Chapter 4
Cumulative Effects

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 Summary of Changes from the Draft Environmental Impact Statement

Chapter 4 was updated to include additional environmental baseline information suggested or provided in substantive agency and public comments received on the Draft EIS and additional data collected to address alternative route adjustments made since the publication of the Draft EIS (refer to Section 2.5.2). The analysis of cumulative effects was updated to reflect the additional data.

Several of the alternative routes contain a series of route variations to compare local routing options. In the Draft EIS, the route variations were included in Chapters 3 and 4 with analysis of the alternative routes. Based on comments received on the Draft EIS, including requests for analysis of additional local route variations, the complexity of these routes necessitated a different presentation in the Final EIS. Thus, in the Final EIS, Chapters 3 and 4 describe the affected environment and environmental consequences associated with complete alternative routes including the Agency Preferred Alternative route, while the local route options are analyzed and compared in Appendix F. The methodology for comparing and analyzing the local route variations is the same as described in Chapters 3 and 4.

The past and present actions and RFFAs considered for the cumulative effects analysis have been updated from the Draft EIS. Also, the historic fires and vegetation and range management projects have been removed from the quantitative analysis because they do not adversely affect all resources, and are comprised of very large polygons that contribute to an over-estimation of cumulative development. In the Final EIS, they are discussed qualitatively for the resources affected by these projects. Additionally, projects that have gone through an authorization process were moved from the list of RFFAs to the list of current projects. Authorized projects are considered a past and present action due to the fact that construction may have begun or may begin at any time. These changes in cumulative projects used in the quantitative analysis, combined with updates in resource data for some resources, contribute to differences in cumulative development estimates between the Draft and Final EIS.

Substantive changes made between the Draft EIS and the Final EIS are demarcated in the left margin of this chapter by a vertical black line.

4.1.2 Definition

Cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the effect on the environment that results from the incremental impact of the action when added to other past and present actions 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.

4.1.3 Elements Considered in Cumulative Effects Analysis

The cumulative effects assessment process considered (1) scoping and Project issues; (2) cumulative effect time frames 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 and present actions and RFFAs that have, or could be expected to cause, impacts on these resources when considered with development of the Project.

4.1.3.1 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 and present actions 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, would not contribute incrementally to cumulative effects, and is not included in the analysis for that resource.

4.1.3.2 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 time frame 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).

4.1.3.3 Cumulative Actions

In general, a cumulative action is a past, present, or 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 and present actions and RFFAs also are shown in MV-26 and MV-27. 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 and present action 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 in 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 3.2.11.4.1); 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 in 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 in 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.

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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 (acres)	Development Assumptions for Analysis[3]	Source of Alignments or Boundaries
Multi-state Projects								
Northwest Colorado District Planning Unit								
Enterprise Mid-America Pipeline	Western Expansion II Project	Pipeline	Crosses Baxter Pass in Colorado, turns west, and proceeds along Interstate 70 to Thompson Springs, Utah	U241, C188, C196, C197, C270	96 miles	579	▪ 50-foot-wide corridor 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)	Bureau of Land Management (BLM 2012r, Bing Imagery 2014)
Wyoming								
Federal								
Bureau of Land Management Wyoming State Office								
Idaho Power and Rocky Mountain Power	Gateway West 500-kilovolt (kV) and 230 kV Transmission Project	Transmission line	Starts at Windstar Substation near Dave Johnston Power Plant in Wyoming to Hemingway Substation near Melba, Idaho	W15, W21, W22, W30, W35	1,125 miles	31,844	▪ Centerline for the double-circuit 500kV sections and the single-circuit 500kV section buffered for a 250-foot-wide corridor and the 230kV section, for a 125-foot-wide corridor ▪ Based on information in the Gateway West Draft Environmental Impact Statement (EIS), 2011 (BLM 2011j)	Tetra Tech 2013
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	▪ 2.5 acres of disturbance per well pad and a density of 1 well pad per 80 acres based on information in the EIS and Record of Decision for the Atlantic Rim Natural Gas Field Development Project (BLM 2007b)	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	▪ For this surface and underground mine, the area in the project boundary is considered as the development area since development at this point is unknown	Wyoming Department of Environmental Quality (WDEQ) 2011
Kennecott Uranium Company	Sweetwater Mine	Non-coal mine	23 miles north of Wamsutter, Wyoming	–	11,715 acres	11,715	▪ For this surface mine, the area in the project boundary is considered as the development area since development at this point is unknown	BLM 2001b
PacifiCorp	Dunlap I Wind Farm	Wind-energy facility	Near Medicine Bow, Wyoming	–	16,279 acres	60	▪ Turbine points 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 Environmental Planning Group (EPG)	NAIP 2012 as digitized by EPG
PacifiCorp	Seven Mile Hill Wind Energy Facility	Wind-energy facility	42 miles northeast of Rawlins, Wyoming	W15, W16, W21, W22	8,942 acres	57	▪ Turbine points 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 as digitized by EPG
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	▪ 0.6 acres of disturbance per turbine and 1,000 wind turbines distributed evenly in the Project area boundaries (Chokecherry: 220-acre spacing; Sierra Madre: 218-acre spacing) ▪ Number of turbines based on information in the Chokecherry and Sierra Madre Programmatic Plan of Development (BLM 2012s) ▪ Density based on the Chokecherry and Sierra Madre Programmatic Record of Decision (BLM 2012t) as digitized by EPG	BLM 2012s BLM 2012t
Terry Hankins	Terry Hankins Cooper Mine	Non-coal mine	15 miles west and south of Grand Encampment, Wyoming	–	54 acres	54	▪ Area in the project boundary considered as the development area since development at this point is unknown	BLM 2001b
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	▪ 2 acres of disturbance per well pad and a density of 1 well pad per 152 acres (9 wells distributed across 1,368 acres) ▪ Based on information in the Plan of Development, 2012 (BLM 2012u)	BLM 2012v
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	▪ For this surface mine, area in the project boundary considered as the development area since development at this point is unknown	WDEQ 2011
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	▪ 2.0 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the public scoping notice, 2012 (BLM 2012w)	BLM 2012x

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 (acres)	Development Assumptions for Analysis[3]	Source of Alignments or Boundaries
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	▪ 1.0 acre of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the public scoping notice, 2012 (BLM 2012w)	BLM 2012x
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	▪ 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres based on information in the Table Rock Field Oil and Gas Development EA and Finding of No Significant Impact (BLM 2012y)	BLM 2012z
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	▪ For this surface mine, area in the project boundary considered as the development area since development at this point is unknown	WDEQ 2011
PacifiCorp	Jim Bridger Mine	Coal mine	10 miles east of Superior, Wyoming	–	26,640 acres	26,640	▪ For this surface and underground mine, the area in the project boundary considered as the development area since development at this point is unknown	WDEQ 2011
State								
Wyoming Office of State Lands and Investments								
–	–	Coal mine (leases)	Within a 2-mile-wide study corridor for the Project	W21, W121, W299	3,183 acres	3,183	▪ Area in the project boundary considered as the development area since development at this point is unknown	Wyoming Office of State Lands and Investments [OSLI] 2013b
–	–	Non-coal mine (uranium leases)	Within a 2-mile-wide study corridor for the Project	–	632 acres	632	▪ Area in the project boundary considered as the development area since development at this point is unknown	Wyoming OSLI 2013b as digitized by EPG
–	–	Oil and/or gas development (leases)	Within a 2-mile-wide study corridor for the Project	W102, W110, W111, W116, W120, W121, W299, W32	11,111 acres	827	▪ 3.1 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Well pad density based on information in Chapter 3, Section 8, of the Wyoming State Statutes for Oil and Gas Development, (State of Wyoming n.d.) ▪ Well pad size based on the existing Atlantic Rim Oil and/or Gas Development Field in the Rawlins Field Office (BLM 2007b)	Wyoming OSLI 2013c
Local								
Carbon County								
–	Cassidy River Ranch	Residential subdivision	In Medicine Bow, Wyoming	–	8,024 acres	8,024	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Carbon County, Wyoming 2012b
PacifiCorp	Standpipe Substation	Substation	2 miles southeast of Hanna, Wyoming	–	26 acres	26	▪ Area in the project boundary considered as the development area since development at this point is unknown	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	▪ 1.5 acres of disturbance per well pad and a density of 1 well pad per 160 acres ▪ Based on information in Reasonably Foreseeable Development Scenario for Oil and Gas, Grand Junction Field Office (BLM 2012aa)	BLM 2012ab
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	▪ For this surface mine, area in the project boundary considered as the development area since development at this point is unknown	BLM 2001b

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TriState/Western Fuels-Colorado, LLC	ColoWyo Coal Mine	Coal mine	12 miles north of Meeker, Colorado	–	14,369 acres	14,369	▪ For this surface mine, area in the project boundary considered as the development area since development at this point is unknown	BLM 2001b
WexPro Company	Carl Allen #45	Oil and/or gas development	1.5 miles northeast of Powder Wash, Colorado	–	6 acres	6	▪ Area in the project boundary considered as the development area since the development area is a minimal size	Wexpro Company 2012
–	–	Oil and/or gas development	Throughout the Little Snake Field Office	C106	314,599 acres	31,395	▪ 4 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the Little Snake Field Office Reasonable Foreseeable Development: Oil and Gas in the Little Snake Field Office (BLM 2004b)	BLM 2012ab
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	▪ For this surface and underground mine, entire project boundary considered since development at this point is unknown	BLM 2013f
Blue Mountain Energy, Inc.	Deserado Mine	Coal mine	Near the Moffat/Rio Blanco county line	C177	8,154 acres	8,154	▪ For this underground mine, entire project boundary considered since development at this point is unknown.	BLM 2009e
Blue Mountain Energy, Inc.	Deserado Mine Expansion	Coal mine	Just south of the Moffat/Rio Blanco county line	–	3,175 acres	3,175	▪ For this underground mine, entire project boundary considered since development at this point is unknown.	BLM 2012ac
Chevron Shale Oil Company	Oil Shale RDD	Oil shale and/or tar sands	19 miles northwest of Rio Blanco, Colorado	–	153 acres	153	▪ Area in the project boundary considered as the development area since development at this point is unknown	BLM 2012ad
EGL Resources, Inc.	Oil Shale RDD	Oil shale and/or tar sands	25 miles northwest of Rio Blanco, Colorado	–	155 acres	155	▪ Area in the project boundary considered as the development area since development at this point is unknown	BLM 2012ad
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	▪ Area in the project lease area considered as the development area since development occurs throughout the project lease area ▪ Source for the project is from the ExxonMobil Exploration Company and Natural Soda Holdings, Inc. Colorado Oil Shale Research, Development, and Demonstration Lease Tracts Project EA, 2012 (BLM 2012ae)	BLM 2010d
Owner unknown	Gravel Pits	Non-coal mine	Two pits – 6 miles southeast of Meeker, Colorado and 8 miles northeast of Rangely, Colorado	–	24 acres	24	▪ For this surface mine, area in the project boundary considered as the development area since development at this point is unknown	BLM 2012af
Natural Soda	Sodium Mine	Non-coal mine	24 miles southwest of Meeker, Colorado	–	577 acres	577	▪ For this surface and underground mine, entire project boundary considered as the development area since development at this point is unknown	BLM 2013f
Questar Gas Company	Greasewood Gas Plant Compressor Station	Oil and/or gas development	18 miles southwest of Meeker, Colorado	–	110 acres	110	▪ Area in the project boundary considered as the development area since development at this point is unknown	BLM 2013g
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	▪ Area in the project boundary considered as the development area since development at this point is unknown	BLM2012ad
–	–	Oil and/or gas development	Throughout the White River Field Office	C175, C195, C196	593,738 acres	56,586	▪ 4 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the White River Draft Resource Management Plan/EIS for Oil and Gas Development (BLM 2012ag)	BLM 2012ab
State								
Colorado State Lands Board								
–	–	Oil and/or gas development	Throughout the Colorado portion of the Project study area	C91, C95, C101, C105, C100, C13, C17, C61, C186, C187	131,500 acres	491	▪ 3 acres of disturbance per well pad and a density of 1 well pad per 640 acres ▪ In the Hiawatha area, 3 acres per well pad with a well pad density of 1 per 40 acres ▪ Based on information received from the Colorado State Land Board during a call on March 14, 2013 (Osborn 2013)	Colorado State Land Board 2012
Local								
Garfield County								
No actions have been identified or no data have been received to use in the cumulative effects analysis.								

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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	▪ Entire land division area considered	Mesa County 2011
Moffat County								
–	Wilderness Ranches	Residential subdivision	30 miles north and east of Craig, Colorado	–	14,318 acres	14,318	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed.	Moffat County 2009
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	▪ Area in the project boundary considered as the development area since development at this point is unknown	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	▪ 20-foot buffer added to the fiber optic centerline based on information from the BLM Fillmore Field Office (BLM 2013h)	BLM 2013i
–	Mona South Pumped Storage Project	Transmission line	In Wide Canyon, 4 miles southwest of Mona, Utah	–	**Transmission:** 4.7 miles	**Transmission:** 143	**Transmission line** ▪ 4.7-mile-long centerline buffered 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]	BLM 2013j
					Facilities: 394 acres	**Facilities:** 394	**Facilities** ▪ Entire project boundary considered since development at this point is unknown	
–	Mona North Pumped Storage Project	Transmission line	Old Canyon stream in the Long Ridge area west of Mona, Utah	–	**Transmission:** 6 miles	**Transmission:** 182	**Transmission line** ▪ 6-mile-long centerline buffered 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]	BLM 2013ko
					Facilities: 833 acres	**Facilities:** 833 acres	**Facilities** ▪ Entire project boundary considered since development at this point is unknown	
Intermountain Power Agency	Intermountain Mona Lines No. 1 and 2	Transmission line	From Intermountain Power Project substation through Leamington Canyon to Adelanto, California	–	100 miles	1,818	▪ 345-kilovolt (kV) transmission centerlines buffered to 150 feet based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011b)	POWERmap Platts 2009 as digitized by EPG
Kern River Gas Transmission Company	Pipeline	Pipeline	Begins 6 miles southeast of Evanston, Wyoming, and terminates in Bakersfield, California	–	432 miles	15,709	▪ 36- to 42-inch diameter pipeline buffered to create a 300-foot corridor based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011a)	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	▪ Area in the project boundary considered as the development area since the boundary is meant to represent the pipeline right-of-way	BLM 2010e
PacifiCorp	Camp Williams to Sigurd No. 1	Transmission line	From Camp Williams, Utah County, Utah, to Sigurd Substation, Sevier County	–	0.3 miles	6	▪ 345kV transmission centerline buffered to 150 feet based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011b)	POWERmap Platts 2009 as digitized by EPG
PacifiCorp	Camp Williams to Sigurd No. 2	Transmission line	From Camp Williams, Utah County, Utah, to Sigurd Substation, Sevier County	–	0.3 miles	6	▪ 345kV transmission centerline buffered to 150 feet based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011b)	POWERmap Platts 2009 as digitized by EPG
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	2,700	▪ 500kV portion of the transmission centerline buffered to 225 feet and 345kV portion buffered to 150 feet based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011b)	POWERmap Platts 2009 as digitized by EPG

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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	▪ 20-inch-diameter pipeline buffered to create a 200-foot corridor based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011a)	BLM 2013l
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	▪ 12-inch-diameter pipeline buffered to create a 100-foot corridor based on average scar widths visible on 2011 NAIP aerial imagery (NAIP 2011a)	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	U490	7 acres	7	▪ 0.8 acres of disturbance per well pad and a 25-foot corridor for the pipeline ▪ Compressor station boundary considered to be fully developed	BLM 2013m
–	–	Oil and/or gas development	Throughout the Moab Field Office	U486, U487	273,246 acres	6,723	▪ 4 acres of disturbance per well pad and a density of 1 well pad per 160 acres ▪ Based on information in the Reasonably Foreseeable Development Scenario for Oil and Gas Development for the Moab Field Office (BLM 2005g)	BLM 2012ah
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	▪ 1.38 acres of disturbance per well pad and a density of 1 well pad per 160 acres ▪ Well pad size is based on the number of wells and well pad density in the project boundary ▪ Density based on information in the Appeals from the Ferron Natural Gas Record of Decision (Interior Board of Land Appeals [BLM] 2003)	BLM 1998b
Bill Barrett Corporation	Peter's Point Loop Pipeline	Pipeline	T12S, R16E, Sec. 26, 27, 35	–	3 miles	18	▪ Pipeline 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 (BLM 2011k)	BLM 2011k
Bill Barrett Corp.	West Tavaputs Plateau Project	Oil and/or gas development	30 miles east-northeast of Price, Utah	–	137,932 acres	1,723	▪ 2 acres of disturbance per well pad and a density of 1 well pad per 160 acres ▪ Based on information in the West Tavaputs Plateau Record of Decision and Final EIS, (BLM 2010f)	BLM 2012af
Interwest Mining Company	Deer Creek Coal Mine, Coal Exploration	Coal mine	T16S, R6E, Sec. 22-27	U629	25,958 acres	25,958	▪ For this underground mine, area in the project boundary considered as the development area since development at this point is unknown	Tetra Tech 2012
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	▪ For this underground mine, area in the project boundary considered as the development area since development at this point is unknown	BLM 2012ah
–	–	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	▪ 1 acre of disturbance per well pad and a density of 1 well pad per 160 acres ▪ Based on information in the Price Field Office Proposed Resource Management Plan/Final EIS (BLM 2008d)	BLM 2012ah
Bureau of Land Management Richfield Field Office								
–	–	Oil and/or gas development	Throughout the Richfield Field Office	U600, U630	49,704 acres	4,934	▪ 4 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Well pad size based on information in the Reasonably Foreseeable Development Scenario for Oil and Gas Development in the Richfield Field Office, March 2005 ▪ Well pad density based on information from Utah Administrative Code R649-3-Drilling and Operating Practices	BLM 2012ah
Bureau of Land Management Salt Lake Field Office								
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	▪ 10-inch-diameter pipeline buffered to create a 100-foot corridor based on average scar widths visible on the 2011 NAIP aerial imagery (NAIP 2011a)	PennWell Map Search 2011

