck Lake Stage Station (intense adjacent existing development), and the Washakie Station (limited adjacent development) as well as trail-associated access routes (Wamsutter Road, Eureka Headquarters Road, and Duck Lake Road). The development of future actions including the Project, the TransWest Express Transmission Project, and the expansive Continental Divide-Creston Junction oil and gas field, the areas adjacent to the Overland Historic Trail in this portion of the BLM Rawlins Field Office have the potential to be dominated by industrial development. Views from the Overland Trail Ruts Interpretive Site, along Alternative WYCO-D (and route variation) have been influenced by past projects, which may result in an industrialized landscape setting if these future projects were constructed. The development of these areas also has the potential to modify the narrow shrubland riparian zones through vegetation clearing associated with these projects, in particular on Alternative WYCO-C and its route variations and Alternative WYCO-D (and route variation) along Barrel Springs Draw and Muddy Creek respectively. However, if the proposed transmission lines were constructed using shared access, had similar color treatments (all dulled grey steel) and spans between towers where matched, cumulative effects could be reduced.

Cherokee Historic Trail

Cumulative effects on the 1849 route for the Cherokee Historic Trail (under feasibility study) are similar to the cumulative effects on the northern option of the Overland Historic Trail as these trails are located in proximity to each other.

The areas associated with the 1850 route for the Cherokee Historic Trail, adjacent to Alternative WYCO-D (and route variation) along Wyoming Highway 789 and the first trail crossing on Alternative WYCO-F and its route variations located 2.5 miles west of Wyoming Highway 789, have been influenced by existing oil and gas development. Through the introduction of the Project along these alternatives routes, the TransWest Express Transmission Project, and the development of the Continental Divide-Creston Junction oil and gas field, the area adjacent to the Cherokee Historic Trail has the potential to become visually compromised by industrial facilities, and would yield a landscape that has decreased scenic integrity. The area farther to the west, where Alternatives WYCO-B and WYCO-C and their route variations cross the Cherokee Historic Trail and Shell Creek Stock Trail (a trail-associated access road), has been influenced by an existing pipeline corridor which include strong geometric vegetative patterns resulting from right-of-way vegetation clearing. These pipelines influence, but do not entirely define the trail's setting nor, dominate views from this area. Based on the potential development of the Project and the TransWest Express Transmission Project, the setting would likely exhibit an industrial character defined by tall, formal, and geometric lattice transmission structures. It is important to note that Alternative WYCO-B and its route variations would parallel the Cherokee Historic Trail from 1 to 4 miles away for a distance of approximately 15 miles. A portion of this would occur adjacent to Hangout Road

which provides access to the historic trail, in an area minimally modified by development except for an area of oil and gas wells on Flat Top Mountain.

Since there is limited future development planned for this area, the introduction of the Project and the TransWest Express Transmission Project would modify and may begin to dominate views from portions of the trail located closest to these projects north of Hartt Cabin Draw. South of this area, views from McPherson Springs (a trail-associated cultural site) may become dominated by the introduction of the Project (Alternative WYCO-B) and the TransWest Express Transmission Project in addition to the existing oil and gas facility adjacent to the springs. To reduce cumulative effects on this site's trail-related setting, potential mitigation would be to locate both the Project and the TransWest Express Transmission Project further to the west to increase opportunities to screen views of these projects. The two other trail crossings associated with Alternative WYCO-F (at Sand Creek and Colloid Draw), as well as being located in proximity to Shell Creek Stock Trail and Sand Creek Road (trail access routes), would occur in areas with limited existing and planned future development. As such, the introduction of the Project and the TransWest Express Transmission Project has the potential to begin to dominate views at these trail crossings through the construction of tall, transmission structures incongruent with the existing landscape character. However, if the proposed transmission lines were constructed using shared access, had similar color treatments (all dulled grey steel) and spans between towers were matched, cumulative effects could be reduced.

In all areas located in proximity to the Cherokee Historic Trail, there is a potential cumulative effect on historic resources through the development of past, present, and future projects which may result in the loss of cultural artifacts, features, or sites that could yield important information about the trail.

4.3.17.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Old Spanish National Historic Trail

There are two analysis areas for the Old Spanish NHT identified by the BLM, as described in Chapter 3, with all three alternative routes in this route grouping sharing the same alignment in proximity to the Book Cliffs Analysis Unit. This area has been modified by I-70, pipelines adjacent to I-70, areas leased for oil and gas development, and intermittent industrial development which influences but does not compromise the setting for the Old Spanish NHT. Recreation-based views of the Old Spanish NHT setting occur along I-70 (partially designated as the Dinosaur Diamond Scenic Byway) and the associated rest areas/scenic overlooks including the Harley Dome Rest Area and Overlook, Thompson Welcome Center, and Crescent Junction Rest Area. East of Green River along NHT II and III trail traces, areas permitted for oil and gas development by the Moab Field Office have the potential to further influence the setting and views associated with the Old Spanish NHT through the introduction of industrial structures and a network of access roads. The further introduction of the Project and the TransWest Express Transmission Project into these areas would produce a landscape which may be viewed as industrial in nature. To reduce cumulative effects on the Old Spanish NHT along this analysis unit, potential mitigation would include colocation of the two proposed transmission projects to the extent practicable. This would not only reduce impacts on the setting and views associated with the Old Spanish NHT but also would minimize effects on riparian vegetation corridors south of the Book Cliffs, through reduced right-of-way vegetation clearing, and potential cultural resources that could be effected through a larger area of cumulative disturbance.

In the San Rafael Swell Analysis Unit, there are limited existing modifications except for a lower voltage transmission line paralleled by Alternative COUT BAX-B adjacent to a series of NHT II and III trail traces along Cottonwood Wash, a trail-related prehistoric and historic rock art site in Big Hole Wash as identified by the BLM's NHT Inventory Project, and the Big Hole ACEC. Based on the potential development of areas leased for oil and gas wells by the State of Utah, this area has the potential to

become more influenced by energy infrastructure. The introduction of the Project would further modify and dominate the trail setting and views from trail-associated resources in this area. There is also the potential for disturbance of riparian vegetation along Cottonwood Wash where the right-of-way would be cleared of vegetation.

The same existing transmission line is located adjacent to Alternatives COUT BAX-B and COUT BAX-C through Buckhorn Flat in an area of NHT II and III trail traces adjacent to the Wedge Overlook/Buckhorn Draw Scenic Backway and the newly constructed recreation kiosk at the turnoff to the Wedge Overlook. The existing transmission line does have an effect on the setting for the Old Spanish NHT in this area but due to the scale of the structures and construction materials (wood), it is relatively benign in the setting. Through introduction of the Project and the TransWest Express Transmission Project, this setting would be locally modified from the presence of large scale lattice transmission structures (towers) and right-of-way vegetation clearing in evenly occurring pinyon-juniper woodland communities. The visibility of the right-of-way vegetation clearing would be most apparent from the Cedar Mountain Overlook which has superior views over Buckhorn Flat. In addition to these proposed projects, development of the proposed Emery County wind farm would further effect the setting for the Old Spanish NHT in Buckhorn Flat by introducing a series of skylined structures on Cedar Mountain, which through their motion and shade and shadow patterns, would attract views from adjacent recreation areas.