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 (acres)	Development Assumptions for Analysis[3]	Source of Alignments or Boundaries
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	▪ 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, March 2012 (BLM 2012ai)	URMCC2013a
Bill Barrett Corporation	Lake Canyon EDA	Oil and/or gas development	South of Fruitland, Utah	U424, U426, U427	244,730 acres	15,341	▪ 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, March 2012 (BLM 2012ai)	URMCC 2013a
Encana	North Chapita Wells Natural Gas Development	Oil and/or gas development	6 miles northwest of Bonanza, Utah	–	9,191 acres	453	▪ 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, March 2012 (BLM 2012ai)	BLM 2012aj
Enduring Resources	Rock House Development	Oil and/or gas development	11 miles southwest of Bonanza, Utah	–	4,859 acres	31	▪ 2 acres of disturbance per well pad and a density of 1 well pad per 285.8 acres (17 pads distributed across 4,859.2 acres ▪ Based on information in the Saddletree Draw Leasing and Rock House Development Proposal EA, December 2007 (BLM 2007c)	BLM 2012aj
EOG Resources, Inc.	Chapita Wells-Stagecoach Area Natural Gas Development	Oil and/or gas development	10 miles southeast of Ouray, Colorado	U300, U285, U290	31,861 acres	220	▪ 2.5 acres of disturbance per well pad and a density of 1 well pad per 320 acres ▪ 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 2008k, 2012ak)	BLM 2012aj
Gasco Energy, Inc.	Uinta Natural Gas Development Project	Oil and/or gas development	T9S, R15–19E T10S, R14–19E T11S, R15–18E	U400, U401	165,895 acres	15,833	▪ 3.8 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the Gasco Final EIS, June 2012 (BLM 2012al)	BLM 2011l
–	Gilsonite Mines	Non-coal mine	Throughout the southern portion of the Vernal Field Office	U300, U391, U400	174 miles	212	▪ The linear mines were assumed to be 10 feet wide based on an average width of mining scars visible on 2011 NAIP aerial imagery (NAIP 2011c)	BLM 2008l
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, R21-22E	U260, U280, U285, U290, U300	160,285 acres	9,955	▪ 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in Greater Natural Buttes Final EIS, March 2012 (BLM 2012ak)	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	▪ 3.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the North Algers Project EA, October 2012 (BLM 2012n)	BLM 2012aj
Newfield Gusher Development	–	Oil and/or gas development	5 miles northeast of Randlett, Utah	U390, U391	38,138 acres	2,324	▪ 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, March 2012 (BLM 2012ai)	BLM 2012aj
Petro-Canada Resources (USA), Inc.	Rye Patch EA	Oil and/or gas development	21 miles south of Duchesne, Utah	–	5,506 acres	11	▪ 2.1 acres of disturbance per well pad and a density of 1 well pad per 790.9 acres (7 pads distributed across 7,283 acres ▪ Based on information in the Rye Patch Exploratory Drilling EA, July 2007 (BLM 2007d)	BLM 2012aj
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	▪ 2.3 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the Greater Deadman Bench Final EIS, January 2008 (BLM 2008i)	BLM 2012aj

TABLE 4-1
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–	Seep Ridge Road	Highway/road	From Ouray, Colorado to Uintah County line	–	702 acres	702	▪ Area in the project boundary considered as the development area since the boundary is meant to represent the actual road development	BLM 2012an
Stewart Petroleum	Tumbleweed II	Oil and/or gas development	37 miles southwest of Bonanza, Utah	–	7,283 acres	16	▪ 2.5 acres of disturbance per well pad and a density of 1 well pad per 1,040.4 acres (7 pads distributed across 7,283.1 acres) ▪ Based on information in the Tumbleweed II Exploratory Natural Gas Drilling Project Final EA, June 2010 (BLM 2010g)	BLM 2012aj
XTO Energy	Riverbend Directional Infill	Oil and/or gas development	T10S, R19-20E	U300, U400	17,127 acres	2,137	▪ 2.5 acres of disturbance per well pad and a density of 1 well pad per 20 acres ▪ Based on information in the River Bend Unit Infill Development Environmental Assessment and Biological Assessment, July 2012 (BLM 2012ao)	BLM 2012aj
–	–	Oil and/or gas development	Throughout the Vernal Field Office	U241, U280, U310, U390, U431, U300, U400	435,064 acres	14,059	▪ 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, March 2012 (BLM 2012ai)	BLM 2012ah
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	▪ 1 acre of disturbance per well pad and a density of 1 well pad per 106.7 acres (6 pads per 640-acre section) ▪ Based on information in the South Unit Oil and Gas Development Project Record of Decision, February 2012 (USFS 2012e)	USFS 2007
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	▪ Area for this underground mine in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
–	Flat Canyon Coal Lease Tract	Coal mine	5 miles west of Clear Creek, Utah	U600	2,717 acres	2,717	▪ For this underground mine, area in the project boundary considered as the development area since development at this point is unknown	USFS 2013d
Fossil Rock Fuels, LLC	Coal Exploration Drilling	Coal mine	10 miles northwest of Orangeville, Utah	–	8,707 acres	8,707	▪ Area in the project boundary considered as the development area since development at this point is unknown	USFS 2012f
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	▪ Area in the project boundary considered as the development area since development at this point is unknown	USFS 2012g
Sunroc Corporation	Chicken Creek Surface Gypsum Mine	Non-coal mine	2 miles east of Levan, Utah	–	57 acres	57	▪ For this surface mine, area in the project boundary considered as the development area since development at this point is unknown ▪ For the proposed access road, centerline buffered for a 25-foot width	USFS 2012h
Uinta-Wasatch-Cache National Forest								
No actions have been identified or no data have been received to use in the cumulative effects analysis.								
Surface Transportation Board								
No actions have been identified or no data have been received to use in the cumulative effects analysis.								
Utah Reclamation Mitigation and Conservation Commission (URMCC)								
No actions have been identified or no data have been received to use in the cumulative effects analysis.								
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	▪ 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) ▪ Based on information in the Blacktail Ridge 12-Well Exploratory Drilling Project EA Scoping Notice, November 2012 (URMCC 2012)	URMCC 2013b

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PAST AND PRESENT ACTIONS

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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	Reservoir: 669	▪ **Reservoir:** Entire project boundary considered since development at this point is unknown.	Central Utah Water Conservancy District 2012
					Pipelines: 16 miles	Pipelines: 59	▪ **Pipelines:** Pipelines buffered for a 30-foot-wide corridor.	
					Highway: 3 miles	Highway: 8	▪ **Highway:** Centerline buffered for a 24-foot-wide corridor	
					Tunnel: 0.6 miles	Tunnel: 2	▪ **Tunnel:** Centerline buffered for a 30-foot-wide corridor based on aerial imagery scar measurement of the current alignment	Sanpete Water Conservancy District 2012
					Dam: 0.3 acres	Dam: 0.3	▪ **Dam:** The development assumption is to buffer the dam point to 14,251 square feet.	
					–	–	▪ All based on information from the Narrows Project Final EIS, November 2012 (U.S. Bureau of Reclamation 2012)	
State								
Central Utah Water Conservancy District								
–	Roosevelt Pipeline	Pipeline	Extends from Roosevelt, Utah, to the west 9 miles	U420	18 miles	6,371	▪ Pipeline 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	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	▪ Area in the project boundary considered as the development area since development at this point is unknown	SITLA 2012
–	University of Utah leases	Educational	8 miles southeast of Columbia, Utah	–	2,802 acres	2,802	▪ Area in the project boundary considered as the development area since development at this point is unknown	SITLA 2014a
–	Utah National Guard Engineering Battalion training area	Military training/testing site	6 miles east of Price, Utah	–	163 acres	163	▪ Area in the project boundary considered as the development area since development at this point is unknown	SITLA 2014a
–	White Sands Missile Launch Facility (abandoned)	Military training/testing site	Near Green River, Utah	U487	728 acres	728	▪ Area in the project boundary considered as the development area since development at this point is unknown	SITLA 2014a
–	Arches Overlook, Grand County; Price Industrial, Carbon County; Price Industrial Large Lots; Price Fairgrounds, Carbon County; Johnsons Up On Top/Moab Golf Course; Moab - USU/CEU Branch Campus Site, Grand County; Price Fairgrounds Exchange Parcel; Price City 40, Carbon County; South Price Residential, Carbon County	Multiple types of development[4]	Throughout the Utah portion of the Project area	–	10,633 acres	10,633	▪ Entire project lease boundary considered since development in each lease or project area currently is unknown	SITLA 2014a
–	Mancos Hills Industrial Park, Emery County	Industrial	3 miles west of Green River, Utah	U488	2,556 acres	2,556	▪ Area in the project boundary considered as the development area since development at this point is unknown	SITLA 2014a
–	–	Coal and Non-coal mine	Throughout the Project area	U300, U486, U487, U488, U489, U730	106,858acres	106,858	▪ Area in the project boundary considered as the development area since development at this point is unknown	SITLA 2014b
–	–	Oil and/or gas development	Throughout the Project area	U241, U242, U280, U285, U290, U300, U310, U390, U400, U401, U406, U410, U411, U413, U416, U419, U430, U432, U436, U437, U438, U442, U443, U445, U486, U487, U488, U489, U490, U493, U495, U496, U498, U502, U504, U506, U508, U512, U514, U516, U520, U523, U524, U527, U537, U546, U548, U585,	759,875 acres	15,362	▪ 3 acres of disturbance per well pad and a density of 1 well pad per 107 acres ▪ An average of 6 wells per section based on Utah Department of Oil, Gas, and Mining map found at this website: http://mapserv.utah.gov/oilgasmining/	SITLA 2014c

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				U586, U587, U600, U621, U628, U629, U631, U636, U650, U730, U731, U734, U765				
–	–	Oil shale tar sands development	Throughout the Project area	U280, U285, U290, U300	140,013 acres	140,013	▪ Area in the project boundary considered as the development area since development at this point is unknown	SITLA 2014c
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	▪ Area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
Canyon Fuel Company, LLC	Banning Siding Loadout	Coal mine	8 miles east of Wellington, Utah	–	40 acres	40	▪ Area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
Canyon Fuel Company, LLC	Dugout Canyon Mine	Coal mine	11 miles northeast of Wellington, Utah	–	9,383 acres	9,383	▪ Area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
Canyon Fuel Company	Soldier Canyon Mine	Coal mine	12 miles northeast of Wellington, Utah	U523	7,140 acres	7,140	▪ Area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
Carbon Resources, LLC	Kinney # 2	Coal mine	East of Scofield, Utah	–	709 acres	709	▪ Area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
Castle Valley Mining, LLC	Bear Canyon Mine	Coal mine	10 miles west of Huntington, Utah	–	10,831 acres	10,831	▪ For this underground mine, area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
COVOL Engineered Fuels, LLC	COVOL Site	Coal mine	Industrial area on Ridge Road, Carbon County, Utah	–	31 acres	31	▪ For this surface mine, area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
Energy West Mining Company	Cottonwood Waste Rock Site	Coal mine	12 miles northwest of Orangeville, Utah	–	2,153 acres	2,153	▪ For this underground mine, area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
Hiawatha Coal Company, Inc.	Hiawatha Mine	Coal mine	15 miles southwest of Price, Utah	–	11,623 acres	11,623	▪ For this underground mine, area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
Hidden Splendor Resources	Horizon Mine	Coal mine	5 miles east of Scofield, Utah	–	1,539 acres	1,539	▪ For this underground mine, area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
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	▪ Area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
PacifiCorp	Trial Mountain Mine	Coal mine	12 miles west of Orangeville, Utah	–	3,492 acres	3,492	▪ For this underground mine, area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
Savage Services Corporation	Savage Coal Terminal	Coal mine	4 miles south-southeast of Price, Utah	–	166 acres	166	▪ Area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
Sunnyside Cogeneration Associates	Star Point Waste Fuel	Coal mine	3 miles north of Hiawatha, Utah	–	156 acres	156	▪ Area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
Sunnyside Cogeneration Associates	Sunnyside Refuse/Slurry	Coal mine	25 miles east of Price, Utah	–	331 acres	331	▪ Area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
Utah American Energy, Inc.	Horse Canyon Mine (Lila Canyon extension)	Coal mine	7 miles east of Cedar, Utah	–	4,566 acres	4,566	▪ For this surface mine, area in the project boundary considered as the development area since development at this point is unknown	UDNR 2013
West Ridge Resources	West Ridge Mine	Coal mine	10 miles north of Sunnyside, Utah	–	5,990 acres	5,990	▪ For this underground mine, area in the project boundary considered as the development area since development at this point is unknown.	UDNR 2013

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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	▪ Trail centerline is buffered to 15 feet wide based on existing portions of the trail in 2011 NAIP aerial imagery	Carbon County, Utah 2011a
–	Clear Creek subdivision	Residential subdivision	4 miles south of Scofield, Utah	–	19 acres	19	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Carbon County, Utah 2011b
–	Dennis Plat of Spring Glen subdivision	Residential subdivision	1 mile south of Helper, Utah	–	23 acres	23	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Carbon County, Utah 2011b
–	Frank Jr. and Judy Saccomanno subdivision	Residential subdivision	1 mile southeast of Helper, Utah	–	5 acres	5	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Carbon County, Utah 2011b
–	Kenilworth subdivision	Residential subdivision	2 miles east of Helper, Utah	–	42 acres	42	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Carbon County, Utah 2011b
–	Spring Glen Townsite	Residential subdivision	1 mile south of Helper, Utah	–	53 acres	53	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Carbon County, Utah 2011b
–	Theo Vista subdivision	Residential subdivision	1 mile south of Helper, Utah	–	5 acres	5	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	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	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Carbon County, Utah 2011b
–	Fitch's subdivision	Residential subdivision	Western portion of the city limits of Helper, Utah	–	1 acre	1	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Carbon County, Utah 2011b
–	Giacoletto subdivision	Residential subdivision	Northern portion of the city limits of Helper, Utah	–	2 acres	2	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Carbon County, Utah 2011b
–	Hillcrest Addition subdivision	Residential subdivision	Eastern portion of the city limits of Helper, Utah	–	6 acres	6	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Carbon County, Utah 2011b
–	New Helper Townsite subdivision	Residential subdivision	Northern portion of the city limits of Helper, Utah	–	23 acres	23	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Carbon County, Utah 2011b
–	Sheya Addition subdivision	Residential subdivision	In the municipal boundary of Helper, Utah	–	8 acres	8	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	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	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Alfred Stringham subdivision	Residential subdivision	T3S, R2W, Sec. 9	–	41 acres	41	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Amy Hemphill subdivision	Residential subdivision	T3S, R1W, Sec. 18	–	81 acres	81	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Arch View Ranchettes subdivision	Residential subdivision	15 miles west of Duchesne, Utah	U421	51 acres	51	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Brad Knight subdivision	Residential subdivision	2 miles south of Roosevelt, Utah	–	21 acres	21	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Brad Mikesell subdivision	Residential subdivision	T11S, R11E, Sec. 7	–	126 acres	126	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Brad Taylor subdivision	Residential subdivision	T3S, R5W, Sec. 12	–	80 acres	80	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Bridgeland BV – Chevron	Residential subdivision	T3S, R3W, Sec. 34	–	41 acres	41	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Cedar Mountain No. 6 and 6A subdivision	Residential subdivision	22 miles west of Duchesne, Utah	U426	1,698 acres	1,698	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Cedar Mountain No. 8 subdivision	Residential subdivision	6 miles west of Duchesne, Utah	–	334 acres	334	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009

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–	Cedar Mountain No. 9 subdivision	Residential subdivision	13 miles west of Duchesne, Utah	U421	1,967 acres	1,967	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Cove Estates subdivision	Residential subdivision	Northern portion of Roosevelt municipal boundary, Utah	–	416 acres	416	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Dale Gines subdivision	Residential subdivision	6 miles north of Duchesne, Utah	–	102 acres	102	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	David Thacker subdivision	Residential subdivision	T2S, R3W, Sec. 28 and 33	U420	200 acres	200	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Dean Roberts subdivision	Residential subdivision	T2S, R3W, Sec. 15	–	160 acres	160	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Deer Field subdivision	Residential subdivision	25 miles west of Duchesne, Utah	–	43 acres	43	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Deloris Crespo and Jaime Trujillo subdivision	Residential subdivision	T3S, R7W, Sec. 27	–	39 acres	39	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	D.J. Crozier Land and Livestock LLC subdivision	Residential subdivision	T3S, R2W, Sec. 2	U410	41 acres	41	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Dennis Manning subdivision	Residential subdivision	T3S, R2W, Sec. 10	–	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Duncan – Price subdivision	Residential subdivision	T3S, R2W, Sec. 1	–	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Duchesne Land LC - Petroglyph Energy	Residential subdivision	T4S, R4W, Sec. 8, 17, and 18	–	1,198 acres	1,198	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Elk Tracks at Golden Eagle subdivision	Residential subdivision	5 miles northwest of Duchesne, Utah	U420	789 acres	789	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	EP Energy Belcher	Oil and/or gas development	T2S, R4W, Sec. 32	–	80 acres	80	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Fruitland Ranchettes subdivision	Residential subdivision	24 miles west of Duchesne, Utah	–	26 acres	26	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Fruitland SS District subdivision	Residential subdivision	T3S, R9W, Sec. 25	–	81 acres	81	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Golden Eagle subdivision	Residential subdivision	5 miles northwest of Duchesne, Utah	–	359 acres	359	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Great Basin Estates I subdivision	Residential subdivision	7 miles northwest of Duchesne, Utah	U420	319 acres	319	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Hidden Meadow subdivision	Residential subdivision	24 miles west of Duchesne, Utah	–	63 acres	63	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Highland Estates subdivision	Residential subdivision	2 miles south of Roosevelt, Utah	–	12 acres	12	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Hock subdivision	Residential subdivision	T3S, R7W, Sec. 30	–	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Ioka Meadows subdivision	Residential subdivision	2 miles southwest of Roosevelt, Utah	–	38 acres	38	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Ivan German subdivision	Residential subdivision	T3S, R1W, Sec. 5	–	79 acres	79	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Jerry Thacker subdivision	Residential subdivision	T2S, R3W, Sec. 28	U420	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Karren Industrial Park	Industrial	Directly south of the City of Roosevelt municipal boundary, Utah	–	20 acres	20	▪ Area in the project boundary considered as the development area since this industrial park is not fully developed	Duchesne County 2009
–	Kelly R. Kielbasa subdivision	Residential subdivision	T4S, R3W, S16	–	79 acres	79	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Lake Pointe Ranches subdivision	Residential subdivision	T3S, R5W, Sec. 16	–	323 acres	323	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Lake Side Acres - Grant Starvation subdivision	Residential subdivision	T3S, R5W, Sec. 11	–	158 acres	158	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014

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 (acres)	Development Assumptions for Analysis[3]	Source of Alignments or Boundaries
–	Lane Yack subdivision	Residential subdivision	T2S, R1W, Sec. 33 T3S, R1W, Sec.4	–	79 acres	79	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Lazy JP Ranchettes subdivision	Residential subdivision	23 miles west of Duchesne, Utah	U426	70 acres	70	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Ledge Rock Cove subdivision	Residential subdivision	6 miles west of Roosevelt, Utah	–	36 acres	36	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Leon Clayburn subdivision	Residential subdivision	T3S, R3W, Sec. 35	–	81 acres	81	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Lobo Ranchettes subdivision	Residential subdivision	20 miles northeast of Price, Utah	–	368 acres	368	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Luther – Deluca subdivision	Residential subdivision	T3S, R6W, Sec. 6	–	149 acres	149	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Mark Thacker subdivision	Residential subdivision	T2S, R3W, Sec. 15	–	80 acres	80	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Mike Kendall subdivision	Residential subdivision	T2S, R5W, Sec. 34	–	119 acres	119	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Mitchell Minor subdivision	Residential subdivision	T2S, R3W, Sec. 16	–	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Moondance Ranch Phase I and II subdivision	Residential subdivision	6 miles southeast of Duchesne, Utah	U430, U431	4,162 acres	4,162	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Moonlake Electric	Utility	T3S, R4W, Sec. 16	–	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	MM70 subdivision	Residential subdivision	T3S, R7W, Sec. 29	–	316 acres	316	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Neal Potter subdivision	Residential subdivision	T3S, R1W, Sec. 4	U410	158 acres	158	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Nicole O'Driscoll subdivision	Residential subdivision	T3S, R2W, Sec. 4	–	41 acres	41	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
Newfield Company	North Lateral PI	Oil and/or gas Development	T3S, R2W, Sec. 14	–	81 acres	81	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
Newfield Company	Gregory Huffman	Pipeline	T3S, R1W, Sec. 18	–	119 acres	119	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Oliver Squire subdivision	Residential subdivision	T3S, R1W, Sec. 7	–	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Pheasant Run subdivision	Residential subdivision	3 miles southwest of Roosevelt, Utah	–	13 acres	13	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Private Estates subvision	Residential subdivision	T3S, R4W, Sec. 4	–	41 acres	41	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Ranches at Pinion Ridge subdivision	Residential subdivision	T3S, R7W, Sec. 28	–	159 acres	159	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Randall Hanberg subdivision	Residential subdivision	T4S, R3W, Sec. 10	–	79 acres	79	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Richard and Connie Johnson subdivision	Residential subdivision	T3S, R9W, Sec. 14	–	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	River Bend Estates subdivision	Residential subdivision	T2S, R5W, Sec. 34	–	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	River Breeze Estates subdivision	Residential subdivision	5 miles north of Duchesne, Utah	U420	32 acres	32	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	River Heights Estates subdivision	Residential subdivision	T2S, R5W, Sec. 34	–	79 acres	79	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Robbers Roost subdivision	Residential subdivision	25 miles west of Duchesne, Utah	–	80 acres	80	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Ron and Lori Winterton subdivision	Residential subdivision	T2S, R1W, Sec. 30	–	159 acres	159	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Ron Peatross subdivision	Residential subdivision	T2S, R2W, Sec. 23	–	80 acres	80	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014

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 (acres)	Development Assumptions for Analysis[3]	Source of Alignments or Boundaries
–	Rosalinda Park subdivision	Residential subdivision	4 miles north of Duchesne, Utah	–	24 acres	24	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Silver Moon subdivision	Residential subdivision	5 miles southeast of Duchesne, Utah	U430, U431	6,443 acres	6,443	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Squire subdivision	Residential subdivision	T3S, R1W, Sec. 7	–	80 acres	80	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Starvation Ranches II subdivision	Residential subdivision	T3S, R6W, Sec. 35	–	79 acres	79	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Sundown Ridge subdivision	Residential subdivision	26 miles west of Duchesne, Utah	U426	141 acres	141	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Sunrise Estates subdivision	Residential subdivision	4 miles southwest of Roosevelt, Utah	–	21 acres	21	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Tabby Shadows subdivision	Residential subdivision	15 miles west-northwest of Duchesne, Utah	U421	659 acres	659	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Taylor subdivision	Residential subdivision	T3S, R2W, Sec. 6	U430	79 acres	79	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Thomas Winterton subdivision	Residential subdivision	T2S, R1W, Sec. 29	–	80 acres	80	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Trent Jenkins subdivision	Residential subdivision	T2S, R1W, Sec. 28	–	161 acres	161	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Tuck Away Storage	Commercial	T2S, R1W, Sec. 31	–	41 acres	41	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Uintah Haven subdivision	Residential subdivision	5 miles north of Duchesne, Utah	U420	50 acres	50	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Uintah Mountain Vista subdivision	Residential subdivision	T2S, R2W, Sec. 36	–	159 acres	159	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Uintah View Ranches subdivision	Residential subdivision	1 mile north of Duchesne, Utah	–	2,511 acres	2,511	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Valle Del Padre subdivision	Residential subdivision	25 miles west of Duchesne, Utah	–	441 acres	441	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Victory Pipeline	Water pipeline	Duchesne County	U410, U430	746 acres	746	▪ For this pipeline, the shapefile boundary provided by Jones and DeMille Engineering was used	Jones and DeMille Engineering 2013
–	View subdivision	Residential subdivision	2 miles south of Roosevelt, Utah	–	12 acres	12	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Vista Valley subdivision	Residential subdivision	18 miles west of Duchesne, Utah	U421, U425	768 acres	768	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Vonsville subdivision	Residential subdivision	1 mile south of Roosevelt, Utah	–	157 acres	157	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Warren Brandow subdivision	Residential subdivision	T3S, R8W, Sec. 30	–	76 acres	76	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Wasatch Meadow subdivision	Residential subdivision	26 miles west of Duchesne, Utah	–	69 acres	69	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	West Star Properties	Residential subdivision	20 miles west of Duchesne, Utah	U421	79 acres	79	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
–	Willis Hansen subdivision	Residential subdivision	T3S, R1W, Sec. 9	–	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2014
–	Young Meadows subdivision	Residential subdivision	20 miles west of Duchesne, Utah	–	934 acres	934	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Duchesne County 2009
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.								

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 (acres)	Development Assumptions for Analysis[3]	Source of Alignments or Boundaries
Juab County								
–	Birch Creek subdivision	Residential subdivision	Adjacent to Nortonville of Juab County, 6 miles north and west of Nephi, Utah	–	13 acres	13	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Juab County 2009
–	Burraston View subdivision	Residential subdivision	Adjacent to Old Highway 91, and Burraston Hill of Juab County, 6 miles north and west of Nephi, Utah	–	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Juab County 2009
–	Burraston Hill of Juab subdivision	Residential subdivision	Adjacent to Burraston View and Old Highway 91, 6 miles north and west of Nephi, Utah	–	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Juab County 2009
–	Majestic Estates subdivision	Residential subdivision	6 miles north and west of Nephi, Utah	–	7 acres	7	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Juab County 2009
–	Nortonville subdivision	Residential subdivision	Adjacent to Birch Creek, 6 miles north and west of Nephi, Utah	–	13 acres	13	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Juab County 2009
–	Old 91 subdivision	Residential subdivision	Adjacent to Burraston View, and Burraston Hill of Juab County, 6 miles north and west of Nephi, Utah	–	40 acres	40	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Juab County 2009
–	West Creek of Juab subdivision	Residential subdivision	6 miles north and west of Nephi, Utah	–	26 acres	26	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Juab County 2009
Nephi City								
–	Deer Acre Plat 'B' subdivision	Residential subdivision	Eastern edge of the municipal boundary of Nephi, Utah	–	6 acres	6	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Juab County 2009
Sanpete County								
–	Mount Baldy subdivision	Residential subdivision	7 miles northeast of Fountain Green, Utah	–	307 acres	307	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Sanpete County 2009
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	▪ Entire project boundary considered since development at this point is unknown	Stantec Corporation 2012
Utah County								
–	Solider Summits residential estates	Residential subdivision	13 miles north of Scofield, Utah	U527, U530, U560	811 acres	811	▪ Area in the project boundary considered as the development area since this subdivision is not fully developed	Utah County 2009
Wasatch County								
There are not any actions identified or data received to be used in cumulative analysis								
Additional Actions[6]								
LANDFIRE™								
–	–	–	Throughout the Project area	–	–	–	**LANDFIRE™** data 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	LANDFIRE 2012

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 (acres)	Development Assumptions for Analysis[3]	Source of Alignments or Boundaries
							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	
Transmission Line								
–	–	Transmission line	Throughout the Project area	–	–	–	Transmission lines 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	POWERmap Platts 2009
Pipelines								
–	–	Pipeline	Throughout the Project area	–	–	–	Pipelines 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	PennWell 2011
Highways/Roads								
–	–	Transportation	Throughout the Project area	–	–	–	Highways and roads is based on averaging corridor widths estimated by 2011 and 2012 NAIP aerial imagery interpretation (NAIP 2011d): 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	Automated Geographic Reference Center 2012
Railroads								
–	–	Transportation	Throughout the Project area	–	–	–	Railroads assume an average corridor width of 25 feet based on 2011 and 2012 NAIP aerial imagery interpretation(NAIP 2011d)	

NOTES:
[1]All locations are approximate unless township/range/section is provided.
[2]The 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.
[3]The assumptions were used in the quantification portion of the cumulative analysis to achieve an approximate amount of disturbance for each activity.
[4]Additional activities are datasets of existing development but are not called out as individual projects.
[5]The development assumption for transmission lines is based on averaging corridor widths estimated by aerial interpretation for the following voltages:

- 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

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.

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:

- Little Snake Field Office
  - Sand Wash Artillery Range Site and Craig Range National Guard Training Site
- Six County Coalition
  - Uinta Basin Rail Study

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]	Ground Disturbance (acres)	Development Assumptions for Analysis[3]	Source of Alignments or Boundaries
Multi-state Actions								
Bureau of Land Management (BLM) Wyoming State Office								
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, W107, W108, W110, W111, W113, W117, W120, W124, W409, W410, C100, C101, C105, C106, C13, C175, C177, C185, C186, C195, C196, C197, C270, C92, C93, C94, C95, U241, U310, U406, U407, U408, U409, U410, U411, U418, U420, U421, U424, U425, U426, U429, U430, U431, U432, U433, U434, U435, U436, U437, U438, U439, U442, U443, U445, U486, U487, U488, U489, U490, U496, U498, U502, U504, U511, U512, U513, U515, U523, U524, U525, U527, U530, U533, U537, U540, U545, U546, U548, U560, U585, U586, U587, U600, U625, U629, U630, U631, U636, U639, U650, U728, U729, U730, U731, U732, U733, U734	2,551 miles	77,182	▪ Centerline buffered for a 250-foot-wide right-of-way based on information in the right-of-way application submitted in 2010 (TransWest Express LLC 2010)	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	▪ 1.9 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ 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	W22	12,644 acres	12,644	▪ Area in the project boundary considered as the development area since development at this point is unknown.	Ambre Energy 2012b
BP (consortium)	Continental Divide-Creston Natural Gas Project	Oil and/or gas development	25 miles west of Rawlins, Wyoming, in Carbon and Sweetwater counties	W101, W102, W107, W108, W109, W110, W111, W116, W117, W120, W125, W128, W27, W32	1,028,334 acres	66,723	▪ 2.6 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the Project Draft EIS and Plan of Development 2012 (BLM 2012ap)	BLM 2007e
–	Whirlwind I	Wind-energy facility	2 miles southwest of Rawlins, Wyoming	W30, W32	42,568 acres	255	▪ 1.0 acres of disturbance per turbine pad and a density of 1 turbine pad per 167 acres ▪ Based on averaging wind-turbine pad sizes for existing projects in the project area ▪ Developed by evenly spacing 300 turbines in the project-area boundary ▪ 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 2013o)	BLM 2013p
Bureau of Land Management Rock Spring Field Office								
Evergreen Wind Power Partners, LLC	Quaking Aspen Mountain	Wind-energy facility	Southeast of Rock Springs, Wyoming	–	7,172 acres	109	▪ 1.0 acre of disturbance per turbine pad and a density of 1 turbine pad per 65 acres ▪ Based on averaging wind-turbine pad sizes for similar existing	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]	Ground Disturbance (acres)	Development Assumptions for Analysis[3]	Source of Alignments or Boundaries
							wind projects in the Project area ▪ Density was developed by evenly spacing 79 turbines in the project-area boundary ▪ Source of this information from the scoping notice extension in 2011 (BLM 2011m)	
Sweeney Ranch Wind Park, LLC	Sweeney Ranch	Wind-energy facility	9 miles south of Thayer Junction, Wyoming	–	12,097 acres	329	▪ 1.0 acre of disturbance per turbine pad and a density of 1 turbine pad per 36 acres ▪ Density developed by evenly spacing 150 turbines in the project area boundary ▪ Source of this information is the BLM NEPA Hotsheet, January 2013 (BLM 2013m)	BLM 2009f
Teton Wind, LLC	White Mountain Wind Farm	Wind-energy facility	Located west-northwest of Rock Springs, Wyoming (T19N, R105-106W T20N, R105-106W)	–	13,165 acres	191	▪ 0.8 acres of disturbance per turbine pad and a density of 1 turbine pad per 54.85 acres ▪ Density developed by evenly spacing 240 turbines in the project area boundary ▪ Source of this information from the Environmental Assessment (EA) in 2010 (BLM 2010k)	BLM 2012aq
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.								
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	▪ 1.5 acres of disturbance per well pad and a density of 1 well pad per 160 acres ▪ Based on information in the Reasonable Foreseeable Development Scenario for Oil and Gas, Grand Junction Field Office 2012 (BLM 2012ab)	BLM 2012ab
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	▪ For this surface mine, the entire area in the project boundary considered as the development area since the extent of the development at this point is unknown	Trapper Mining, Inc. 2012
–	–	Oil and/or gas development	9 miles southeast of Moffat, Colorado	–	11,974 acres	1,205	▪ 4 acres of disturbance per well pad and a density of 1 well pad per 40 acres ▪ Based on information in the Reasonable Foreseeable Development: Oil and Gas in the Little Snake Field Office Administrative Boundary Area, 2004 (BLM 2004b)	BLM 2012ab
Bureau of Land Management White River Field Office								
No actions have been identified or no data have been received to use in the cumulative effects analysis.								
							▪	
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								
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]	Ground Disturbance (acres)	Development Assumptions for Analysis[3]	Source of Alignments or Boundaries
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.								
Utah								
Federal								
Bureau of Land Management Fillmore Field Office								
No actions have been identified or no data have been received to use in the cumulative effects analysis.								
Bureau of Land Management Moab Field Office								
No actions have been identified or no data have been received to use in the cumulative effects analysis.								
Bureau of Land Management Price Field Office								
–	Woodside Site	Power generation	Boundary encompasses 50 miles around Green River and East Carbon, Utah	U488, U489, U734	50,046 acres	50,046	▪ Area in the project boundary considered as the development area since development at this point is unknown ▪ Woodside substation is 6.5 acres	BLM 2012ar
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.								
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								
Moon Lake Electric	Bonanza to Upalco 138kV Transmission Line	Transmission Line	Begins 0.8 mile southeast of Fort Duchesne and runs east for 4.8 miles	–	4.8 miles	88	▪ Based on information from Moon Lake Electric Company (2013)	Moon Lake Electric 2013
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	▪ 1.2 acres of disturbance per well pad and a density of 1 well pad per 20 acres ▪ Based on information in the Newfield Master Development Plan No. 6 EA, 2011 (BLM 2011n)	BLM 2012aj
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								
No actions have been identified or no data have been received to use in the cumulative effects analysis.								
Uinta-Wasatch-Cache National Forest								
–	Squaw Creek Road Relocation Project	Highway/Road	Between Spanish Fork Road and Heber-Kamas Road	–	5 miles	12	▪ Road centerline buffered for a 30-foot-wide corridor based on the portion of existing road alignment the project follows (USFS 2012i)	USFS 2012j
Uinta Express Pipeline Company	Uinta Express Pipeline – East Canyon Route	Pipeline	Begins 9.7 miles south of Myton, Utah, and ends 2 miles northwest of Salt Lake City, Utah	U420, U430	150 miles	1,819	▪ 50-foot wide to 100-foot-wide corridor created by buffering the pipeline's centerline according to the description of the permanent right-of-way in the Uinta Basin Express Pipeline Public Scoping letter (Uinta-Wasatch-Cache National Forest, January 2014)	USFS 2013e
Bureau of Reclamation								
No actions have been identified or no data have been received to use in the cumulative effects analysis.								
State								
State of Utah School and Institutional Trust Lands Administration (SITLA)								
	Santaquin Residential, Utah County	Residential	1.6 miles northwest of Rocky Ridge, Utah	–	566 acres	566	▪ Entire project lease boundary considered since development in each lease or project area currently is unknown	SITLA 2013b