The setting along U.S. Highway 6 (designated as the Dinosaur Diamond Scenic Byway), adjacent to Alternatives COUT BAX-C and COUT BAX-E, has been altered by a lower voltage transmission line and railroad line. These features do have an influence on the setting but do not dominate views along this designated scenic travel route adjacent to the congressionally designated alignment of the Old Spanish NHT. Development of the Project, the TransWest Express Transmission Project, and the Twin Bridges Oil and Gas Field would result in the local setting viewed as being primarily for energy usage. The local setting would then exhibit a strong industrial character for this segment of the Old Spanish NHT. To reduce cumulative effects on views from U.S. Highway 6 and the trail setting, potential mitigation would include colocation of the two proposed transmission lines as close to the Book Cliffs landscape as practicable. By locating these projects closer to the Book Cliffs, the geometric lines and complex shade and shadow patterns associated with dull grey steel lattice would readily be absorbed by the horizontal lines and banding color of the landforms. It is important to note that no trail traces were identified in this area through the BLM's NHT Inventory Project. Similarly, Alternative COUT BAX-C would parallel the Green River Cutoff Road in an area with limited existing modifications. The Green River Cutoff Road provides access into the San Rafael Swell, may be viewed as associated with the Old Spanish NHT due to its proximity to the congressionally designated alignment of the trail. Through the addition of the Project, the TransWest Express Transmission Project, and Twin Bridges oil and gas field, views of this area would become dominated by industrial development including energy-related structures, a network of access roads, and geometric clearing of pinyon-juniper vegetation. To minimize cumulative effects on these views, the two proposed transmission projects could be colocated further to the north where existing terrain would begin to screen views of the projects from the Green River Cutoff Road. If the transmission lines were constructed using shared access, had similar color treatments (all dulled grey steel) and spans between towers were matched, cumulative effects could be reduced further.

4.3.17.3.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

Since no designated National Historic Trail, National Scenic Trail, or trails undergoing a feasibility study for inclusion with the National Trails System are adjacent to the alternative routes in the COUT route group (including route variations), this section is not pertinent for analysis of the Project.

4.3.18 Cultural Resources

Over time, cultural resources are subject to attrition as cultures change and archaeological and historical sites weather and erode. In addition, prior development in the region has either degraded or resulted in the loss of some cultural resources. The addition of the Project to past, present, and RFFAs would result in the greater potential for effects on cultural resources throughout the Project area.

The geographic scope of analysis for cultural resources is defined as a 4-mile-wide corridor centered on the reference centerlines (similar to the methodology identified in Section 3.2.18). Cumulative effects on cultural resources would occur over the life of the Project and other current and future projects, including direct effects during construction and indirect effects during operation and maintenance activities. Disturbances from future developments and ground-disturbing activities could uncover or destroy unrecorded cultural resource sites. Despite the potential for adverse effects on some sites, future actions proposed on federal and/or state lands would require cultural resource evaluations and mitigation of affected significant historic properties prior to implementation. The resulting cultural resource documentation would increase the cultural resources knowledge base for the overall region; however, developments solely on private land are largely exempt from this requirement. Cumulative effects would be analyzed over the duration of the life of the Project.

The approach for analysis of cumulative effects on cultural resources, including the geographic and temporal scopes defined for analysis, is presented in Table 4-3. This analysis relies on the analysis of direct and indirect impacts from the Project (refer to Section 3.2.18) and considers them in conjunction with the past, present, and RFFAs listed in Tables 4-1 and 4-2.

4.3.18.1 Issues Identified for Analysis

Other present and reasonably foreseeable future projects that could have cumulative effects on cultural resources along the proposed alternative routes for the Project (Tables 4-1 and 4-2) include, but are not limited to, the PacifiCorp Seven Mile Hill Wind-Energy Facility (Wyoming), the Continental Divide-Creston Natural Gas Project (Wyoming), the Blue Mountain Energy Deserado Mine Project (Colorado), the Uinta Natural Gas Development Project (Utah), the TransWest Express Transmission Project (multi-state), the Hiawatha Regional Energy Development Project (multi-state), the Newfield Exploration Company Monument Butte Area Oil and Gas Development Project (Utah), the Victory Pipeline Project (Utah) and the Bill Barrett Corporation Blacktail Ridge Project (Utah). The majority of present and future actions that could have cumulative effects on cultural resources are associated with oil and gas development, mining/mineral exploration, transportation, utility corridors, renewable energy (e.g., wind and solar) development, and parks and recreation.

Cumulative effects from direct impacts associated with the construction and operation phases of the Project would be similar for any of the alternative routes. Cultural resources could be destroyed by construction activities, such as clearing, grading, drilling, and substation development. Development of new access corridors and rights-of-way could increase access to previously inaccessible areas, leading to potential vandalism of cultural resource sites, including both those previously recorded and those which are yet to be encountered. There also could be cumulative effects from indirect impacts in the form of visual impacts on visually sensitive cultural resource sites. Development would introduce visual, atmospheric, and audible elements that could detract from the cultural significance of designated or potential TCPs and adversely impact cultural resource sites that are eligible, or have been listed in the NRHP. The introduction of additional development could alter the setting and feeling of numerous NRHP eligible archaeological sites (e.g., habitation structures, ceremonial sites, and rock art), as well as significant historic properties, such as the Old Spanish NHT, the Cherokee Historic Trail, the Overland Historic Trail, the Dragon to Rangely Stage/Freight Road, U.S. Highway 6, the Rawlins to Baggs Stage

Road, the Lincoln Highway, the old Victory Highway, the Buckhorn Flat Railroad, the Uintah Railway, and the D&RGW Railway.

Other cultural resources that would be affected cumulatively by implementation of the Project alternative routes, in combination with present and RFFAs, include 33 NRHP-listed properties (including Red Rock Site, Hanna Community Hall, Canyon Pintado NHD, Carrot Men Pictograph Site, Buckhorn Wash Rock Art Sites, and the D&RG Lime Kiln [Buckhorn Flat Lime Kiln]), 6 ACECs with cultural resources (Big Hole, Cottonwood Canyon, Grassy Trail, Smith Cabin, Tidwell Draw, and Nine Mile Canyon), Argyle Canyon Rock Art (Archaeological Sites), and a designated TCP (Ute vision quest site [42UT395])

The extent of cumulative effects on cultural resources could be reduced significantly through avoidance and the implementation of selective mitigation measures. Potential impacts on cultural resources in the area would be incremental and the potential to mitigate impacts on archaeological and historical sites is good. The indirect cumulative effects on cultural resources, as a result of increased public access, would be expected to be low.

4.3.18.2 Results

Cumulative effects from direct impacts associated with the construction and operation phase of the Project would be similar for any of the alternative routes. Cultural resources could be destroyed by construction activities, such as clearing, grading, drilling, and substation development. Development of new access corridors and rights-of-way could increase access to previously inaccessible areas, leading to potential vandalism of cultural resource sites. There also could be cumulative effects from indirect impacts in the form of visual impacts on visually sensitive cultural resource sites. Development would introduce visual, atmospheric, and audible elements that could detract from the cultural significance of designated or potential TCPs and adversely impact cultural resource sites that are eligible, or have been listed in the NRHP.

4.3.18.2.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

The introduction of additional development could alter the setting and feeling of numerous NRHP eligible archaeological sites, as well as significant historic properties located along the WYCO alternative routes (including route variations). Significant cultural resources include, but are not limited to, the Cherokee and Overland historic trails (contributing and non-contributing segments), the Rawlins to Baggs Stage Road, the Lincoln Highway, and two NRHP-listed properties (Red Rock Site and Hanna Community Hall) in Wyoming; and the old Victory Highway in Colorado.

As a result of the presence of existing development projects and proposed future actions, including, but not limited to the TransWest Express Transmission Project, numerous known cultural resources and potentially significant cultural resources could be negatively affected throughout this portion of the Project area. If colocated, the TransWest Express Transmission Project could have a negative impact on many of the same cultural resources that would be affected by the Project.

Overall, the addition of the Project to past and RFFAs would result in a greater potential for cumulative effects on numerous known culturally significant resources and other potentially significant cultural resources or historic properties that could be considered NRHP eligible, or could be determined as eligible for listing in the NRHP.

The extent of cumulative effects on cultural resources could be reduced significantly through avoidance and the implementation of selective mitigation measures. Potential impacts on cultural resources in this area would be incremental and the potential to mitigate impacts on archaeological and historical sites is

good. The indirect cumulative effects on cultural resources, as a result of increased public access, would be expected to be low.

4.3.18.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

The introduction of additional development could alter the setting and feeling of numerous NRHP eligible archaeological sites, as well as significant historic properties located along all of the COUT BAX alternative routes, such as the Dragon to Rangely Stage/Freight Road, the Dragon-Douglas Trail, U.S. Highway 6, the Uintah Railway, and two NRHP-listed properties (Canyon Pintado NHD and Carrot Men Pictograph Site) in Colorado; the Old Spanish NHT (recorded and unrecorded segments) and U.S. Highway 6 (recorded and unrecorded segments) in Colorado and Utah; and the Buckhorn Flat Railroad, the D&RGW Railway, 25 NRHP-listed historic properties, and 5 ACECs with cultural resources (Big Hole, Cottonwood Canyon, Grassy Trail, Smith Cabin, and Tidwell Draw) in Utah. NRHP-listed historic properties, as described in the cultural resources inventory summary in Chapter 3 (Section 3.2.18.5.2), include 14 historic buildings (residential), 1 historic farmstead, the Juab County Jail, Wasatch Academy, Mount Pleasant Carnegie Library, Fountain Green Hydroelectric Plant Historic District, Nephi Main Post Office, Mount Pleasant High School Mechanical Arts Building, Mount Pleasant Commercial Historic District, Mount Pleasant National Guard Armory, the D&RG Lime Kiln (Buckhorn Flat Lime Kiln), and the Buckhorn Wash Rock Art Sites.

As a result of the presence of existing development projects and proposed future actions, including, but not limited to the TransWest Express Transmission Project, numerous known cultural resources and potentially significant cultural resources could be negatively affected throughout this portion of the Project area. If collocated, the TransWest Express Transmission Project could have a negative impact on many of the same cultural resources that would be affected by the Project.

Overall, the addition of the Project to past and RFFAs would result in a greater potential for cumulative effects on numerous known culturally significant resources and other potentially significant cultural resources or historic properties that could be considered NRHP eligible, or could be determined as eligible for listing in the NRHP. For areas adjacent to the Book Cliffs (east of Alternatives COUT BAX-C and COUT BAX-E), there is a high potential for encountering numerous unrecorded archaeological sites and rock art panels.

The extent of cumulative effects on cultural resources could be reduced significantly through avoidance and the implementation of selective mitigation measures. Potential impacts on cultural resources in this area would be incremental and the potential to mitigate impacts on archaeological and historical sites is good. The indirect cumulative effects on cultural resources, as a result of increased public access, would be expected to be low.

4.3.18.3.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

The introduction of additional development could alter the setting and feeling of numerous NRHP eligible archaeological sites, as well as significant historic properties along the COUT alternative routes (including route variations), such as the old Victory Highway, U.S. Highway 6, the Buckhorn Flat Railroad, the D&RGW Railway, 23 NRHP-listed historic properties, a designated TCP (Ute vision quest site [42UT395]), Argyle Canyon Rock Art (Archaeological Sites), and Nine Mile Canyon ACEC in Utah; and the old Victory Highway in Colorado. NRHP-listed historic properties, as described in the cultural resources inventory summary in Section 3.2.18.5.2, include 14 historic buildings (residential), 2 historic post offices (Helper Main and Nephi Main), 1 historic farmstead, Fountain Green Hydroelectric Plant Historic District, Clerico Commercial Building, Helper Commercial District, Juab County Jail, Martin Millarich Hall, Mount Pleasant Carnegie Library, Mount Pleasant Commercial Historic District, Mount Pleasant High School Mechanical Arts Building, Mount Pleasant National Guard Armory, and the Wasatch Academy.

As a result of the presence of existing development projects and proposed future actions, including, but not limited to the TransWest Express Transmission Project and the Victory Pipeline Project, numerous known cultural resources and potentially significant cultural resources could be negatively affected throughout this portion of the Project area. If colocated, the TransWest Express Transmission Project could have a negative impact on many of the same cultural resources that would be affected by the Project.

Overall, the addition of the Project to past and RFFAs would result in a greater potential for cumulative effects on numerous known culturally significant resources, including the designated TCP, and other potentially significant cultural resources or historic properties that could be considered NRHP eligible, or could be determined as eligible for listing in the NRHP. For areas adjacent to Nine Mile Canyon and its tributary canyon branches, including Argyle Canyon, there is a high potential for encountering numerous unrecorded cultural resource sites (e.g., rock art panels, habitations, ceremonial sites, and potential TCPs).

The extent of cumulative effects on cultural resources could be reduced significantly through avoidance and the implementation of selective mitigation measures. Potential impacts on cultural resources in this area would be incremental and the potential to mitigate impacts on archaeological and historical sites is good. The indirect cumulative effects on cultural resources, as a result of increased public access, would be expected to be low.

4.3.19 Fire Ecology and Management

The approach for analysis of cumulative effects on fire ecology and management, including the geographic and temporal scopes defined for analysis, is presented in Table 4-3. This analysis relies on the analysis of direct and indirect impacts from the Project (refer to Section 3.2.19.5) and considers them in conjunction with the past, present, RFFAs listed in Tables 4-1 and 4-2.

The cumulative effects analysis area for fire ecology and management is the same as the Project area. The potential cumulative effects of the Project that may be shared with the effects of the past, present, and RFFAs listed in Tables 4-1 and 4-2 are discussed in general, as they may occur at nearly any location in the Project area.

4.3.19.1 Issues Identified for Analysis

4.3.19.1.1 Potential Impacts on Fire Risk

The Project would contribute to the ongoing, widespread human-caused changes in fire ecology throughout the Project area. Many past, present, and reasonably foreseeable future activities listed in Tables 4-1 and 4-2 can affect fire frequency and intensity through changes in vegetation cover, and may increase the risk of fire ignition.