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]	Ground Disturbance (acres)	Development Assumptions for Analysis[3]	Source of Alignments or Boundaries
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.								
Emery County								
–	Blue Castle Nuclear Power Plant Project	Power generation	4 miles west-northwest of Green River, Utah	–	1,030 acres	1,030	▪ Area in the project boundary considered as the development area since development at this point is unknown	Emery County 2009a
–	–	Wind-energy facilities	20 miles east of Castle Dale, Utah	–	3,838 acres	3,838	▪ Area in the project boundary considered as the development area since development at this point is unknown	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	–	3.8 miles	34	▪ Road centerline buffered for a 75-foot-wide corridor based on the average road width for an interstate ▪ Average identified by EPG staff after measuring existing interstates	BLM 2012as
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								
No actions have been identified or no data have been received to use in the cumulative effects analysis.								
City of Naples								
–	Proposed Golf Course (private)	Recreation	2 miles east of Naples, Utah	–	433 acres	433	▪ Area in the project boundary considered as the development area since development at this point is unknown	Naples City 2009a
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	▪ Area in the project boundary considered as the development area since the subdivision development at this point is unknown	Wasatch County 2013

NOTES:
[1]All locations are approximate unless township/range/section is provided.
[2]The acreage and mileage is calculated from the available data received from agencies or digitized maps.
[3]The assumptions were used in the quantification portion of the cumulative analysis to achieve an approximate amount of disturbance for each action.
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 was unavailable due to the project being in the early stages of development. These reasonably foreseeable future actions include:

- Multi-State Projects
  - LS Power and Wyoming Infrastructure Authority Wyoming-Colorado Intertie Transmission Project
  - High Plains Express Transmission Project
  - Regional Watershed Supply Project Pipeline
- BLM Rawlins Field Office
  - 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
- BLM Moab Field Office
  - Professor Valley Land and Water Conservation Fund Site Land Purchase
- BLM Richfield Field Office
  - May 2013 Oil and Gas lease
  - Surface Transportation Board
- Uinta Basin Rail Project
- Duchesne County
  - Source gas pipeline
  - Myton to Wellington pipeline

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	▪ 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	▪ 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 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
Soil Resources	▪ 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 1-mile from either side of the reference centerline of 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 development associated with the Project, other present and past projects, and RFFAs to assess potential impacts on soils susceptible to wind/water erosion and prime farmland	None
Mineral Resources	▪ 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 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
Paleontological Resources	▪ 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 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
Water Resources	▪ What are the cumulative effects of the Project, other present and past projects, and RFFAs on: • 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	Analyze potential impacts on surface water quality and potential impacts on wetlands and riparian areas by estimating extent of potential cumulative loss of water resources as well as wetlands and riparian areas associated with the Project, other present and past projects, and RFFAs	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) Assess potential cumulative impacts on areas with high potential for discharging erosion-related sediment into water resources (i.e., areas particularly susceptible to erosion) Assess potential contribution to existing cumulative impacts on water resources from wildfire and vegetation management actions
Vegetation	▪ What are the cumulative effects of the Project, other present and past projects, and RFFAs on: • the spread of noxious weeds; and • wetland and riparian areas?	12-digit HUC (subwatershed) 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	Assess potential cumulative impacts on vegetation associated with the spread of noxious weeds Assess potential contribution to existing cumulative impacts on vegetation resources from wildfire and vegetation management actions.
Special Status Plants	▪ 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 12-digit HUC (subwatershed) 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 Assess potential contribution to existing cumulative impacts on special status plant resources from wildfire and vegetation management actions

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	▪ 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?	**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	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 crucial (Utah and Wyoming) and severe (Colorado) big game habitat	Assess potential cumulative impacts on mammals and reptiles that may inhabit the project area Assess potential contribution to existing cumulative impacts on wildlife resources from wildfire and vegetation management actions
Special Status Wildlife	▪ What are the cumulative effects of the Project, other present and past projects, and RFFAs on special status wildlife species, including: • 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) Assess potential contribution to existing cumulative impacts on special status wildlife resources from wildfire and vegetation management actions
Migratory Birds	▪ What are the cumulative effects of the Project, other present and past projects, and RFFAs on: ▪ Sensitive migratory bird species ▪ Areas identified as important to migratory bird conservation ▪ Migratory bird habitat	**Migratory birds**: the Project area, and its contribution as a part of the Central and Pacific migratory flyways **Conservation areas**: the Project area **Migratory bird habitat**: Vegetation communities in 12-digit HUC (subwatershed) 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	Habitat loss is discussed in the context of its impacts on migratory birds, but is quantitatively analyzed by reference to the Vegetation analysis. No other cumulative impacts are quantified.	Assess potential cumulative impacts on migratory birds related to direct impacts (mortality, disturbance) and indirect impacts (habitat alteration and fragmentation) Assess potential contribution to existing cumulative impacts on migratory birds from wildfire and vegetation management actions
Fish and Aquatic Resources	▪ What are the cumulative effects of the Project, other present and past projects, and RFFAs on: • 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
Land Use Resources	▪ 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 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	▪ 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	▪ 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
Congressional Designations	▪ What are the impacts of the Project, other present and past projects, and RFFAs on congressional designations	Boundary of congressional designation 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 congressional designation area potentially crossed by the Project	None

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
Special Designations and Other Management Areas	▪ What are the impacts of the Project, other present and past projects, and RFFAs on special designations and other management areas?	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
Lands with Wilderness Characteristics	▪ What are the impacts of the Project, other present and past projects, and RFFAs on lands with wilderness characteristics, natural areas, or lands with wilderness characteristics adopted into a BLM resource management plan (RMP)?	Boundary of lands with wilderness characteristics, natural area, or lands with wilderness characteristics adopted into a BLM RMP 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 lands with wilderness characteristics adopted into a BLM RMP potentially crossed by the Project	Evaluate potential cumulative impacts on wilderness criteria inventoried on lands with wilderness characteristics
U.S. Forest Service Inventoried Roadless Areas (IRAs) and Unroaded/Undeveloped area	▪ 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 characteristics
Visual Resources	▪ What are the cumulative effects of the Project, other present and past projects, and RFFAs on: • scenery; and • views from residences and other viewing areas (e.g., travel routes, recreation areas, and special designations)?	**Scenery**: Scenic Quality Rating Units (SQRU) that would be fully or partially located within 3 miles of the alternative routes were considered **Viewers**: Defined by the agency-approved simulation locations that would have views of the Project and of the TransWest Express and/or Gateway West transmission projects, where the projects could be colocated	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	**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) **Viewers**: Illustrate potential cumulative impacts on viewers at 32 key observation points using visual simulations	**Scenery**: For key SQRUs, assess cumulative effects on landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modification as appropriate
National Trails System	▪ What are the cumulative effects of the Project, other present and past projects, and RFFAs on National Scenic and Historic Trail's resources, qualities, values, associated settings, or primary use(s)?	**National Scenic Trails:** Extent of trail alignment located in BLM Field Offices traversed by the Project **National Historic Trails:** High potential route segments and high potential historic sites for congressionally-designated trails, or feasibility study alignments for trails under study, adjacent to the Project	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 cumulative effects on National Scenic and Historic Trail resources, qualities, values, associated settings, or primary use(s)
Cultural Resources	▪ What are the cumulative effects of the Project, other present and past projects, and RFFAs on: • archaeological and historic sites; • cultural resources dependent on visual settings (e.g., national historic trails); and • traditional cultural properties?	4-mile-wide study corridor 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
Wildland and Fire Ecology Management	▪ 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	▪ 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	▪ What are the potential health effects of the Project, other present and past projects, and RFFAs on humans and animals from electric and magnetic fields? ▪ Would the Project, other present and past projects, and RFFAs cause interference with cellular phone, Internet, radio and/or television reception? ▪ What are the 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

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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

TABLE 4-4 DATA COMPONENTS OF EXISTING DEVELOPMENT BASE LAYER	
Dataset	**Attributes**
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
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-feet-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-feet-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-feet-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-feet-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 and present actions 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 HAPs—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 SF_6, 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. The entire county is considered a nonattainment area with respect to the NAAQS for PM_{10}.

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 H. 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 NO_2 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

NO_2 resulting from Project construction would not be anticipated. In addition, the 1-hour NO_2 NAAQS is based on a 3-year average of submaximum 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 submaximum 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 CO_2e per mile of transmission line. Total emissions for the Applicant's Preferred Alternative (Alternatives WYCO-B and COUT-C) would total approximately 50,000 tons of CO_2e 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 CO_2e each. In contrast, the energy-related CO_2 emissions in the U.S. totaled 6,215 million tons in 2010 (U.S. Energy Information Administration 2011a); energy related CO_2 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 energy-related emissions in the U.S., a minor additional contribution to cumulative emissions.

During operation of the series compensation stations, approximately 50 tons of CO_2e (as SF_6) would be emitted per year. This represents less than 0.000001 percent of annual energy-related emissions in the U.S., 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 and present actions 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 affect 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 and present actions 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 alternations to the natural environment stemming from construction of the Project, other past and present projects, and RFFAs, such that the local soil resources would be stabilized or returned to a state close to their preconstruction 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 and present actions 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. The types of impacts on mineral resources that could occur with implementation of the Project are discussed in Section 3.2.2.4.2.

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. Permitted mines are present along all of the WYCO alternative routes with the greatest past and present development along Alternative WYCO-D. Coal and other leases are present along all of the WYCO alternative routes with the greatest past and present development along Alternative WYCO-D. Oil and gas leases are present along all of the WYCO alternative routes with the greatest past and present development along Alternative WYCO-D. 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 and 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, 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, 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

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

Sensitive soils with moderate or high susceptibility to water or wind erosion, would experience the greatest cumulative effects along Alternative WYCO-D; whereas, the least cumulative effects would occur along Alternative WYCO-C (Table 4-5).

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			
WYCO-B (Agency and Applicant Preferred Alternative)	26,415	1,962	3,331	3,079	8,373	18,043
WYCO-C	26,896	2,906	2,577	3,008	8,491	18,405
WYCO-D	31,974	4,254	2,061	3,266	9,581	22,393
WYCO-F	28,025	1,987	3,344	3,116	8,447	10,579

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

Past and present developments that would have cumulative effects on sensitive soils include:

- BLM vegetation treatments in the Little Snake Field Office
- BLM oil and gas units in the BLM Price, Richfield, and Vernal Field Offices
- oil and gas leases on Colorado and Utah state lands
- Chokecherry Wind Farm Expansion
- Seven Mile Hill Wind Energy Facility
- Gateway West Transmission Project

RFFAs that would have cumulative effects on sensitive soils include:

- Continental Divide-Creston Junction oil and gas project
- TransWest Express Transmission Project
- Hogback Ridge (Whirlwind I) Wind Energy Project

Designated Farmland Soils

Designated farmland soils would experience similar cumulative effects along all of the WYCO alternative routes (Table 4-6).

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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
WYCO-B (Agency and Applicant Preferred Alternative)	18,183	874	586	247	1,707	16,476
WYCO-C	18,183	874	586	247	1,707	16,476
WYCO-D	31,959	7,517	704	274	8,494	23,464
WYCO-F	18,183	874	586	246	1,706	16,477
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Past and present developments that would have cumulative effects on designated farmland soils include oil and gas fields. The RFFA that would have cumulative effects on designated farmland soils is the TransWest Express Transmission Project.

Existing Mineral Operations

Active Mining Claims and Producing Wells

Active mining claims and producing wells are common along the WYCO alternative routes with concentrations in Wyoming (Table 4-7). Cumulative effects on active mines and producing wells would be greatest along Alternatives WYCO-B and WYCO-C, which are similar, and would be the least along Alternative WYCO-D.

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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
WYCO-B (Agency and Applicant Preferred Alternative)	13,510	1,731	787	100	2,617	10,893
WYCO-C	12,313	1,651	616	78	2,345	9,968
WYCO-D	8,798	1,446	435	66	1,948	6,850
WYCO-F	14,237	1,763	895	86	2,744	11,493
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Past and present developments that would cumulatively affect active mines include:

- Chokecherry Wind Farm Expansion
- Sevenmile Hill Wind Energy Facility
- oil and gas leases on Colorado and Wyoming state lands
- BLM oil and gas units on the White River and Little Snake Field Offices
- Gateway West Transmission Project

RFFAs that would cumulatively affect active mines and producing wells include:

- Continental Divide-Creston Junction oil and gas project
- TransWest Express Transmission Project
- Hogback Ridge (Whirlwind I) Wind Energy Project

Active Mining Claims

Active mining claims are only present along Alternative WYCO-D, and cumulative effects would be associated with reasonably foreseeable future projects (Table 4-8).

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			
WYCO-D	39	0	2	0	2	37

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

Permitted Mines

Permitted mines occur infrequently along the WYCO alternative routes and would experience the greatest cumulative effect along Alternative WYCO-D (Table 4-9).

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			
WYCO-B (Agency and Applicant Preferred Alternative)	182	12	2	3	17	165
WYCO-C	234	21	0	0	21	212
WYCO-D	1,180	295	13	1	308	872
WYCO-F	208	13	3	3	19	188

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

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

Coal and Other Leases

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 would be least along Alternative WYCO-B (Table 4-10).

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			
WYCO-B (Agency and Applicant Preferred Alternative)	5,118	2,157	147	29	2,333	2,785
WYCO-C	29,204	2,484	147	55	2,643	26,561
WYCO-D	145,254	7,952	532	117	8,602	136,652
WYCO-F	5,123	2,206	187	29	2,422	2,701

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

Past and present developments 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
- Chokecherry Wind Farm Expansion
- Gateway West Transmission Project

RFFAs that would have cumulative effects on coal and other leases include:

- Continental Divide-Creston Junction oil and gas project
- TransWest Express Transmission Project
- Hogback Ridge (Whirlwind I) Wind Energy Project

Oil and Gas Leases

Oil and gas leases are present to varying degrees along the WYCO alternative routes (Table 4-11). Cumulative effects would be greatest along Alternative WYCO-D and would be least along Alternative WYCO-B.

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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
WYCO-B (Agency and Applicant Preferred Alternative)	251,742	7,198	8,302	1,115	16,614	235,128
WYCO-C	268,734	9,099	7,946	1,086	18,131	250,603
WYCO-D	224,946	15,186	6,371	1,080	22,637	202,309
WYCO-F	255,177	7,695	8,706	821	17,223	237,954
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Past and present developments 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
- Chokecherry Wind Farm Expansion
- Gateway West Transmission Project

RFFAs that would have cumulative effects on oil and gas leases include:

- Continental Divide-Creston Junction oil and gas project
- TransWest Express Transmission Project
- Hogback Ridge (Whirlwind I) Wind Energy Project

Potential Mineral Resource Areas

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 (Table 4-12).

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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
WYCO-B (Agency and Applicant Preferred Alternative)	114,687	5,078	5,221	1,283	11,583	103,105
WYCO-C	122,599	6,353	4,905	1,325	12,583	110,017
WYCO-D	171,269	24,530	5,709	1,594	31,834	139,435
WYCO-F	131,966	6,126	6,577	1,341	14,044	117,922
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 alternative routes 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 alternative routes 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 near the Project.

Soil Resources

Sensitive Soils

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 (Table 4-13).

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	34,964	3,107	2,830	3,365	9,301	25,663
COUT BAX-C	36,132	3,519	4,199	3,095	10,813	25,319
COUT BAX-E	36,744	3,477	4,015	3,302	10,794	25,950

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

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
- Carbon County proposed ATV trail

RFFAs that cumulatively would affect sensitive soils include:

- Kerr-McGee oil and gas development
- Narrows proposed East Bench and Oak Creek pipeline
- TransWest Express Transmission Project

Designated Prime or Unique Farmland Soils

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 similar along all of the COUT BAX alternative routes (Table 4-14).

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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT BAX-B	36,786	11,580	733	328	12,640	24,145
COUT BAX-C	36,786	11,580	733	326	12,638	24,147
COUT BAX-E	39,821	11,298	817	383	12,498	27,323
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Past and present developments that cumulatively would affect designated Prime or Unique Farmland soils include:

- 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
- Ferron Natural Gas project
- 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
- TransWest Express Transmission Project

Existing Mineral Operations

Active Mining Claims and Producing Wells

Active mines 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 (Table 4-15). Cumulative effects on active mines and producing wells would be greatest along Alternative COUT BAX-E.

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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT BAX-B	22,666	11,769	409	138	12,315	10,351
COUT BAX-C	22,870	11,727	520	137	12,384	10,486
COUT BAX-E	48,598	33,901	509	168	34,578	14,021
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Past and present developments that cumulatively would affect active mines and producing wells include:

- existing mines and 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
- Enterprise Mid-America pipeline

The RFFA that cumulatively would affect active mines and producing wells is the TransWest Express Transmission Project.

Active Mining Claims

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 (Table 4-16).

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			
COUT BAX-B	660	57	34	20	111	549
COUT BAX-C	660	57	34	20	111	549
COUT BAX-E	1,640	65	47	45	157	1,484

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

Past and present developments that cumulatively would affect active mining claims include existing gravel pits and BLM oil and gas units. The RFFA that cumulatively would affect active mining claims is the TransWest Express Transmission Project.

Permitted Mines

Permitted mines occur intermittently along the COUT BAX alternative routes, and cumulative effects on permitted mines along Alternative COUT BAX-E are less than Alternatives COUT BAX-B and COUT BAX-C (Table 4-17).