4.3.19.1.2 Potential Impacts on Wildland Fire Suppression at Wildland-urban Interface

The existing wildland-urban interface creates a complex, challenging environment for wildland fire suppression, where human safety, property, and infrastructure are at the highest risk. Ongoing and future activities, including the proposed Project, are expected to continue to expand the wildland-urban interface and increase values to be protected during wildland fires.

4.3.19.2 Existing Condition

Past and present activities listed in Table 4-1 have modified fire ecology directly and indirectly throughout the CIAA. Agriculture, urban and rural residential developments, oil and gas production, and

other activities have all contributed to a complex, expanding wildland-urban interface. Some of these activities, such as agriculture and oil or gas development, have a higher risk of spreading invasive weeds and altering fire ecology. Other activities, such as rural residential development, create substantial values to be protected during wildland fires while increasing the risk to health and safety. The impact of all of these activities is to create an environment where management of fire for the benefit of resources may be highly constrained, but where the absence of fire over long time periods increases the risk that when fires do occur, fuel loads and fire intensity are often unnaturally high and suppression may be very difficult.

4.3.19.3 Results

4.3.19.3.1 Cumulative Effects on Fire Ecology and Ignition Risk

As discussed in Section 3.2.19, human activities such as agriculture have a very high potential to spread invasive plants that may alter fire ecology. However, all cumulative activities identified in Tables 4-1 and 4-2 that cause ground disturbance or have the potential to transport the seeds of invasive plants also have some potential to contribute to further changes in the natural fire regime. Transmission lines and gas pipelines create long, linear corridors that may facilitate the local spread of invasive plants, and the Project would potentially contribute to the cumulative effects on fire ecology of all other past, present, and RFFAs through this mechanism.

Some FMPs provide information on wildland fire causes in FMUs crossed by the Project. Where provided, this information indicates that, while wildland fires in FMUs with little development are typically ignited by lightning, fires in FMUs with an extensive wildland-urban interface may be ignited by human causes more often than by lightning. Insufficient information is available to discuss whether certain types of development are more likely than others to increase the risk of human-caused wildland fires, but increasing development in general is expected to continue to increase the cumulative risk. Construction of the Project and RFFAs would increase the number of roads, create new roads in areas previously without access, and contribute incrementally to the potential for accidental wildland fire ignitions.

4.3.19.5.2 Cumulative Effects on Fire Suppression

Human safety is the overriding concern of all wildland fire suppression activities. Secondary to safety concerns, protection of resources and property are considered when developing management objectives and allocation of responding personnel or equipment for each wildland fire. Past and present developments and linear utilities, when adjacent to burnable vegetation, can affect the response to a wildland fire. Existing roads and new roads created for future developments, potentially including the proposed Project, may provide access for ground crews, but protection of buildings and utilities may divert efforts from containment or suppression elsewhere. Construction of the Project and any RFFAs, including additional transmission lines, would further increase these effects.

As discussed in in Section 3.2.19, overhead utilities such as transmission lines pose a direct hazard to fire suppression personnel through the risk of equipment failure during a fire, or through arcing where the increased moisture and particles in smoke can carry electrical currents. Overhead utilities also create a hazard to aircraft responding to a fire. These risks may be mitigated by constructing multiple utilities in a shared corridor, minimizing the total area where hazards to ground crews and aircraft are present.

4.3.20 Socioeconomics

The approach for analysis of cumulative effects on socioeconomics, including the geographic and temporal scopes defined for analysis, is presented in Table 4-3. This analysis relies on the analysis of

direct and indirect impacts from the Project (refer to Section 3.2.20) and considers them in conjunction with the past, present, RFFAs listed in Tables 4-1 and 4-2.

4.3.20.1 Issues Identified for Analysis

Socioeconomic issues that could be cumulatively affected by the Project and past, present, and future actions include recreational values and visitor spending, housing and public services, impacts on environmental justice populations, property values, and future business and industrial activity.

4.3.20.1.1 Effects on Recreational Values and Local Tourism

The development and operation of the transmission line could diminish the natural appearance and the undeveloped character of recreation areas, which could have detrimental effects on recreation values. Additional industrial and commercial development also could adversely affect these resources, cumulatively affecting recreational values. If visitation were to decrease due to the presence of the transmission line and other industrial development, this potentially could affect visitor spending and the local economy.

4.3.20.1.2 Availability of Employment for Local Workforce

Transmission line construction activity would expand regional economic development through increased employment and income in the region. As construction workers spend their money in the local area, revenues would likely increase for local businesses (e.g., hotels, restaurants, gas stations, and grocery stores), supporting jobs, and incomes for these businesses and their employees. In remote areas across the study area, it is likely that construction workers would temporarily live in proximate communities during construction. The potential for cumulative socioeconomic impacts from implementing the Project exist where there are multiple projects proposed in an area that have overlapping construction schedules and/or project operations that could affect similar resources. Concurrent and similar projects could result in a demand for labor that cannot be met by the region's labor pool, which could lead to an influx of nonlocal workers. Socioeconomic resources potentially affected could include the availability of housing and accommodations as well as the availability of public and social services to accommodate the temporary workers.

4.3.20.1.3 Potential Impacts on Environmental Justice Populations of Concern

Potential environmental justice populations of concern residing in proximity to the transmission line routes could be cumulatively adversely affected by the construction and/or development of other proximate projects, with disproportionate impacts such as traffic, air quality, visual resources, cultural resources, property values, and agricultural land uses.

4.3.20.1.4 Potential Impacts on Private Property Values

Proximate residences to the transmission line may incur adverse effects on their property values. Additional proximate industrial construction and operations, such as other transmission lines, pipelines, oil and gas development, etc., may cumulatively affect these residential property values.

4.3.20.1.5 Potential Impacts on Local Businesses and Existing and Future Economic Development

Rangeland and cropland could be disturbed on private lands as well as in grazing leases on USFS- or BLM-administered land. Additional development in the Project right-of-way, such as pipelines and other transmission lines, could also adversely affect these ranching resources. Additionally, the location of the development of new oil and gas wells would be restricted by the right-of-way, which may decrease oil and gas investment in certain locations, with potential impacts on the local economies.

4.3.20.2 Existing Condition

The existing social and economic conditions are discussed in detail in Section 3.2.20.3.

4.3.20.3 Results

There are two types of effects that could have implications for cumulative effects on socioeconomic resources. Construction activity has the potential to temporarily affect socioeconomic resources, including recreational and scenic values; construction workforce effects on housing and public services; and property effects (e.g., traffic, dust). Industrial development and/or operations and activity in proximity to the Project, which causes long-term scenic, visual, or physical obstructions, could have implications for aesthetic and recreational values and residential property values, and have the potential to restrict the location of future business or industrial development. The potential cumulative impacts associated with these activities could occur across the socioeconomic study area. Past, present, and future projects that could affect these resources are described in this section.

Environmental justice populations are expected to benefit from the Project through jobs, income, and fiscal receipts to local governments. These populations are not anticipated to be disproportionately and adversely affected by the Project and, therefore, the Project is not anticipated to cumulatively affect these populations.

4.3.20.3.1 Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)

There are a number of projects in the area that could result in cumulative effects in southwestern Wyoming and northwestern Colorado. The following projects have been identified that potentially have similar construction schedules and/or the industrial activity or development would occur in proximity to the Project.

Present or future construction and/or proximate industrial activity are expected for the following multi-state projects in this region in Wyoming and Colorado:

- Gateway West 500kV Transmission Project (multi-state)
- TransWest Express Transmission Project (multi-state)

Present or future construction and/or proximate industrial activity are expected for the following Wyoming projects in this region:

- Oil and gas development in southwestern Wyoming
- Wind-energy facility development (Chokecherry and Sierra Madre Wind Farm, Seven Mile Hill Wind Energy Facility, Dunlap I Wind Farm, Whirlwind I, Quaking Aspen Mountain, White Mountain Wind Farm, and Sweeney Ranch)
- Coal and noncoal mine development
- Residential developments

Present or future construction and/or proximate industrial activity are expected for the following Colorado projects in this region:

- Oil and gas development in northwestern Colorado
- Oil shale and tar sands development
- Coal and noncoal development projects
- Residential developments

Construction activity has the potential to temporarily affect properties, recreational and scenic values, and bring temporary construction workforce to local communities, requiring housing and public services. It is possible that the construction associated with these present and future activities, including transmission, wind facilities, oil and gas resources, oil shale, and mining resources, would require similar construction schedules that may overlap with the Project. As a result, the construction schedules of the Project, when added to these schedules, could lead to cumulative effects. Some of these projects would be expected to draw on the regional construction workforce in southwestern Wyoming and western Colorado, where there is considerable supply of construction workers. The cumulative demand for laborers in construction would likely require additional workers to temporarily relocate from the Denver and Salt Lake City regions and possibly elsewhere to fill these positions. This would result in an increase in temporary population across this region and an increased demand on housing, services and infrastructure, including road maintenance, emergency services, and municipal and county resources.

The construction workers needed for all of these cumulative projects, along with those required for the Project, could add to stresses on housing, services and infrastructure if construction schedules coincide, requiring an influx of temporary workers. Municipal and county services, including public service provisions such as education, road repair and construction, police and law enforcement, judicial facilities and services, medical services and facilities, emergency services, and other social services can all be expected to increase driven by the growing workforce and population, even if it is temporary in nature. Additionally, average earnings may also be driven up by higher-paying oil industry jobs.

The location of where these temporary residents would be housed is not known for this Project nor is it known for future development activities. To the extent that larger towns and cities could be used for temporary housing with perhaps greater capacity to absorb these residents and the spreading of workers' temporary residences across these towns and cities to diffuse the impact, this would mitigate the adverse effects on the availability of housing and public services. In Wyoming where there are multiple existing and future wind facility developments occurring and expected in the foreseeable future near the communities of Aeolus, Hanna, Sinclair, Rawlins, and Wamsutter, it may be the case that these communities are near housing and accommodations capacity. To the extent that the Applicant can locate its workers so as to not cumulatively affect these communities, this could mitigate these adverse effects on housing and public services. Additionally, the Applicant could provide temporary housing and basic services to its workers to mitigate these effects on communities, housing, and public services.

The transmission construction jobs associated with the proposed project would be a temporary impact on these communities, and permanent increases in residents to these areas are not expected to directly result from the proposed Project. Regionally, the construction of the Project would have temporary and low adverse effect on population, housing, and public services and infrastructure. However, on a more local level, these effects could be considerable, especially when considered with the present and future cumulative construction actions and projects. During the construction period, the cumulative impacts associated with the proposed Project on infrastructure, public services, and housing are expected to be moderate, short-term, and adverse. However, these adverse effects on housing and public services could be mitigated, as discussed above.

These temporary workers often bring their wages and spending to remote communities who welcome the stimulus to their economies. The cumulative beneficial impact of the Project on the social and economic conditions in the region could be significant, including business revenues, employment, income, fiscal receipts, and increased electrical reliability. In addition, indirect cumulative effects range from increases in housing stock to job growth. If current trends continue, the three state's economies will continue to grow, the population will increase, government services will expand, and the housing stock will increase. This project would not induce this growth; however, this Project would accommodate the increased demand that would be placed on the current electrical system.

The proximity of industrial or commercial activities to the Project could cumulatively affect property values, scenic and recreational values, and possibly affect the location of future business and commercial activity. Very few properties are located in proximity to Alternatives WYCO-B, WYCO-C, and WYCO-F (2 residences within 0.1 of a mile and 3 to 4 residences within 0.25 mile), resulting in minimal adverse effects on the property values associated with the Project. Alternative WYCO-D has 10 and 50 residences within 0.1 mile and 0.25 mile, respectively. Since property values are most affected within 0.25 mile or less of a transmission line or other industrial development, the specific siting of the Gateway West transmission line between Aeolus and Wamsutter and the TransWest Express Transmission Project between Rawlins and south to the Utah border in proximity to the Project would have the greatest potential to cumulatively affect these property values. With the bulk of Alternative WYCO-D proximate properties near Craig, Colorado, the siting of the TransWest Express Transmission Project along this alternative route and corridor may cumulatively adversely affect the proximate property values. Other wind power, oil and gas resource development could affect property values if located very near to the Project and residences, although this is not likely to occur. Again, topography, landscaping, and visual obstructions may lessen these effects, and the property value effects tend to dissipate over time. The cumulative transmission line development and activity if sited along the Alternative WYCO-D, when combined with the Project, would moderately and adversely affect these property values around Craig, Colorado, potentially affecting 50 residences within 0.25 mile. The remainder of the WYCO alternative routes would have minimal adverse impacts on residential property values.

Residential and commercial properties could be adversely affected by construction of other transmission lines, oil and gas and shale resources, wind power facilities, residential developments, and other transportation and industrial facilities from increased traffic, noise, dust, and other construction inconveniences. Construction activities associated with the Project and cumulative actions and activities could also temporarily adversely affect scenic and aesthetic values, with the potential to adversely affect visitor experiences and recreation values. Since construction activities are anticipated to be temporary, there would be minimal short-term adverse impacts on properties and scenic and recreational values. However, when combined with multiple construction projects, these adverse effects could be more profound and extended for a relatively longer period of time. However, the Project's contribution to these cumulative impacts would be short term and minor.

The existence and operation of transmission lines also have the potential to displace future industrial and commercial development. However, the industrial restrictions would apply only to the right-of-way, which would be at most 250 feet wide. The placement of new oil and gas wells potentially could be affected by the Project, although the location of the development of new wells would be constrained only by the right-of-way, and the impacts would be low since the extraction of oil can usually occur from multiple locations in and above reserves.

4.3.20.3.2 Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)

There are a number of projects in the area that could result in cumulative effects in eastern Utah in proximity to the COUT BAX alternative routes. These projects have been identified with the potential to have similar construction schedules and/or the industrial activity or development would occur in proximity to the Project.