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	613	165	0	0	165	448
COUT BAX-C	613	165	0	0	165	448
COUT BAX-E	535	76	0	0	76	460

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

Past and present developments that cumulatively would affect permitted mines along the COUT BAX alternative routes would include:

- exiting gravel pits
- BLM oil and gas units
- various mines
- Ferron Natural Gas Project
- Enterprise Mid-America Pipeline

There are no known RFFAs that would cumulatively affect permitted mines in the area of analysis.

Coal and Other Leases

Coal and other leases occur frequently along the COUT BAX alternative routes (Table 4-18). Cumulative effects on these types of leases along the COUT BAX alternative routes would be equal along Alternatives COUT BAX-B and COUT BAX-C and less along Alternative COUT BAX-E.

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	79,116	42,530	665	250	43,445	35,671
COUT BAX-C	79,116	42,530	665	248	43,443	35,672
COUT BAX-E	135,272	32,982	1,233	304	34,519	100,753

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

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
- Ferron Natural Gas Project
- Liberty Pioneer Gas Exploration project
- UDOGM oil and gas well pads
- Enterprise Mid-America Pipeline

RFFAs that would cumulatively affect coal and other leases would include:

- Narrows proposed reservoir site
- TransWest Express Transmission Project
- Green River Industrial project

Oil and Gas Leases

Oil and gas leases occur frequently along the COUT BAX alternative routes, and cumulative effects would be greatest along Alternative COUT BAX-C, and would be least along Alternative COUT BAX-E (Table 4-19).

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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT BAX-B	536,434	49,710	5,051	1,923	56,684	479,750
COUT BAX-C	546,252	50,913	20,239	1,859	73,010	473,242
COUT BAX-E	542,612	41,514	10,657	1,910	54,080	488,532
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

Past and present developments that would have cumulative effects on oil and gas leases include:

- various existing oil and gas well pads on lands administered by BLM and SITLA
- potash leases
- Ferron Natural Gas project
- Enterprise Mid-America Pipeline

RFFAs that would be cumulative effects on oil and gas leases include:

- TransWest Express Transmission Project
- Green River Industrial project
- proposed Narrows reservoir
- Woodside power generation project

Geothermal Leases

Geothermal leases occur infrequently along the COUT BAX alternative routes and cumulative effects on geothermal leases would only occur along Alternative COUT BAX-E (Table 4-20).

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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT BAX-B	26	0	0	0	0	26
COUT BAX-C	26	0	0	0	0	26
COUT BAX-E	78	1	25	0	26	52
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

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.

Potential Mineral Resource Areas

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).

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	312,535	28,012	6,102	3,094	37,208	275,327
COUT BAX-C	325,548	29,574	18,028	2,825	50,426	275,122
COUT BAX-E	330,876	27,897	17,758	3,015	48,670	282,206

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

Sensitive Soils

The greatest cumulative effects on sensitive soils and moderate or high susceptibility to water or wind erosion would occur along Alternative COUT-B and the least cumulative effects would occur along Alternative COUT-H (Table 4-22).

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			
COUT-A	24,627	3,389	2,847	2,854	9,090	15,537
COUT-B	25,461	3,473	4,064	2,353	9,890	15,570
COUT-C (Agency and Applicant Preferred Alternative)	22,537	3,075	3,158	2,785	9,018	13,519
COUT-H	22,296	3,489	2,763	1,956	8,208	14,088
COUT-I	27,327	4,328	2,186	2,846	9,359	17,968

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

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
- oil and gas leases and well pads on Utah state lands

RFFAs that would have cumulative effects on sensitive soils would include:

- Strawberry Highlands project
- TransWest Express Transmission Project

Designated Prime and Unique Farmland Soils

Designated Prime and Unique Farmland soils occur along the COUT alternative routes and would experience the greatest cumulative effects along Alternative COUT-B (Table 4-23). The least cumulative effects would occur along Alternative COUT-C.

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			
COUT-A	27,517	12,521	456	208	13,185	14,332
COUT-B	29,429	13,731	485	197	14,413	15,016
COUT-C (Agency and Applicant Preferred Alternative)	17,097	9,279	252	126	9,657	7,440
COUT-H	22,187	10,555	362	115	11,032	11,155
COUT-I	20,900	9,960	336	183	10,480	10,420

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

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
- 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:

- Narrows proposed East Bench and Oak Creek pipeline
- Mona South transmission line project
- TransWest Express Transmission Project

Existing Mineral Operations

Active Mines and Producing Wells

Active mines and producing wells occur to varying degrees along the COUT alternative routes (Table 4-24). Cumulative effects on active mines and producing wells would be the greatest along Alternatives COUT-H and COUT-I and the least along Alternatives COUT-A and COUT-B.

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			
COUT-A	22,614	12,635	286	97	13,018	9,596
COUT-B	23,908	12,701	325	82	13,108	10,800
COUT-C (Agency and Applicant Preferred Alternative)	41, 281	19,661	339	231	20,232	21,049
COUT-H	53,992	30,542	369	229	31,140	22,852
COUT-I	63,137	34,668	462	288	35,418	27,719

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

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
- Roosevelt pipeline

RFFAs that cumulatively would affect active mines and producing wells would include:

- Blacktail Ridge exploratory drilling project
- TransWest Express Transmission Project

Active Mining Claims

Active mining claims occur equally along Alternatives COUT-C, COUT-H, and COUT-I (Table 4-25).

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			
COUT-A	0	0	0	0	0	0
COUT-B	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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT-C (Agency and Applicant Preferred Alternative)	25,712	2,227	89	72	2,389	23,323
COUT-H	25,712	2,227	89	72	2,388	23,324
COUT-I	26,163	2,231	89	76	2,396	23,767
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

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
- BLM oil and gas units in the Vernal Field Office

The RFFA that cumulatively would affect active mining claims is the TransWest Express Transmission Project.

Permitted Mines

Permitted mines occur infrequently along the COUT alternative routes and Alternative COUT-I would have the greatest cumulative effects (Table 4-26).

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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT-A	395	52	3	0	55	340
COUT-B	551	56	3	0	59	492
COUT-C (Agency and Applicant Preferred Alternative)	499	56	3	0	59	439
COUT-H	156	30	7	0	36	120
COUT-I	268	117	0	0	117	151
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

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
- Ferron Natural Gas project

The RFFA that cumulatively would affect permitted mines is the TransWest Express Transmission Project.

Coal and Other Leases

Coal and other leases would occur frequently along the COUT alternative routes and Alternative COUT-I would have the greatest cumulative effects and Alternative COUT-B would have the least cumulative effects (Table 4-27).

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			
COUT-A	3,308	1,547	37	25	1,609	1,699
COUT-B	2,656	538	43	0	581	2,075
COUT-C (Agency and Applicant Preferred Alternative)	7,322	1,240	38	17	1,295	6,027
COUT-H	105,410	25,212	612	17	25,841	79,568
COUT-I	155,510	58,263	845	176	59,284	96,225

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

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
- 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:

- TransWest Express Transmission Project
- Kerr-McGee oil and gas development project
- Narrows proposed reservoir

Oil and Gas Leases

Oil and gas leases occur frequently along the COUT alternative routes (Table 4-28). Alternative COUT-I would have the greatest cumulative effects and Alternative COUT-A would have the least.

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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT-A	224,917	23,014	2,720	1,199	26,932	197,985
COUT-B	279,177	27,404	3,020	1,082	31,506	247,671
COUT-C (Agency and Applicant Preferred Alternative)	471,604	63,901	3,325	1,769	68,995	402,609
COUT-H	511,427	71,097	3,174	1,466	75,737	435,691
COUT-I	627,257	91,583	4,019	2,250	97,852	529,405
NOTE: Acreages are approximate and have been rounded to the nearest 100 acres; therefore, the columns may not total.						

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
- oil and gas leases and well pads on Utah state lands
- metalliferous mineral on Utah state lands

RFFAs that cumulatively would affect oil and gas leases would include:

- TransWest Express Transmission Project
- Kerr-McGee oil and gas development

Geothermal Leases

Geothermal leases occur rarely along the COUT alternative routes (Table 4-29). Alternatives COUT-C, COUT-H, and COUT-I would have the greatest cumulative effect. No cumulative effects on geothermal leases would occur along Alternatives COUT-A and COUT-B.

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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT-A	26	0	0	0	0	26
COUT-B	26	0	0	0	0	26
COUT-C (Agency and Applicant Preferred Alternative)	52	14	0	0	14	38

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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT-H	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.						

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 is the Kerr-McGee oil and gas development project.

Potential Mineral Resource Areas

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).

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						
		No Action Alternative				
Alternative Routes	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT-A	225,939	35,444	7,423	2,569	45,435	180,505
COUT-B	238,896	32,473	5,834	1,959	40,266	198,630
COUT-C (Agency and Applicant Preferred Alternative)	226,065	28,010	4,663	2,770	35,443	190,622
COUT-H	226,146	188,506	4,756	1,952	39,592	186,554
COUT-I	271,242	42,498	4,993	2,850	50,341	220,901
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 and present actions and 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)
WYCO-B (Agency and 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-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-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

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)**
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

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)**
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-B	Same as COUT-A	Same as COUT-A
COUT-C (Agency and Applicant Preferred Alternative)	Same as COUT-A	Same as COUT-A
COUT-H	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 past and present 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
WYCO-B (Agency and Applicant Preferred Alternative)	Chokecherry and Sierra Madre Wind Farm, Gateway West Transmission Project, 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, TransWest Express Transmission Project, Hogback Ridge (Whirlwind I) Wind Energy Project
WYCO-C	Same as WYCO-B	Same as WYCO-B
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-F	Same as WYCO-B	Same as WYCO-B

For the WYCO alternative routes, 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, Gateway West Transmission Project, 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. Also, Carl Allen 45 oil and gas development would be excluded from cumulative effects associated with Alternative WYCO-D. 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 Leases (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 past and present 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 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, 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 alternatives routes are similar. Projects that could have cumulative effects associated with the implementation of the Project for the COUT alternative routes 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
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-B	Same as COUT-A	Same as COUT-A
COUT-C (Agency and Applicant Preferred Alternative)	Same as COUT-A	Same as COUT-A
COUT-H	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, Utah 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, 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 an 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 the analysis of direct and indirect impacts from the Project (Section 3.2.4) and considers them in conjunction with the past and present actions and RFFAs listed in Tables 4-1 and 4-2.

As discussed in Section 3.2.4.4.2, impacts on groundwater resources from this Project have been found to be negligible and are not assessed further.

For this analysis, water resources were categorized separately as either surface water resources (perennial waters such as streams and lakes) or wetland-riparian water resources (waters associated with wetland and riparian systems) to most appropriately assess potential cumulative impacts on water resources relative to issues identified for analysis (Table 4-3). 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, respectively, for either surface water resources or wetland-riparian 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 route, represents the CIAA for that proposed alternative route. Cumulative impacts by alternative route are addressed quantitatively where possible. Additional cumulative effects on water resources, particularly valuable or susceptible to ground-disturbing activities (e.g., specially designated waters, wetlands and riparian areas, perennial systems) or areas with high potential for discharging erosion-related sediment into water resources (i.e., areas particularly susceptible to erosion), are addressed qualitatively in Section 4.3.4.3.

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.

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 development of 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 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.

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.

In addition to the previously listed developments, wildfires and vegetation management practices that modify riparian and wetland habitats can affect water resources by decreasing soil stability, inhibiting the ability to moderate heavy flows, and removing shade. Modification of this nature results in higher water temperatures, decreased oxygen potential, and embeddedness of the substrate, which reduces breeding habitat that many aquatic species rely on for reproduction. The subsequent outcome of these results can change 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. Water resources

affected by wildfires and vegetation management were excluded from the quantitative analysis as aquatic communities can recover from these events. Recovery from wildfires depends on the time since the occurrence, precipitation amounts, vegetation community type, fire intensity, and degree of associated degradation (weed invasion, soil loss, soil hydrophobicity, and alteration of riparian community structure).

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 surface and wetland-riparian water resources are summarized in Tables 4-37 and 4-38.

TABLE 4-37
SURFACE 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			
WYCO-B (Agency and Applicant Preferred Alternative)	184,552	13,400	546	11	13,957	170,596
WYCO-C	184,552	13,400	546	13	13,959	170,594
WYCO-D	236,067	20,153	639	26	20,817	215,249
WYCO-F	184,552	13,400	546	11	13,956	170,596

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

TABLE 4-38
WETLAND-RIPARIAN 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			
WYCO-B (Agency and Applicant Preferred Alternative)	194,291	43,388	1,809	39	45,236	149,056
WYCO-C	194,291	43,388	1,809	41	45,238	149,053
WYCO-D	209,399	46,976	1,824	46	48,845	160,554
WYCO-F	194,291	43,388	1,809	35	45,232	149,059

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 alternative routes are distributed throughout nine subbasins (refer to Section 3.2.4) and range between 184,552 and 236,067 acres of surface water resources and between 194,291 and 209,399 acres of wetland-riparian water resources, depending on the alternative 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 alternative routes, which could currently be affecting water resources. These activities include coal mines the Gateway West Transmission Project, 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; 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 alternative routes, 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 area of the WYCO alternative routes.

In addition to the effects of past and present actions, water resources in the CIAA in association with the WYCO alternative routes have been affected by wildfires and vegetation management actions. The water resources affected by wildfires in the CIAA for the WYCO alternative routes occur mostly in Moffat County, Colorado, with the greatest concentration of wildfires associated with the CIAA for Alternative WYCO-D. Water resources affected by vegetation management actions, including prescribed burns, occur mostly in Carbon County, Wyoming, in association with Alternative WYCO-D. The Mud Springs (2007), Bitter Brush (2006), Lone Tree (2007), and Winter Valley (2000) fires, as well as prescribed burns and other vegetation management treatments conducted by the BLM Rawlins and Little Snake Field Offices, account for most of the effect on water resources resulting from wildfires or vegetation management actions. As recovery from disturbance events depends on the time since the occurrence, precipitation amounts, vegetation community type, disturbance intensity, and degree of associated degradation, it is difficult to determine the degree of localized recovery relative to each of the listed events. However, due to the amount of time that has elapsed since many of the listed events, water resources in the CIAA as a whole are likely in various stages of recovery.

The RFFAs in the CIAA include the proposed Project, the Rosebud coal mine, the Continental Divide-Creston Junction and Kerr-McGee oil and gas projects, and TransWest Express transmission projects, and the Hogback Ridge (Whirlwind I) 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 on surface water resources estimated for the WYCO alternative routes differ between alternative routes. The incremental Project development would account for approximately 11 to 26 acres (approximately 0.07 to 0.1 percent) of the total estimated cumulative effect on surface water resources in the CIAA. Development of the Project when added to the past and present actions and RFFAs could result in potential cumulative effects on approximately 13,956 to 20,817 acres (approximately 8 to 9 percent) of the total available surface 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.

The incremental effect of Project development on wetland-riparian water resources estimated for the WYCO alternative routes differs between alternative routes. The incremental Project development would

account for approximately 35 to 46 acres (approximately 0.07 to 0.09 percent) of the total estimated cumulative effect on wetland-riparian water resources in the CIAA. Development of the Project when added to the past and present actions and RFFAs could result in potential cumulative effects on approximately 45,232 to 48,845 acres (approximately 23 percent) of the total available wetland-riparian 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 surface and wetland-riparian water resources are summarized in Tables 4-39 and 4-40.

TABLE 4-39
SURFACE 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	206,691	16,344	56	47	16,447	190,245
COUT BAX-C	223,389	18,759	241	47	19,047	204,342
COUT BAX-E	223,389	18,759	241	57	19,057	204,333

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

TABLE 4-40
WETLAND-RIPARIAN 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	84,804	20,893	77	15	20,985	63,820
COUT BAX-C	99,087	25,065	686	15	25,766	73,322
COUT BAX-E	99,087	25,065	686	17	25,768	73,319

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 alternative routes are distributed throughout nine subbasins (refer to Section 3.2.4) and range between 206,691 and 223,389 acres of surface water resources and between 84,804 and 99,087 acres of wetland-riparian water resources, 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 alternative routes, which could currently be affecting water resources, include coal mines, noncoal mines, oil and gas developments, oil shale and tar sands development, pipelines (including the Enterprise Mid-America and Western Expansion II projects), and the Clear Creek residential development.

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 close to the CIAA of the COUT BAX alternative routes.

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 alternative routes 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.

In addition to the effects of past and present actions, water resources in the CIAA in association with the COUT BAX alternative routes have been affected by wildfires and vegetation management actions. The water resources affected by wildfires and vegetation management occur mostly along the Wasatch Plateau and occur in comparatively equal concentrations relative to each COUT BAX alternative route. The Seeley (2012), Wood Hollow (2012), and Salt Creek (2007) fires as well as USFS timber sales and fuel treatments conducted by Manti-La Sal National Forest account for most of the effect on water resources resulting from wildfire and vegetation management actions associated with the COUT BAX alternative routes. As recovery from disturbance events depends on the time since the occurrence, precipitation amounts, vegetation community type, disturbance intensity, and degree of associated degradation, it is difficult to determine the degree of localized recovery relative to each of the listed events. However, due to the amount of time that has elapsed since many of the listed events, water resources within the CIAA as a whole are likely in various stages of recovery.

RFFAs in the CIAA for the COUT BAX alternative routes 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 alternative routes (refer to Section 3.2.4.3.2) are especially susceptible to effects from past and present actions 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 and present actions 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 and present actions 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 on surface water resources estimated for the COUT BAX alternative routes differs between alternative routes. The incremental Project development would account for approximately 47 to 57 acres (approximately 0.2 to 0.3 percent) of the total estimated cumulative effects on surface water resources in the CIAA. Development of the Project when added to the past and present actions and RFFAs could result in potential cumulative effects on approximately 16,447 to 19,057 acres (approximately 8 to 9 percent) of the total surface 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.