Present or future construction and/or proximate industrial activity are expected for the following multi-state projects in this region in eastern Utah:

- Enterprise Mid-America Pipeline Western Expansion II Project (multi-state)
- TransWest Express Transmission Project (multi-state)

Present or future construction and/or proximate industrial activity are expected for the following Utah projects:

- Oil and gas development
- Oil shale and/or tar sands development
- Pipeline development
- Transmission projects
- Wind energy facilities (near Castle Dale)
- Coal and noncoal mine development
- Flatirons Resource Helium Well Project
- Industrial facilities (power) near Green River
- Pumped-storage transmission line project (near Mona)
- The Narrows Dam and Reservoir project
- Road developments
- Residential developments

Many of these effects would be the same as those described for the WYCO alternative routes. Only those aspects that are different for this region are described here.

Some of these present and future actions and projects would be expected to draw on the regional construction workforce in western Colorado and eastern and central Utah where there is a supply of available construction workers (refer to Section 3.2.20). The cumulative demand for laborers in construction would likely require additional workers to temporarily relocate from the Denver and Salt Lake City regions and possibly elsewhere to fill these positions. This would especially be the case in the communities further away from the Salt Lake City urban area where construction workers would need to reside temporarily to support construction activities.

This would result in an increase in temporary population across this region and an increased demand on housing, services and infrastructure, including road maintenance, emergency services, and municipal and county resources. The construction workers needed for all of these cumulative projects, along with those required for the Project, could add to stresses on housing, services and infrastructure if construction schedules coincide, requiring an influx of temporary workers. Many of the communities along the COUT BAX alternative routes are small and remote, and a large influx of temporary residents may not be able to be accommodated in many of these small rural towns. The location of where these temporarily residents would be housed is not known for this project nor is it known for future development activities. To the extent that larger towns and cities could be used for temporary housing with perhaps greater capacity to absorb these residents and spreading workers' temporary residences across these towns and cities to diffuse the impact, this would mitigate the adverse effects on the availability of housing and public services. Grand Junction, Colorado and Green River and Price, Utah are relatively larger communities along the COUT BAX routes. Additionally, the Applicant could provide temporary housing and basic services to its workers to mitigate these effects on communities, housing, and public services, if needed.

The cumulative impacts associated with the proposed Project on infrastructure, public services, and housing are the same as described for the WYCO alternative routes, and are expected to be moderate, short-term, and adverse. However, these adverse effects on housing and public services could be mitigated, as discussed above.

The cumulative beneficial impact of the Project on the social and economic conditions in the Project area could be significant, including business revenues, employment, income, fiscal receipts, and increased electrical reliability, as described for the WYCO alternative routes.

The proximity of industrial or commercial activities to the Project could cumulatively affect property values, scenic and recreational values, and possibly affect the location of future business and commercial activity. Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E have 106 residences within 0.25 mile. Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E have 10, 10, and 17 residences within 0.1 of a mile, respectively.

Seventy-seven proximate residences (within 0.25 mile) are located very near Nephi, Utah. All Colorado-Utah alternative routes pass by these residences. The TransWest Express Transmission Project also is likely to be routed through this community, with the potential to cumulatively affect property values in this neighborhood. Alternatives COUT BAX-B and COUT BAX-C traverse near 10 residences close to Mount Pleasant, Utah. This is also a corridor through which the TransWest Express Transmission Project could also be located.

Alternative COUT BAX-E is located in proximity to 10 residences near Fairview, Utah, and this is also an alternate route being considered for the TransWest Express Transmission Project. Other oil and gas resource development and industrial facilities could affect property values if located very near to the Project and residences. Again, topography, landscaping, and visual obstructions may lessen these effects, and the property value effects tend to dissipate over time. The cumulative transmission line development and activity if sited along the COUT BAX alternative routes, when combined with the Project, could have a substantial adverse effect on property values primarily located around the communities of Nephi, Mount Pleasant, and Fairview.

Properties could be adversely affected by the construction activity associated with cumulative actions and projects from increased traffic, noise, dust, and other construction inconveniences. Since construction activities are anticipated to be temporary, there would be minimal short-term adverse impacts on properties and scenic and recreational values. However, when combined with multiple construction projects, these adverse effects could be more profound and extended for a relatively longer period of time. The Project's contribution to these cumulative impacts would be short term and minor.

The existence and operation of transmission lines also have the potential to displace future industrial and commercial development. However, the impacts would be low since development would only be restricted to the right-of-way.

4.3.20.3.3 Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)

There are a number of projects in the area that could result in cumulative effects in eastern and central Utah in proximity to Alternatives COUT-B, COUT-C, COUT-H, and COUT-I. These projects have been identified with the potential to have similar construction schedules and/or the industrial activity or development would occur in proximity to the Project.

Present or future construction and/or proximate industrial activity are expected for the TransWest Express Transmission Project (multi-state project) in this region in eastern and central Utah.

Present or future construction and/or proximate industrial activity are expected for the following Utah projects in this region:

- Oil and gas development
- Oil shale and/or tar sands development
- Pipeline development
- Transmission projects
- Coal and noncoal mine development
- Pumped-storage transmission line project (near Mona)

- The Narrows Dam and Reservoir project
- Road developments
- Residential developments

Many of these effects would be the same as those described for the Utah portions of the COUT BAX alternative routes. Only those aspects that are different for this region are described here.

The construction schedules of the Project, when added to the construction schedules of present and future actions and projects, could lead to cumulative effects. Some of these projects would be expected to draw on the regional construction workforce in eastern and central Utah where there is a supply of construction workers. The project and cumulative demand for laborers in construction would likely require workers to temporarily relocate from the Denver and Salt Lake City regions and possibly elsewhere to fill these positions. This especially would be the case in the communities further from the Salt Lake City urban area where construction workers would need to reside temporarily to support construction activities. Many of the communities along the COUT alternative routes are small and remote, and a large influx of temporary residents may not be easily accommodated in many of these small rural towns. The location of where these temporarily residents would be housed is not known for this Project nor is it known for future development activities. To the extent that larger towns and cities could be used for temporary housing with perhaps greater capacity to absorb these residents and the spreading workers' temporary residences across these towns and cities to diffuse the impact, this would mitigate the adverse effects on the availability of housing and public services. Vernal, Roosevelt, and Price, Utah are relatively larger communities along the Alternatives COUT-A, COUT-B, COUT-C, COUT-H, and COUT-I. Additionally, the Applicant could provide temporary housing and basic services to its workers to mitigate these effects on communities, housing, and public services, if needed.

The construction of the Project would have temporary and low adverse effects on population, housing, and public services and infrastructure across the region. However, on a more local level, these effects could be considerable, especially when considered with the present and future cumulative actions and projects. The cumulative impacts associated with the proposed Project on infrastructure, public services, and housing is expected to be moderate, short-term, and adverse. However, these adverse effects on housing and public services could be mitigated, as discussed above.

The proximity of industrial or commercial activities to the Project cumulatively could affect property values, scenic and recreational values, and possibly affect the location of future business and commercial activity. Similar to the analysis for the COUT BAX alternative routes, all of the COUT alternative routes pass by within 0.25 mile of 77 residences near Nephi, Utah. The TransWest Express Transmission Project also is likely to be routed through this community, with the potential to cumulatively affect property values in this neighborhood.

Alternatives COUT-A, COUT-B, COUT-C, and COUT-H, and COUT-I have between 10 and 45 residences within 0.1 of a mile, and 98 to 214 residences within 0.25 mile. Alternative COUT-A has the greatest number of residences located within 0.25 mile, located near Strawberry Reservoir, Fruitland, Duchesne, and Roosevelt, a total of 214 residences. Alternative COUT-B has 199 residences within 0.25 mile, the majority of which are located in Roosevelt and southwestern Duchesne County. Alternative COUT-C has proximate residences in southwestern Duchesne County. The TransWest Express Transmission Project has alternative routes located along Alternatives COUT-A, COUT-B, and COUT-C (although a portion of Alternative COUT-B between Roosevelt and southwestern Duchesne county is not included within the TransWest Express alternative routes), with the potential to cumulatively affect these property values.

Alternative COUT-I has 99 proximate residences within 0.25 mile of the Project, some of which are located in southwestern Duchesne County. Alternative COUT-H has 147 proximate residences within

0.25 mile of the Project, some of which are located in southwestern Duchesne County and near Helper, Utah. These residences are also along the alternative routes being considered for the TransWest Express Transmission Project.

Other oil and gas resource development and industrial facilities could affect property values if located very near to the Project and residences. Again, topography, landscaping, and visual obstructions may lessen these effects, and the property value effects tend to dissipate over time. The cumulative transmission line development and activity if sited along the COUT alternative routes, when combined with the Project, could have a substantial adverse effect on property values. Residences close to the following communities would be affected—Nephi (all COUT BAX and COUT alternative routes and route variations), Roosevelt (Alternatives COUT-A and COUT-B), Upalco (Alternative COUT-A), Duchesne (Alternative COUT-A), Fruitland (Alternative COUT-A), Helper (Alternative COUT-H), Fairview (Alternative COUT-H), and southwestern Duchesne County (Alternatives COUT-B, COUT-C, COUT-H, and COUT-I).

Properties could be affected adversely by construction of cumulative actions and from the Project due to increased traffic, noise, dust, and other construction inconveniences. Since construction activities are anticipated to be temporary, there would be minimal short-term adverse impacts on properties and scenic and recreational values. However, when combined with multiple construction projects, these adverse effects could be more profound and extended for a relatively longer period of time. The Project's contribution to these cumulative impacts would be short-term and minor.

The existence and operation of transmission lines also have the potential to displace future industrial and commercial development. However, the impacts would be low since development would only be restricted to the right-of-way.

4.3.21 Public Health and Safety

The approach for analysis of cumulative effects on public health and safety, including the geographic and temporal scopes defined for analysis, is presented in Table 4-3. This analysis relies on the analysis of direct and indirect impacts from the Project (refer to Section 3.2.21.5) and considers them in conjunction with the past, present, and RFFAs listed in Tables 4-1 and 4-2.

4.3.21.1 Issues Identified for Analysis

Three issues were identified for which additional analysis of the potential cumulative effects of the operation of the proposed 500kV transmission line is required. For each of the issues, the question is whether operation of the proposed transmission line in proximity to other transmission lines would cause cumulative effects, i.e., the combined EMF, radio noise, and audible noise levels would rise above levels with a potential to produce adverse effects or device interference (EMF, radio noise) or annoyance (audible noise).

4.3.21.1.1 Electric and Magnetic Field Effects on Humans and Animals

EMF is produced by transmission lines, distribution lines, and all electrical devices supplied with electricity. Comparisons of calculated levels of EMF from the proposed 500kV transmission line to health-based exposure guidelines and an assessment of relevant literature did not identify any likely effects of EMF exposure on human or animal health.

4.3.21.1.2 Radio Noise Effects on Cellular Phone, Internet, Radio, or Television Reception

Radio noise from the proposed 500kV transmission line was calculated and found to be below recommended levels and not likely to be a source of interference to electrical devices, except to amplitude-modulated radio reception on the right-of-way.

4.3.21.1.3 Audible Noise Annoyance to Area Residents

Audible noise from the proposed 500kV transmission line was calculated and found to be below EPA-recommended levels on and beyond the right-of-way and not likely to be a source of annoyance to residents in proximity to the line.

4.3.21.2 Existing Condition

Thousands of miles of high-voltage alternating-current (AC) and direct-current (DC) transmission lines exist (Table 4-1), some of which may traverse the Project study area (Table 4-2). The levels of EMF, radio noise, and audible noise from these transmission lines are judged to be higher than other existing or potential sources identified; therefore, the focus of this analysis is on interactions of the proposed transmission line with these other transmission lines that might yield significant cumulative effects.

4.3.21.3 Results

The potential cumulative effects of EMF, radio noise, and audible noise with existing and proposed transmission lines were analyzed and the results are summarized in Table 4-3. As discussed below, no significant cumulative effects for these exposures were identified.

4.3.21.3.1 Past and Present Activities

Section 3.2.21 evaluated the proposed 500kV transmission line where it might parallel three existing AC transmission lines for significant distances (the interactions between transmission lines that cross over or under one another are negligible and highly localized). When located on separate but adjacent rights-of-way, the new transmission line was calculated to produce very small increases in the levels of EMF, radio noise, and audible noise such that the potential total impact of these adjacent sources (the Mona-Bonanza 345kV transmission line and two 138kV transmission lines—Spanish Fork to Carbon and Hayden to Artesia) would still be well below the designated guideline values for these exposures. It is important to understand that depending on the orientation, loading, and phasing of the conductors, the EMF from adjoining lines as vectors may result in EMF levels at locations that are higher (additive effect) or lower (partial cancellation effect) than the EMF from an existing or proposed transmission line alone. Nevertheless, despite the potential additive effect of two adjacent transmission lines, the total effect in the area between the transmission lines is calculated to always be less than in the area directly under the conductors of either transmission line.

Given that distances from centerlines to the edge of the rights-of-way are no less than 75 feet at 345kV, appropriately less for lower voltages, and a minimum of 112.5 feet for the only existing 500kV transmission line (Mona to Oquirrh), this assessment also applies to other existing AC transmission lines in the Project area (Table 4-3) operating at voltages from 20kV up to 345kV. Adding these distances to the 125 feet from the centerline of the proposed Gateway West transmission line to the edge of the right-of-way translates to a minimum separation distance of 200 feet between the proposed 500kV transmission line and existing transmission lines at greater than or equal to 345kV. If the proposed transmission line crosses such existing transmission lines, the potential affected area would be confined to a limited area of the right-of-way. In addition, combined effects of EMF, radio noise, and audible noise would be

minimized by the additional height above ground required for the proposed 500kV transmission line to cross above an existing transmission line.