The incremental effect of Project development on wetland-riparian water resources estimated for the COUT BAX alternative routes differs between alternative routes. The incremental Project development would account for approximately 15 to 17 acres (approximately 0.07 percent) of the total estimated cumulative effect on wetland-riparian water resources in the CIAA. Development of the Project when added to the past and present actions and RFFAs could result in potential cumulative effects on approximately 20,985 to 25,768 acres (approximately 25 to 26 percent) of the total available wetland-riparian 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.

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

Results of the analysis of cumulative effects on surface and wetland-riparian water resources are summarized in Tables 4-41 and 4-42

TABLE 4-41
SURFACE 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			
COUT-A	203,932	12,688	221	29	12,938	190,994
COUT-B	207,869	14,609	501	36	15,145	192,724

TABLE 4-41 SURFACE WATER RESOURCES CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT-C (Agency and Applicant Preferred Alternative)	207,131	14,899	502	34	15,435	191,696
COUT-H	222,720	17,213	497	17	17,727	204,993
COUT-I	222,720	17,213	497	29	17,739	204,981
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

TABLE 4-42 WETLAND-RIPARIAN WATER RESOURCES CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT-A	182,243	51,348	787	66	52,201	130,042
COUT-B	195,635	56,339	861	39	57,239	138,396
COUT-C (Agency and Applicant Preferred Alternative)	185,300	52,799	857	17	53,673	131,627
COUT-H	167,437	52,330	834	7	53,170	114,267
COUT-I	167,437	52,330	834	10	53,174	114,263
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 alternative routes are distributed throughout nine subbasins (refer to Section 3.2.4) and range between 203,932 and 222,720 acres of surface water resources and between 167,437 and 195,635 acres of wetland-riparian water resources, 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 alternative routes, which currently could be affecting water resources. These activities include active coal mines; Central Utah Telephone Fiber Optic communication lines; Lower Duchesne River Wetlands Project; 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; Carbon County proposed ATV trail; and a number of residential developments.

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 close to the CIAA of the COUT alternative routes.

In addition to the effects of past and present actions, water resources in the CIAA in association with the COUT alternative routes have been affected by wildfires and vegetation management actions. The water resources potentially affected by wildfires occur mostly along the Wasatch Plateau and occur in comparatively equal concentrations relative to each COUT alternative route. The Seeley (2012), Wood Hollow (2012), Salt Creek (2007), Church Camp (2012) and Mellen (2009) fires account for the most notable wildfire events associated with the COUT alternative routes. Water resources potentially affected by vegetation management actions also occur mostly along the Wasatch Plateau and in association with lands administered by the BLM Vernal Field Office. Vegetation management actions occur in comparatively equal concentrations relative to each COUT alternative route. USFS timber sales and fuel treatments conducted by Manti-La Sal National Forest, as well as habitat projects conducted by the BLM Vernal Field Office, account for most of the effect on water resources associated with vegetation management actions. As recovery from disturbance events depends on the time since the occurrence, precipitation amounts, vegetation community type, disturbance intensity, and degree of associated degradation, it is difficult to determine the degree of localized recovery relative to each of the listed events. However, due to the amount of time that has elapsed since many of the listed events, water resources in the CIAA as a whole are likely in various stages of recovery.

RFFAs in the CIAA for the COUT alternative routes 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 Boulger 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 alternative routes (refer to Section 3.2.4.3.2) are especially susceptible to past and present actions 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 characteristics. Where the CIAA crosses Colorado, slopes are not especially steep and soils are not characterizes 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 and present actions and RFFAs, crosses 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 and present actions and RFFAs would result in sediment being discharged to waterbodies and subsequently decreasing water quality.

The incremental effect of Project development on surface water resources estimated for the COUT alternative routes differs between alternative routes. The incremental Project development would account for approximately 17 to 36 acres (approximately 0.09 to 0.2 percent) of the total estimated cumulative effects on surface water resources in the CIAA. Development of the Project when added to the past and present actions and RFFAs could result in potential cumulative effects on approximately 12,938 to 17,739 acres (approximately 6 to 8 percent) of the total surface 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.

The incremental effect of Project development on wetland-riparian water resources estimated for the COUT alternative routes differs between alternative routes. The incremental Project development would account for approximately 7 to 66 acres (approximately 0.01 to 0.1 percent) of the total estimated cumulative effect on wetland-riparian water resources in the CIAA. Development of the Project when added to the past and present actions and RFFAs could result in potential cumulative effects on approximately 52,201 to 57,239 acres (approximately 29 percent) of the total available wetland-riparian 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.

4.3.5 Vegetation

This section addresses cumulative effects on vegetation 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 3.2.5.

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 and present actions and RFFAs (Tables 4-1 and 4-2) in conjunction with direct and indirect impacts from the Project (described in Section 3.2.5.4.3).

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 4.3.5.3).

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 4.3.5.3).

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 nineteenth 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 presettlement 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 land cover types are provided in Appendix J.

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 also are 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 predisturbance. Vegetation communities adjacent to disturbed areas also may differ in structure and composition from those that occurred predisturbance, 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 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 of the Proposed Action for environmental protection (refer to Table 2-8, Design Feature 2); however, it would be unlikely that disturbed areas would be restored to predisturbance 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 and present actions and RFFAs was estimated using shapefiles of specific projects received from agencies and local governments. Vegetation communities affected by wildfires and vegetation management were excluded from the quantitative analysis, as vegetation communities can recover from these events. Recovery from wildfires depends on the amount of time since the occurrence, precipitation amounts, vegetation community type, and degree of associated degradation (weed invasion, soil loss, and alteration of community structure). Incremental project development was estimated using assumptions of the extent of access road and transmission line tower disturbance per mile of alternative route 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.

Alpine

The incremental loss of alpine vegetation communities predicted for Alternative WYCO-D and the COUT-BAX and COUT alternative routes 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 4-43.

TABLE 4-43
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)						
WYCO-B (Agency and Applicant Preferred Alternative)	2	0	0	0	0	2
WYCO-C	2	0	0	0	0	2
WYCO-D	20	2	0	0	2	18
WYCO-F	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	689	6	6	701	4,073
COUT BAX-C	4,775	689	6	6	701	4,073
COUT BAX-E	1,637	292	6	1	300	1,337
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
COUT-A	3,948	1,117	35	5	1,156	2,792
COUT-B	4,960	1,750	48	3	1,801	3,159
COUT-C (Agency and Applicant Preferred Alternative)	2,425	228	19	2	249	2,177
COUT-H	3,495	703	16	2	721	2,773
COUT-I	5,847	1,036	16	17	1,069	4,778

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 include:

- coal mining operations
- pipelines
- oil and gas development
- residential development
- Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines)

RFFAs in the CIAA for alpine vegetation communities include:

- coal mining operations
- residential development
- TransWest Express Transmission Project

Alpine vegetation communities affected by wildfires and vegetation management occur mostly along the Wasatch Plateau. In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, the Seeley (2012) and Salt Creek (2007) fires and USFS timber sales and fuel treatments have affected alpine vegetation communities in the CIAA along the COUT BAX alternative routes and Alternatives COUT-H and COUT- I. Due to the high cover of barren ground and general low production, alpine vegetation communities are naturally fire resistant and mostly unaffected by timber management activities.

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 4-43). 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 4-43).

Aspen

The loss of aspen vegetation communities for the COUT BAX and COUT alternative routes 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 4-44.

TABLE 4-44
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)						
WYCO-B (Agency and Applicant Preferred Alternative)	444	10	2	0	12	433
WYCO-C	444	10	2	0	12	433
WYCO-D	20,711	1,344	1,260	0	2,604	18,107
WYCO-F	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	6,729	246	92	7,067	44,973
COUT BAX-C	52,040	6,729	246	91	7,067	44,973
COUT BAX-E	72,927	11,796	252	61	12,109	60,817

TABLE 4-44
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			
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
COUT-A	56,094	926	1,918	112	2,957	53,137
COUT-B	66,384	6,410	668	43	7,121	59,263
COUT-C (Agency and Applicant Preferred Alternative)	53,871	3,555	612	172	4,340	49,532
COUT-H	78,841	14,288	465	54	14,807	64,035
COUT-I	61,224	11,302	459	92	11,852	49,372

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 include:

- coal mining operations
- communication facility
- oil and gas development
- Narrows Reservoir
- Narrows Tunnel
- pipelines
- residential developments
- Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines)
- BLM White River Field Office range improvement lines

RFFAs in the CIAA that would affect aspen vegetation communities include:

- coal mining operations
- recreation management activities
- residential development
- sand and gravel mining
- TransWest Express Transmission Project
- transportation projects

Aspen vegetation communities in the CIAA occur mostly along the Wasatch Plateau. In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, these aspen vegetation communities have been affected by wildfire and vegetation management activities. Several large fires (the Seeley [2012], Church Camp [2012], and Garder [2002]) and multiple USFS timber sales and salvages have affected large areas of aspen vegetation communities, especially in the CIAA for the COUT-BAX alternative routes and Alternatives COUT-H and COUT- I. Extensive suckering and high growth rates allow aspen vegetation communities to rapidly recover from disturbances.

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 4-44). All cumulative effects, including those from the Project, affect a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-44).

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 4-45.

TABLE 4-45
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)						
WYCO-B (Agency and Applicant Preferred Alternative)	24,329	499	435	74	1,008	23,321
WYCO-C	33,104	572	554	52	1,178	31,926
WYCO-D	11,819	588	164	6	758	11,061
WYCO-F	25,057	501	403	40	945	24,112
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	131,558	3,874	5,440	269	9,584	121,974
COUT BAX-C	132,742	3,994	8,941	201	13,136	119,606
COUT BAX-E	122,555	4,336	5,906	229	10,471	112,084
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
COUT-A	50,110	3,038	488	92	3,618	46,492
COUT-B	59,084	3,294	268	85	3,648	55,436
COUT-C (Agency and Applicant Preferred Alternative)	73,456	6,560	289	146	6,994	66,461
COUT-H	76,184	6,745	281	135	7,160	69,024
COUT-I	86,395	7,911	350	155	8,417	77,978

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 include:

- coal mining operations
- pipelines
- White Sands missile launch facility
- noncoal mining operations
- oil and gas development
- oil shale development
- recreation management activities
- residential development
- Seep Ridge road paving project
- two wind-energy facilities
- Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines)
- BLM White River Field Office range improvement lines
- Gateway West Transmission Project

RFFAs in the CIAA that would affect barren/sparsely vegetated vegetation communities include:

- coal-mining operations
- oil and gas development
- Woodside power-generation facility
- recreation management activities
- residential development
- TransWest Express Transmission Project
- two wind-energy facilities

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, barren/sparsely vegetated vegetation communities affected by wildfires and vegetation management occur in the CIAA for all alternative routes. Multiple large fires, (Salt Creek [2007], Wolf Den [2012], and Wood Hollow [2012]), and several BLM habitat/rangeland/vegetation management activities, and the Sheep Creek Vegetation Management Area have affected large areas containing barren/sparsely vegetated vegetation communities in the CIAA. Due to the high cover of barren ground in barren/sparsely vegetated communities, fire effects tend to be minimal.

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 4-45). 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).

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 4-46.

TABLE 4-46
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)						
WYCO-B (Agency and Applicant Preferred Alternative)	690,168	23,132	13,791	1,671	38,594	651,575
WYCO-C	681,175	23,069	13,043	1,619	37,731	643,444
WYCO-D	869,397	37,271	17,935	2,309	57,515	811,882
WYCO-F	772,152	24,944	17,305	1,902	44,151	728,001
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	226,333	25,710	2,110	633	28,453	197,880
COUT BAX-C	225,446	25,706	2,155	595	28,456	196,991
COUT BAX-E	233,330	22,169	2,043	603	24,815	208,515
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
COUT-A	285,374	21,755	5,887	1,326	28,968	256,407
COUT-B	291,543	19,517	3,924	974	24,414	267,128

TABLE 4-46
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			
COUT-C (Agency and Applicant Preferred Alternative)	279,546	22,675	2,755	1,034	26,465	253,080
COUT-H	278,383	29,833	2,061	630	32,524	245,858
COUT-I	295,585	37,337	2,045	868	40,250	255,336

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 include:

- coal-mining operations
- communication facilities
- pipelines
- Utah National Guard training area
- non-coal mining operations
- oil and gas development
- oil shale development
- power generation station
- Carbon County ATV trail
- residential development
- transportation project
- three wind-energy facilities
- Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines)
- BLM White River Field Office range improvement lines
- Mona South and Gateway West transmission projects
- Narrows Reservoir
- Narrows Tunnel

RFFAs in the CIAA that would affect big sagebrush vegetation communities include:

- coal mining operations
- industrial development
- oil and gas development
- Uinta Express Pipeline
- power generation facilities and storage
- recreation management activities
- residential development
- TransWest Express Transmission Project
- transportation projects
- two wind-energy facilities

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, big sagebrush vegetation communities affected by wildfires and vegetation management occur in the CIAA for all alternative routes. Numerous fires, the largest being Mayberry (2006), Salt Creek (2007), Wolf Den (2012), and Wood Hollow (2012), Winter Valley (2000), and Church Camp (2012), and several BLM habitat/rangeland/vegetation management activities have affected large areas of big sagebrush

vegetation communities in the CIAA. Post-disturbance re-establishment occurs through seed germination and may take decades to mature, depending on precipitation, invasion of exotic annual grasses, soil conditions, and fire severity. Therefore, effects from wildfires can persist and account for substantial modification or temporary loss of big sagebrush vegetation communities.

Sagebrush does not resprout from roots following wildfires or vegetation treatments and, as a result, may take decades to become re-established on a site following a fire. Re-establishment rate is largely dependent on precipitation, soil conditions, and fire severity. Therefore, especially in areas with low precipitation, wildfires can account for substantial modification or temporary removal of big sagebrush vegetation communities.

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 4-46). 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).

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 4-47.

TABLE 4-47
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)						
WYCO-B (Agency and Applicant Preferred Alternative)	11,724	325	140	40	504	11,220
WYCO-C	11,742	325	140	40	504	11,238
WYCO-D	35,120	1,262	350	115	1,726	33,393
WYCO-F	12,354	350	140	40	529	11,825
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	41,473	2,846	377	81	3,303	38,170
COUT BAX-C	42,703	2,949	848	76	3,874	38,829
COUT BAX-E	37,348	2,533	750	63	3,346	34,002
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
COUT-A	7,717	398	66	13	476	7,240
COUT-B	11,666	763	102	31	896	10,770
COUT-C (Agency and Applicant Preferred Alternative)	12,697	1,309	180	57	1,546	11,151
COUT-H	13,503	1,985	177	49	2,211	11,291
COUT-I	19,393	2,612	193	78	2,882	16,511

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 include:

- coal mining operations
- pipelines
- Utah National Guard training area
- White Sands missile launch facility
- non-coal mining operations
- oil and gas development
- oil shale development
- Carbon County ATV trail
- residential development
- transportation projects
- two wind-energy facilities
- Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines)
- BLM White River Field Office range improvement lines
- Gateway West transmission Project
- Mona South Transmission Project

RFFAs in the CIAA that would affect grassland vegetation communities include:

- coal mining operations
- industrial development
- oil and gas development
- power generation facilities, including a nuclear power plant
- recreation management activities
- residential development
- Hogback Ridge (Whirlwind I) Wind Energy Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, grassland vegetation communities affected by wildfires and vegetation management occur in the CIAA for all alternatives. Numerous fires (the largest being Mayberry [2006], Salt Creek [2007], Wolf Den [2012], Wood Hollow [2012], Winter Valley [2000], and Church Camp [2012] and several BLM habitat/rangeland/vegetation management activities have affected large areas in the CIAA for all alternative routes. Grassland vegetation communities can recover within a decade through resprouting and recruitment, depending on precipitation, fire severity, and invasion of exotic annual grasses. Invasion by exotic grasses has the potential to permanently alter grassland vegetation community structure without active management. As such, wildfires can result in substantial loss or modification of grassland vegetation communities.

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 4-47). All cumulative effects, including those from the Project, affect a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-47).

Montane Forest

The loss of montane forest vegetation communities under COUT BAX and COUT alternative routes 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 4-48.

TABLE 4-48 MONTANE FOREST VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
WYCO-B (Agency and Applicant Preferred Alternative)	190	0	0	0	0	190
WYCO-C	190	0	0	0	0	190
WYCO-D	5,655	30	3	0	32	5,623
WYCO-F	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	9,506	76	74	9,657	53,959
COUT BAX-C	63,627	9,506	76	74	9,656	53,971
COUT BAX-E	59,350	7,739	84	12	7,834	51,516
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
COUT-A	38,420	559	1,457	50	2,066	36,355
COUT-B	60,680	2,596	478	18	3,092	57,588
COUT-C (Agency and Applicant Preferred Alternative)	50,368	1,611	304	55	1,970	48,398
COUT-H	58,070	7,936	254	29	8,219	49,851
COUT-I	66,080	13,912	183	104	14,199	51,881
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 include:

- coal mining operations
- noncoal mining operations
- prescribed fires for the BLM White River Field Office
- oil and gas development
- oil shale development
- pipelines
- residential development
- Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines)
- BLM White River Field Office range improvement lines
- Narrows Reservoir

RFFAs in the CIAA that would affect montane forest vegetation communities include:

- coal mining operations
- oil and gas development
- residential development
- TransWest Express Transmission Project
- transportation projects
- Hogback Ridge (Whirlwind I) Wind Energy Project

Montane forest vegetation communities occur mostly along the Wasatch and Tavaputs plateaus. In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, several large fires (Seeley [2012], Church Camp [2012], and Garder [2002]) and multiple USFS timber

sales and salvages affect montane forest vegetation communities in the CIAA for all COUT and COUT-BAX alternative routes. Wildfires occur naturally within montane forest vegetation communities and may be beneficial. However, the effects of stand-replacing fires and timber removals persist and may account for temporary loss of montane forest vegetation communities.

All impacts on montane forest vegetation communities from Project activities would 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 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 4-48). All cumulative effects, including those from the Project, affect a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-48).

Mountain Shrub

The loss of mountain shrub vegetation communities for Alternative WYCO-D and the COUT BAX and COUT alternative routes 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 4-49.

TABLE 4-49
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)						
WYCO-B (Agency and Applicant Preferred Alternative)	699	4	0	0	4	695
WYCO-C	699	4	0	0	4	695
WYCO-D	19,495	1,851	2,869	3	4,724	14,771
WYCO-F	700	5	0	0	5	695
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	91,534	4,280	652	192	5,125	86,410
COUT BAX-C	91,524	4,280	652	191	5,123	86,401
COUT BAX-E	95,525	4,365	738	241	5,344	90,181
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
COUT-A	91,837	1,534	675	283	2,492	89,346
COUT-B	112,856	2,754	942	290	3,986	108,870
COUT-C (Agency and Applicant Preferred Alternative)	109,267	2,495	920	365	3,780	105,488
COUT-H	63,271	4,794	644	177	5,616	57,655
COUT-I	56,671	5,951	535	144	6,631	50,041

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 include:

- coal mining
- a communication facility
- 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)
- BLM White River Field Office range improvement lines
- Narrows Reservoir

RFFAs in the CIAA that would affect mountain shrub vegetation communities include:

- coal mining
- oil and gas development
- pipelines
- recreation management activities
- residential development
- TransWest Express Transmission Project
- Squaw Creek Road relocation
- wind-energy facility

Mountain shrub vegetation communities occur mostly along the Wasatch and Tavaputs plateaus with minor occurrences west of the Park Range. In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, several large fires (Seeley [2012], Wood Hollow [2012], and Salt Creek [2007]) and multiple BLM and USFS vegetation management activities (the largest being the Sheep Creek Vegetation Management Area) are in the CIAA for Alternative WYCO-D and all COUT and COUT-BAX alternative routes. Following disturbance, most plant species in mountain shrub vegetation communities resprout and can re-establish rapidly, depending on precipitation and severity. As such, effects from vegetation management and wildfires may result in temporary loss of mountain shrub vegetation communities.

Impacts on mountain shrub vegetation 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 4-49). All cumulative effects, including those from the Project, affect a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-49).

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 4-50.

TABLE 4-50 PINYON-JUNIPER VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
WYCO-B (Agency and Applicant Preferred Alternative)	73,325	836	351	117	1,304	72,022
WYCO-C	73,327	835	351	115	1,301	72,026
WYCO-D	68,031	1,258	223	71	1,552	66,479
WYCO-F	74,100	858	363	115	1,336	72,765
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	385,582	13,880	3,079	644	17,602	367,980
COUT BAX-C	382,924	13,832	3,941	573	18,345	364,579
COUT BAX-E	365,072	13,624	1,903	556	16,082	348,989
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
COUT-A	179,104	13,284	1,125	413	14,821	164,283
COUT-B	161,824	6,778	1,412	370	8,560	153,264
COUT-C (Agency and Applicant Preferred Alternative)	194,073	8,571	1,453	588	10,612	183,461
COUT-H	213,367	12,390	1,169	352	13,911	199,456
COUT-I	230,570	18,015	1,283	510	19,808	210,763
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 include:

- coal mining
- communication facility
- pipelines
- noncoal mining operations
- oil and gas development
- oil shale development
- Carbon County ATV trail
- residential development
- Gateway West and Mona South transmission projects
- transportation projects
- two wind-energy facilities
- Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines)
- BLM White River Field Office range improvement lines

RFFAs in the CIAA that would affect pinyon-juniper vegetation communities include:

- coal mining
- industrial development
- oil and gas development
- Uinta Express pipeline
- Woodside power generation facility
- recreation management activities

- TransWest Express Transmission Project
- two wind-energy facilities

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, numerous fires (the largest being Wolf Den [2012] and Wood Hollow [2012]) and several BLM habitat/rangeland/vegetation management activities occur in the CIAA for all alternative routes. Most management activities in pinyon-juniper vegetation communities remove pinyon and juniper trees to prevent encroachment into other vegetation communities. These activities can have a persistent effect on the reduction of pinyon-juniper vegetation communities.

All impacts on pinyon-juniper vegetation communities from Project activities would 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 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 4-50). All cumulative effects, including those from the Project, affect a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-50).

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 4-51.

TABLE 4-51
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)						
WYCO-B (Agency and Applicant Preferred Alternative)	10,593	944	283	32	1,259	9,333
WYCO-C	12,032	994	328	21	1,343	10,689
WYCO-D	15,474	2,725	310	37	3,072	12,403
WYCO-F	11,820	988	342	29	1,359	10,461
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	12,117	4,442	60	14	4,516	7,601
COUT BAX-C	11,835	4,358	506	14	4,878	6,957
COUT BAX-E	11,646	2,161	600	17	2,777	8,869
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
COUT-A	21,224	4,133	675	62	4,869	16,355
COUT-B	12,675	2,749	115	24	2,888	9,786
COUT-C (Agency and Applicant Preferred Alternative)	12,203	1,413	51	16	1,480	10,722
COUT-H	9,920	1,549	27	6	1,582	8,337
COUT-I	14,311	4,593	41	10	4,643	9,667

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 include:

- coal mining
- communication facility
- pipelines
- noncoal mining operations
- oil and gas development
- oil shale development
- Carbon County ATV trail
- residential development
- two wind-energy facilities
- Gateway West Transmission Project
- Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines)
- BLM White River Field Office range improvement lines

RFFAs in the CIAA that would affect riparian vegetation communities include:

- coal mining
- industrial development
- a diversion dam
- oil and gas development
- Uinta Express pipeline
- Woodside power generation station
- residential development
- TransWest Express Transmission Project
- a wind-energy facility

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, numerous fires (the largest being Salt Creek [2007] and Nebo Creek [2001]) and several BLM vegetation management activities occur in the CIAA for all alternative routes. These vegetation communities are naturally resistant to fire and experience minimal direct effects from wildfires, but may be affected by associated increases in erosion and runoff.

All impacts on riparian vegetation communities from Project activities would 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 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 4-51). All cumulative effects, including those from the Project, affect a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-51).

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 4-52.

TABLE 4-52 SHRUB/SHRUB STEPPE VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
		No Action Alternative				
Alternative Route	**Total Available Resource**	**Past and Present Development**	**Reasonably Foreseeable Future Actions**	**Incremental Project Development**	**Estimated Cumulative Development**	**Remaining Available Resource**
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)						
WYCO-B (Agency and Applicant Preferred Alternative)	360,242	14,370	9,946	1,076	25,392	334,850
WYCO-C	427,124	16,195	11,581	1,083	28,859	398,265
WYCO-D	245,575	14,528	8,208	554	23,290	222,286
WYCO-F	377,763	14,825	11,504	921	27,251	350,512
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	522,635	31,733	11,800	1,285	44,817	477,818
COUT BAX-C	556,949	33,460	23,027	1,205	57,692	499,257
COUT BAX-E	532,359	32,778	19,328	1,413	53,519	478,840
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
COUT-A	123,701	12,624	1,080	412	14,116	109,584
COUT-B	148,516	19,285	1,270	325	20,880	127,635
COUT-C (Agency and Applicant Preferred Alternative)	246,956	36,123	1,962	650	38,735	208,221
COUT-H	253,017	36,521	1,973	640	39,134	213,883
COUT-I	339,386	46,255	2,506	1,016	49,777	289,609
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 include:

- coal mining
- communication facility
- pipelines
- industrial development
- Utah National Guard military training area
- White Sands missile launch facility
- non-coal mining operations
- oil and gas development
- oil shale development
- power generation
- Carbon County ATV trail
- residential development
- transportation projects
- three wind-energy facilities
- Mona South, and Gateway West transmission projects
- Uinta-Wasatch-Cache National Forest range improvement projects (i.e., fences and waterlines)
- BLM White River Field Office range improvement lines

RFFAs in the CIAA that would affect shrub/shrub steppe vegetation communities include:

- coal mining
- industrial development
- Uinta Express pipeline
- oil and gas development
- power generation projects
- TransWest Express Transmission Project
- Hogback Ridge (Whirlwind I) Wind Energy Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, numerous fires (the largest being Wolf Den [2012] and Winter Valley [2000]) and several BLM vegetation management activities occur in the CIAA for all alternative routes. Post-disturbance re-establishment occurs through seed germination and may take decades to mature depending on precipitation, invasion of exotic annual grasses, soil conditions, and fire severity. Therefore, effects from wildfires can persist and account for substantial modification or temporary loss of shrub/shrub steppe vegetation communities.

All impacts on shrub/shrub steppe vegetation communities from Project activities would 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 4-52). 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 4-52). All cumulative effects, including those from the Project, affect a moderate amount of the total extent of these vegetation communities in the CIAA (Table 4-52).

Water

The loss of water vegetation communities for all alternative routes 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 4-53.

TABLE 4-53
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)						
WYCO-B (Agency and Applicant Preferred Alternative)	6,559	215	21	8	243	6,316
WYCO-C	6,892	218	15	7	239	6,653
WYCO-D	6,831	619	29	6	654	6,178
WYCO-F	6,786	280	27	6	313	6,473
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	4,098	684	72	4	759	3,339
COUT BAX-C	4,185	687	81	2	770	3,415
COUT BAX-E	4,570	741	68	3	813	3,757

TABLE 4-53 WATER VEGETATION COMMUNITY CUMULATIVE EFFECTS SUMMARY IN ACRES						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
COUT-A	10,491	1,587	9	6	1,602	8,889
COUT-B	4,043	964	13	5	982	3,062
COUT-C (Agency and Applicant Preferred Alternative)	3,243	229	11	3	243	3,000
COUT-H	5,176	334	9	6	349	4,827
COUT-I	5,358	591	9	4	604	4,754
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 include:

- coal-mining operations
- pipelines
- noncoal mining operations
- oil and gas development
- oil shale development
- residential development
- two wind-energy facilities
- Gateway West Transmission Project
- fences and water range improvement projects for the BLM White River Field Office

RFFAs in the CIAA that would affect water vegetation communities include:

- coal mining
- oil and gas development
- Uinta Express pipeline
- power generation facilities
- TransWest Express Transmission Project
- Hogback Ridge (Whirlwind I) Wind Energy Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, numerous fires (the largest being Salt Creek [2007], Seeley [2012], and Church Camp [2012] and several BLM vegetation management activities occur in the CIAA for all alternative routes. These vegetation communities are naturally resistant to fire and experience minimal direct effects from wildfires, but may be affected by associated increases in erosion and runoff.

All impacts on water vegetation communities from Project activities would 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 4-53). 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 4-53). All cumulative effects, including those from the Project, affect a moderate portion of the total extent of these vegetation communities in the CIAA (Table 4-53).

Wetland

The loss of wetland vegetation communities under the WYCO and COUT-BAX alternative routes and Alternatives COUT-A and COUT-B would contribute to the cumulative loss of wetland vegetation communities in the CIAA. The extent of cumulative development on wetland vegetation communities for all relevant alternative routes is summarized in Table 4-54.

TABLE 4-54
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)						
WYCO-B (Agency and Applicant Preferred Alternative)	10,862	1,016	283	15	1,315	9,548
WYCO-C	11,358	1,000	230	25	1,255	10,103
WYCO-D	15,126	5,471	298	11	5,780	9,346
WYCO-F	12,003	1,099	336	16	1,451	10,552
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)						
COUT BAX-B	546	173	9	1	183	364
COUT BAX-C	553	176	9	1	185	368
COUT BAX-E	660	183	12	1	195	464
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)						
COUT-A	7,688	6,204	26	4	6,235	1,453
COUT-B	7,137	5,281	64	14	5,360	1,778
COUT-C (Agency and Applicant Preferred Alternative)	238	34	1	0	35	203
COUT-H	273	58	1	0	60	214
COUT-I	272	89	1	0	91	182

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 include:

- coal mining
- oil and gas development
- Gateway West Transmission Project
- two wind-energy facilities

RFFAs in the CIAA that would affect wetland vegetation communities include:

- coal mining
- Uinta Express pipeline
- oil and gas development
- TransWest Express Transmission Project
- Hogback Ridge (Whirlwind I) Wind Energy Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, numerous fires, the largest being Church Camp (2012), and several BLM vegetation management activities occur in the CIAA for all alternative routes. These vegetation communities are naturally

resistant to fire and experience minimal direct effects from wildfires, but may be affected by associated increases in erosion and runoff.

All impacts on wetland vegetation communities from Project activities would 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 4-54). 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 4-54). All cumulative effects, including those from the Project, affect a considerable portion of the total extent of these vegetation communities in the CIAA (Table 4-54).

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 route 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 across the Project area and, therefore, quantitative analysis of cumulative impacts on these species is not possible for the purposes of this EIS. Cumulative effects on USFS-listed sensitive plant species are addressed in the Biological Evaluation available on the BLM website for the Project and Vegetation and Special Status Plants Report (USFS 2015a).

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 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.

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 have a negative impact on long-term population 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 are discussed quantitatively in Section 4.3.6.

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 nineteenth 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 J.

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, likely have 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 design feature of the Proposed Action for environmental protection (refer to Table 2-8, Design Feature 2); however, it is unlikely that disturbed areas could be restored to predisturbance 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(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. Areas affected by wildfires were excluded from the quantitative analysis as vegetation communities can recover from these events. Recovery from wildfires depends on the time since the occurrence, precipitation amounts, plant species, and degree of associated degradation (weed invasion, soil loss, and fire intensity). Vegetation management areas were also excluded for similar reasons; additionally, these areas were assumed to have beneficial effects. 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 the extent of disturbance per mile of alternative routes as described in Section 2.5.1.2.

Predicted cumulative effects were analyzed for species for 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)

The WYCO alternative routes 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 4-55.

TABLE 4-55 UTE LADIES'-TRESSES HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES IN ACRES						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
WYCO-B (Agency and Applicant Preferred Alternative)	14,340	1,448	216	5	1,668	12,671
WYCO-C	16,380	1,465	288	5	1,757	14,623
WYCO-D	24,282	7,617	309	12	7,938	16,344
WYCO-F	16,385	1,571	304	10	1,884	14,501
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 that would affect Ute ladies'-tresses potential habitat include:

- coal-mining operations
- 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
- 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)
- Gateway West Transmission Project

RFFAs in the CIAA for Ute ladies'-tresses potential habitat include:

- coal-mining operations
- Continental Divide-Creston Junction oil and gas project
- TransWest Express Transmission Project
- Hogback Ridge (Whirlwind I) Wind Energy Project

Ute ladies' tresses potential habitat within the CIAA for all WYCO alternative routes is largely unaffected by historic wildfires and vegetation management activities.

The incremental project-related development in Ute ladies'-tresses potential habitat would account for only a minor portion (between 5 and 12 acres) of the total cumulative effects predicted in the CIAA for the WYCO alternative routes considered (Table 4-55).

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

All COUT BAX alternative routes cross potential habitat for Ute ladies'-tresses and Cisco milkvetch, and Alternative COUT BAX-C crosses San Rafael cactus habitat.

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 4-56.

TABLE 4-56
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	11,977	4,555	45	15	4,615	7,362
COUT BAX-C	11,690	4,474	498	14	4,986	6,704
COUT BAX-E	11,190	2,258	594	16	2,868	8,322

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

- coal-mining operations
- Central Utah Telephone Fiber Optic Line
- 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
- Ferron natural gas project
- Enterprise Mid-America pipelines
- residential development
- Narrows Proposed East Bench and Oak Creek pipeline

RFFAs in the CIAA for all COUT BAX alternative routes that would affect Ute ladies'-tresses potential habitat include:

- Golden Eagle, LLC oil and gas development
- Twin Bridges Resources oil and gas development
- Woodside power generation facility
- TransWest Express Transmission Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, potential habitat for Ute ladies' tresses in the CIAA may have been affected by historic wildfires or vegetation management activities for all COUT-BAX alternative routes. Two fires (Westwater [2006] and Salt Creek [2012]) burned in areas near potential Ute ladies' tresses habitat. While the species grows in wetland habitats that are less likely to burn in fire events, these habitats may be affected by subsequent sedimentation from adjacent burned upland habitats or damaged by high flow events.

The incremental project-related development in Ute ladies'-tresses potential habitat would account for only a minor portion (between 14 and 16 acres) of the total cumulative effects predicted in the CIAA for the COUT BAX alternative routes considered (Table 4-56).

Cisco Milkvetch

The incremental project-related impacts resulting in loss, fragmentation, and modification of Cisco milkvetch habitat for all COUT BAX alternative routes 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 is summarized in Table 4-57.

TABLE 4-57 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						
		No Action Alternative				
Alternative Route	**Total Available Resource**	**Past and Present Development**	**Reasonably Foreseeable Future Actions**	**Incremental Project Development**	**Estimated Cumulative Development**	**Remaining Available Resource**
COUT BAX-B	146,502	3,856	915	475	5,246	141,256
COUT BAX-C	146,502	3,856	915	475	5,243	141,259
COUT BAX-E	146,502	3,856	915	468	5,239	141,263
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 include:

- SITLA active humic shale and potash leases
- BLM Moab Field Office oil and gas units
- SITLA active oil and gas extraction leases
- Enterprise Mid-America pipelines

The only RFFAs in the CIAA for the COUT BAX alternative routes that would affect Cisco milkvetch habitat is the TransWest Express Transmission Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, potential habitat for Cisco milkvetch in the CIAA for all COUT-BAX alternative routes has also been affected by historic wildfires occurs. Four small fires account for all of these effects and only affect small areas of potential habitat for Cisco milkvetch.

The incremental project-related development in Cisco milkvetch habitat would account for a moderate portion (between 468 and 475 acres) of the total cumulative effects predicted in the CIAA for the COUT BAX alternative routes considered (Table 4-57).