4.3.21.3.2 Reasonably Foreseeable Future Actions

In the Project area, the two transmission lines with the highest voltages and longest lengths are the proposed Gateway West 500kV AC transmission line and the proposed TransWest Express 600kV DC transmission line (Table 4-129). It is clear from the modeling of total EMF from the proposed 500kV transmission line adjacent to the Mona to Bonanza 345kV transmission line (Appendix J, Figure J-2 and J-6) that if the 345kV transmission line were to be replaced with the proposed 500kV transmission line, the combined EMF levels at the edges of the rights-of-way would not exceed recommended guideline reference levels determined by the International Commission on Non-Ionizing Protection and the International Committee on Electromagnetic Safety. Thus, if the proposed 500kV transmission line were to parallel the proposed Gateway West 500kV transmission line, the cumulative effect would be very small and no adverse effects would be expected. If the proposed 500kV line were to operate on a right-of-way adjacent to the proposed TransWest Express transmission line, cumulative EMF effects would be even smaller because the 60-Hertz EMF from the AC transmission line and the 0-Hertz EMF from the DC transmission line will not combine such that guidelines for AC EMF or for DC EMF would be exceeded. The only interaction of the EMF from adjacent AC and DC transmission lines is the possibility of enhanced perception of the AC electric field in the presence of DC electric fields and air ions, but the distance between the conductors of the proposed 500kV AC transmission line and the TransWest Express transmission line would always be at least 150 feet (based on data in Table 4-2), so the effects of the two lines would not be cumulative (Chartier et al. 1981; Clairmont et al. 1989). Of the five potential future projects identified in Table 4-3, the minimum distance from the centerline to the edge of the right-of-way is 125 feet for four projects, which translates to a minimum separation distance of 250 feet from the proposed 500kV transmission line.

The analysis of audible noise and radio noise for existing and proposed transmission lines is similar to that presented above for EMF. Of note, the distances from the proposed 500kV transmission line evaluated here are similar to or greater than the critical distances for control of effects on audible noise identified in the Final EIS for the Gateway West transmission line (BLM 2011s). The opportunity for cumulative effects is slightly greater than for EMF, however, because of the slower diminution of audible noise and radio noise with distance compared to diminution of EMF with distance from transmission line conductors. The area of principal interest for the assessment of potential cumulative effects for audible noise and radio noise, however, is not on the rights-of-way of the transmission lines, but at residences away from the transmission lines. When two transmission lines are located on parallel, adjacent rights-of-way, the area with the greatest cumulative effect will be the small area on each right-of-way and between adjacent rights-of-way edges where the audible noise or radio noise from one transmission line adds to that from the other. Since no residences would be located in this area, the areas of concern where the use and enjoyment of property free from unacceptable audible noise or radio noise are limited to the opposite sides of the rights-of-way, where the influence of the adjacent transmission line is exceedingly small. If the proposed transmission line were to cross any of these future transmission lines, the potential area affected would be confined mostly to a limited area of the right-of-way and combined effects of EMF, radio noise, and audible noise would be reduced by the additional height above ground required for the proposed 500kV transmission line to cross above an existing transmission line.

TABLE 4-129 PUBLIC HEALTH AND SAFETY CUMULATIVE EFFECTS ANALYSIS		
Jurisdiction/ Agency	Applicant/Project Name	Significant Cumulative Effect (Yes/No)
Multi-State Activities		
Past and Present Activities¹		
Bureau of Land Management (BLM) Fillmore Field Office	PacifiCorp Mona to Oquirrh Transmission Project	No
	Intermountain Power Agency Intermountain Mona Lines No. 1 and 2	No
	PacifiCorp Camp Williams to Sigurd No. 1	No
	PacifiCorp Camp Williams to Sigurd No. 2	No
LANDFIRE™	Transmission lines throughout the Project area	No
Reasonably Foreseeable Future Activities		
BLM Wyoming State Office	Idaho Power and Rocky Mountain Power Gateway West 500-kilovolt (kV) Transmission Project	No
BLM Wyoming State Office	TransWest Express, LLC TransWest Express 600kV Transmission Project	No
Utah		
Federal		
BLM Fillmore Field Office	Mona North Pumped Storage Project	No
BLM Fillmore Field Office	Mona South Pumped Storage Project	No
NOTE: Past and Present Activities include authorized activities that may or may not have been built to date but could be built at anytime		

4.4 Irreversible and Irretrievable Commitment of Resources

Resources committed to the proposed Project would be material and nonmaterial, including financial resources. Irreversible commitment of resources for the purposes of this section has been interpreted to mean that those resources once committed to the proposed Project would continue to be committed throughout the life of the Project (50 years) or longer if the Project was not decommissioned. Irretrievable commitment of resources has been interpreted to mean that those resources used, consumed, destroyed, or degraded during construction, operation, maintenance of the proposed Project could not be retrieved or replaced for future use. Irreversible and irretrievable commitments of resources for the Project are summarized in Table 4-130.

TABLE 4-130 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES			
Resource	Type of Commitment/ Reason for Commitment	Irreversible	Irretrievable
Air quality	<ul style="list-style-type: none"> ▪ Degradation of air quality ▪ Construction activities 	No	Construction phase
Soils	<ul style="list-style-type: none"> ▪ Soil loss and erosion ▪ Construction activities 	Yes	Yes
Water	<ul style="list-style-type: none"> ▪ None (refer to construction materials section) 	–	–
Biological	<ul style="list-style-type: none"> ▪ Disturbance to and/or loss of vegetation, habitat, and wildlife species ▪ Construction and operation 	Yes	Project life

TABLE 4-130 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES			
Resource	Type of Commitment/ Reason for Commitment	Irreversible	Irretrievable
Archaeological and historical sites	<ul style="list-style-type: none"> ▪ Disturbance or removal of sites ▪ Construction, operation, and maintenance 	Yes	Yes
Important cultural sites	<ul style="list-style-type: none"> ▪ Disturbance or removal of sites, interference with visual setting ▪ Construction, operation, and maintenance 	Yes	Project life
Traditional cultural properties	<ul style="list-style-type: none"> ▪ Disturbance or removal of sites, interference with visual setting, aural disturbance ▪ Construction, operation, and maintenance 	Yes	Project life Construction phase
Paleontological resources	<ul style="list-style-type: none"> ▪ Disturbance or removal of fossils ▪ Construction activities 	Yes	Yes
Visual resources	<ul style="list-style-type: none"> ▪ Degradation of natural scenic quality, viewshed intrusion ▪ Construction and operation 	Yes	Project life
Land use and recreation resources	<ul style="list-style-type: none"> ▪ Disturbance to agriculture and grazing ▪ Exclusion of residential, institutional, and industrial uses ▪ Increased recreational use along new access roads ▪ Increased access construction ▪ Construction and operation 	Yes	Project life
Public health	<ul style="list-style-type: none"> ▪ Potential adverse electrical effects ▪ Operation 	Unknown	Unknown
Noise	<ul style="list-style-type: none"> ▪ Noise exceeding ambient levels ▪ Construction and operation 	Yes No	Construction phase
Social and economic conditions	<ul style="list-style-type: none"> ▪ Increased regional and local employment and revenues ▪ Construction and operation 	Yes	Project life
Construction materials and fuels	<ul style="list-style-type: none"> ▪ Use of: <ul style="list-style-type: none"> ○ Aggregate ○ Water ○ Steel ○ Aluminum ○ Concrete ○ Wood ○ Fossil fuels 	Yes Yes Yes Yes Yes Yes Yes	Yes Yes No No Yes No Yes