San Rafael Cactus

Alternatives COUT BAX-B and COUT BAX-C cross San Rafael cactus habitat. Impacts on San Rafael cactus habitat would not contribute to the cumulative loss, fragmentation, and modification of San Rafael cactus habitat in the CIAA for these alternative routes as all areas where the Project would affect habitat for this species are in the extent of past and present actions and RFFAs (Table 4-58). The extent of cumulative development on San Rafael cactus habitat for all relevant alternative routes is summarized in Table 4-58.

TABLE 4-58 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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT BAX-B	3,594	69	22	0	91	3,503
COUT BAX-C	3,865	75	22	0	96	3,769
NOTE: Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.						

Existing roads and transmission lines in the COUT BAX-B and COUT BAX- C CIAAs account for the majority of total cumulative development in San Rafael cactus habitat.

The only RFFA in the CIAA for Alternatives COUT BAX-B and COUT BAX- C that would affect San Rafael cactus habitat is the TransWest Express Transmission Project.

No potential San Rafael cactus habitat in the CIAA for any of COUT-BAX alternative routes has been affected by historic wildfires or vegetation management activities. UDWR watershed restoration focus areas occur in the CIAA, but any adverse effect from these activities will be minimal.

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. Therefore, the analysis conducted predicts no incremental Project-related development in San Rafael cactus habitat in the CIAA for Alternatives COUT BAX- B and COUT BAX- C. However, whether the Project would incrementally contribute to the effects on this species would be dependent on the degree to which individuals and habitat could be avoided during the design of the Project. Colocating Alternatives COUT BAX-B and COUT BAX- C with the TransWest Express Transmission Project and existing transmission lines would help reduce the effects on this species. However, the cumulative effects analysis found that up to 22 acres of habitat for this species could be affected.

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. Alternatives COUT-A, COUT-B, and COUT-C cross clay phacelia habitat. 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, COUT-H, and COUT-I. Graham's beardtongue and White River beardtongue habitat are crossed by Alternatives COUT-B, COUT-C, 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 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 4-59.

TABLE 4-59 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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT-A	20,363	10,484	98	28	10,611	9,752
COUT-B	17,894	7,980	154	40	8,174	9,720
COUT-C (Agency and Applicant Preferred Alternative)	10,484	1,401	21	14	1,437	9,047
COUT-H	9,782	1,563	20	10	1,593	8,189
COUT-I	14,672	4,614	35	14	4,662	10,010
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. Lesser extents of potential habitat for Ute-ladies'-tresses occur in the cumulative effects analysis areas of Alternatives COUT-C, COUT-H, and COUT-I.

Past and present activities in the CIAA for all COUT alternative routes that would affect Ute ladies'-tresses potential habitat include:

- coal-mining operations
- the Central Utah Telephone fiber optic line
- 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
- UDOGM oil well pads
- recreation management activities
- residential development
- Narrows Proposed East Bench and Oak Creek Pipeline

RFFAs in the CIAA that would affect Ute ladies'-tresses potential habitat include:

- Kerr-McGee oil and gas development
- Monument Butte oil and gas development
- industrial development
- TransWest Express Transmission Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, potential habitat for Ute ladies' tresses in the CIAA may have been affected by historic wildfires or vegetation management activities for all COUT alternative routes. Two fires (Nebo Creek [2001] and Salt

Creek [2012]) burned in areas near potential Ute ladies' tresses habitat. While the species grows in wetland habitats that are less likely to burn in fire events, these habitats may be affected by subsequent sedimentation from adjacent burned upland habitats or damaged by high flow events.

The incremental Project-related development in potential habitat for Ute ladies'-tresses would account for only a minor portion (between 10 and 40 acres) of the total cumulative effects predicted in the CIAA for the COUT alternative routes considered (Table 4-59).

Clay Phacelia

Alternatives COUT-A, COUT-B, and COUT-C cross clay phacelia habitat. Impacts on clay phacelia habitat would contribute to the cumulative loss, fragmentation, and modification of clay phacelia habitat in the CIAA for these alternative routes. The extent of cumulative development on clay phacelia habitat for all relevant alternative routes is summarized in Table 4-60.

TABLE 4-60
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			
COUT-A	535	19	6	1	26	509
COUT-B	1,283	65	31	7	104	1,179
COUT-C (Agency and Applicant Preferred Alternative)	1,283	65	31	8	104	1,179

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 that would affect clay phacelia habitat include:

- D&RGW Railways
- Mona to Bonanza 345 kV transmission line
- Spanish Fork 345 kV and 138 kV transmission lines
- 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 include:

- TransWest Express Transmission Project

In addition to the past, present and RFFAs quantitatively analyzed in this section, and a small wildfire and the Sheep Creek vegetation management area may have affected potential clay phacelia habitat in the CIAA for Alternatives COUT-A, COUT-B and COUT-C. Any effects from these events should be minimal as the fire burned very minor portions of potential habitat and the USFS activities in the Sheep Creek vegetation management area avoid clay phacelia habitat.

The FWS has expressed concern about the potential effects of additional development to suitable and occupied clay phacelia habitat, including the construction and operation of the Energy Gateway South and TransWest Express transmission lines. 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 Uinta-Wasatch-Cache National Forest.

Of the 1,348 acres of USFS modeled habitat, roughly 40 percent and 95 percent is contained in the CIAA for Alternative COUT-A and Alternatives COUT-B and COUT-C, respectively. Total cumulative development affects less than 10 percent of potential suitable habitat in the relevant CIAA (4.9 percent for Alternative COUT-A and 8.4 percent for Alternatives COUT-B and COUT-C). Development associated with the Project would contribute between 3.8 percent and 7.7 percent to the total estimated cumulative development and would affect between 0.2 percent and 0.6 percent of modeled potential habitat in the relevant CIAAs. The contribution of the Project to effects on clay phacelia along these alternative routes would depend on the degree of colocation with other planned and existing transmission lines and the amount of habitat that could be avoided during construction of the Project. Under any action alternative, the majority of the available clay phacelia would be unaffected by past, present, and reasonably foreseeable future development. 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 for Alternatives COUT-C, 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 is summarized in Table 4-61.

TABLE 4-61
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			
COUT-C (Agency and Applicant Preferred Alternative)	37,077	2,179	94	73	2,346	34,731
COUT-H	37,077	2,179	94	73	2,345	34,732
COUT-I	37,077	2,179	94	71	2,344	34,733

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 include:

- 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
- SITLA active metalliferous mineral leases
- UDOGM gas well pads
- gilsonite mining operations

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

Potential clay reed-mustard habitat in the CIAA for any COUT alternative route is largely unaffected by historic wildfires or vegetation management activities.

The incremental Project-related development in clay reed-mustard habitat would account for only a minor portion (71 to 73 acres) of the total cumulative effects predicted in the CIAA for the COUT alternative routes considered (Table 4-61).

Graham's Beardtongue

The incremental Project-related impacts resulting in loss, fragmentation, and modification of Graham's beardtongue habitat for Alternatives COUT-B and COUT-C, 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 is summarized in Table 4-62.

TABLE 4-62
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			
COUT-B	38,005	2,017	707	89	2,813	35,191
COUT-C (Agency and Applicant Preferred Alternative)	89,588	4,395	550	135	5,080	84,508
COUT-H	89,323	4,365	530	111	5,006	84,317
COUT-I	89,323	4,365	530	110	5,004	84,319

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:

- 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

The RFFAs in the CIAA that would affect Graham's beardtongue habitat include:

- TransWest Express Transmission Project

In addition to the past, present and RFFAs analyzed quantitatively in this section, potential habitat for Graham's beardtongue in the CIAA for all COUT alternative routes has been affected by historic

wildfires and vegetation management. Two large fires (Church Camp [2012] and Garder [2002]) affect small areas of potential habitat in the CIAA for Alternatives COUT-B, COUT-C, COUT-H, and COUT-I. BLM vegetation management activities affect even smaller areas in the CIAA for Alternative COUT- B. Fire disturbance effects should be minimal due to the low vegetation cover in potential Graham's beardtongue habitat.

The incremental Project-related development in Graham's beardtongue habitat would account for only a minor portion (89 to 135 acres) of the total cumulative effects predicted in the CIAA for all COUT alternative routes (Table 4-62).

Uinta Basin Hookless Cactus

The loss, fragmentation, and modification of Uinta Basin hookless cactus habitat under Alternatives COUT-C, 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 is summarized in Table 4-63.

TABLE 4-63
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			
COUT-C (Agency and Applicant Preferred Alternative)	223,055	34,639	1,398	482	36,519	186,536
COUT-H	223,055	34,639	1,398	478	36,515	186,540
COUT-I	223,055	34,639	1,398	470	36,507	186,548

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 include:

- 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
- Peter's Point Loop pipeline
- Seep Ridge Road paving project

RFFAs in the CIAA that would affect Uinta Basin hookless cactus habitat include:

- TransWest Express Transmission Project
- Monument Butte EIS oil and gas development
- Kerr-McGee oil and gas development

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, Uinta Basin hookless cactus habitat in the CIAA for Alternatives COUT-C, COUT-H, and COUT- I has been affected by a small wildfire. As this fire affected a very minor portion of potential habitat and potential habitat has low vegetation cover, the effects should be minimal.

The incremental Project-related development in Uinta Basin hookless cactus habitat would account for a moderate portion (between 470 and 482 acres) of the total cumulative effects predicted in the CIAA for the COUT alternative routes considered (Table 4-63).

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

The loss, fragmentation, and modification of Level 1 *Sclerocactus* core habitat for Alternatives COUT-C, 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 4-64.

TABLE 4-64
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			
COUT-C (Agency and Applicant Preferred Alternative)	20,564	2,961	66	21	3,049	10,515
COUT-H	20,564	2,961	66	21	3,048	17,516
COUT-I	20,564	2,961	66	20	3,048	17,516

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 include:

- 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
- UDOGM gas well pads

RFFAs in the CIAA for Uinta Basin hookless cactus include:

- TransWest Express Transmission Project
- Monument Butte EIS oil and gas development
- Kerr-McGee oil and gas development

The incremental Project-related development in Level 1 *Sclerocactus* core habitat would account for only a minor portion (approximately 20 acres) of the total cumulative effects predicted in the CIAA for Alternatives COUT-C, COUT-H, and COUT-I (Table 4-64).

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, Level 1 *Sclerocactus* core habitat in the CIAA for Alternatives COUT-C, COUT-H and COUT-I has been affected by a small wildfire. As this fire affected a very minor portion of potential habitat and potential habitat has low vegetation cover, the effects should be minimal.

The FWS has recommended that Level 1 *Sclerocactus* core habitat areas be managed to exclude additional ground disturbance (FWS 1990). 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 4 percent (approximately 87 acres) of the total estimated cumulative ground disturbance in Level 1 *Sclerocactus* core habitat areas, and ground disturbance resulting from the Project would only range be approximately 20 acres (approximately 35 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. Micro-siting 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 for Alternatives COUT-C, 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 is summarized in Table 4-65.

TABLE 4-65
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			
COUT-C (Agency and Applicant Preferred Alternative)	65,353	9,379	281	107	9,766	55,587
COUT-H	65,353	9,379	281	105	9,765	55,588
COUT-I	65,353	9,379	281	104	9,763	55,590

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 include:

- 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
- UDOGM gas well pads

RFFAs in the CIAA for Uinta Basin hookless cactus include:

- TransWest Express Transmission Project
- Monument Butte EIS oil and gas development
- Kerr-McGee oil and gas development

The incremental Project-related development in Level 2 *Sclerocactus* core habitat would account for only a minor portion (104 to 107 acres) of the total cumulative effects predicted in the CIAA for Alternatives COUT-C, COUT-H, and COUT-I (Table 4-65).

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, Level 2 *Sclerocactus* core habitat in the CIAA for Alternatives COUT-C, COUT- H and COUT-I has been affected by a small wildfire. As this fire affected a very minor portion of potential habitat and potential habitat has low vegetation cover, the effects should be minimal.

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 1990). Disturbance from past and present actions accounts for approximately 14 percent (9,379 acres) of total surface area in Level 2 *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 4 percent (385 to 388 acres) of the total estimated cumulative ground disturbance in Level 2 *Sclerocactus* core habitat areas, and ground disturbance resulting from the Project would range from 104 to 107 acres (approximately 30 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. Micro-siting 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 COUT-C, 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 is summarized in Table 4-66.

TABLE 4-66 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						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
COUT-B	38,005	2,017	707	89	2,813	35,191
COUT-C (Agency and Applicant Preferred Alternative)	89,531	4,415	550	128	5,093	84,437
COUT-H	89,266	4,385	530	111	5,026	84,240
COUT-I	89,266	4,385	530	110	5,024	84,242
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:

- 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

The RFFAs in the CIAA that would affect White River beardtongue habitat is the TransWest Express Transmission Project.

In addition to the past, present and RFFAs analyzed quantitatively in this section, potential habitat for White River beardtongue in the CIAA for all COUT alternative routes has been affected by historic wildfires and vegetation management. Two large fires (Church Camp [2012] and Garder [2002]) affect small areas of potential habitat in the CIAA for Alternatives COUT-B, COUT-C, COUT-H, and COUT-I. BLM vegetation management activities affect even smaller areas in the CIAA for Alternatives COUT- B. Fire disturbance effects should be minimal due to the low vegetation cover within potential White River beardtongue habitat.

The incremental Project-related development in White River beardtongue habitat would account for only a minor portion (89 to 128 acres) of the total cumulative effects predicted in the CIAA for Alternatives COUT- B, COUT-C, COUT-H and COUT-I (Table 4-66).

4.3.7 Wildlife

The section addresses potential cumulative effects on wildlife resources resulting from the Project in addition to past and present actions 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 4-67). 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 histories that support the analysis of cumulative effects, refer to Section 3.2.7.4 and Appendix J.

The geographic scope for detailed analysis of cumulative effects on wildlife resources is identified by species in Table 4-67. CIAAs were established for wildlife species based on the best available information regarding species-specific home ranges 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 2005, 2006a, 2006b), 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). 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, 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 (i.e., the degree to which these actions could place pressure on local wildlife populations and have additive effects on big game limiting factors such as 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. Areas affected by wildfires were excluded from the quantitative analysis, as vegetation communities can recover from these events. Recovery from wildfires depends on the time since the occurrence, precipitation amounts, plant species, and degree of associated degradation (weed invasion, soil loss, and fire intensity). Vegetation management areas were also excluded for similar reasons; additionally, these areas were assumed to have beneficial effects.

TABLE 4-67
CUMULATIVE IMPACTS ANALYSIS AREAS AND RATIONALE FOR WILDLIFE

Habitat Types[1]	Cumulative Impacts Analysis Area[2]	Rationale	Type and Source of Spatial Data[3]
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, 2011b), 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, 2010a), critical winter range and migration corridors (CPW 2012d), seasonal range boundaries (UDWR 2007b)
Pronghorn Fawning 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 pronghorn and local pronghorn populations that may be affected by the Project	Seasonal range and migration corridors (WGFD 2008, 2010a), severe winter range, and migration corridors (CPW 2012e), summer and yearlong habitats (UDWR 2010a)
Moose Calving Ground 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 2011d)
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)

TABLE 4-67
CUMULATIVE IMPACTS ANALYSIS AREAS AND RATIONALE FOR WILDLIFE

Habitat Types[1]	Cumulative Impacts Analysis Area[2]	Rationale	Type and Source of Spatial Data[3]
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 2008b)
Reptiles			
Reptiles	Vegetation communities in 12-digit HUCs (subwatersheds) crossed by alternative routes	Area beyond which effects of the Project on reptiles 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 the Project on mammals are no longer discernible	GAP land cover categories from Northwest and Southwest Regional Gap Analysis Project (USGS 2010b, c)

NOTES:
[1]Agency-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.
[2]Cumulative 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.
[3]When 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.

4.3.7.1.2 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 the selected route for the Project and the selected routes for the TransWest Express and the Gateway West (in Wyoming) transmission projects would be colocated in the same corridor. 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 of the Project. In areas where multiple transmission projects would be collocated in the same corridor, the effects of wildlife displacement could be greater. The presence of multiple transmission lines could become a barrier to movement for some species or individuals or increase the intensity or extent of indirect effects. Cumulative effects of the Project and the TransWest Express and the Gateway West transmission projects are discussed qualitatively for each resource analyzed in detail.

4.3.7.1.3 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, 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, and 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 nineteenth century with European settlement and expansion and has significantly affected the character of landscapes and the quantity and quality of habitats for wildlife resources in the CIAA (Huston 2005). Construction of settlements and 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 wildlife habitats 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, other past and present actions, 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 and population dynamics through the loss, modification, and fragmentation of crucial habitat. Habitat quality and quantity remains a primary concern to wildlife managers (UDWR 2008c, 2009a, 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 2008c, 2009a, 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 2008c, 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 2013at), management of invasive species (USFS 2004b), and government incentive programs such as the Wildlife Habitat Incentives Program (NRCS n.d.).

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 and present actions 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 and present actions and RFFAs are not available for most bird, reptile, and mammal species. Therefore, the potential effects on these resources are analyzed qualitatively.

Reptiles

All alternative routes would contribute to the cumulative loss, fragmentation, and modification of reptile habitats 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
- Gateway West Transmission Project

RFFAs in the CIAA include:

- coal mines
- industrial development
- oil and gas development
- pipelines

- power generation facilities
- recreational and residential development
- habitat restoration projects
- TransWest Express, Mona South, and Mona North transmission projects

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 actions 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. 2013).

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, 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 likely to be used by reptiles is included in Section 4.3.5.

Mammals

All alternative routes 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 Section 3.2.7 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 1 species appeared to be relatively common. Small terrestrial mammals 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. 2011a; Noss et al. 2006a) 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 developments 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. 2013). Dirt roads and secondary paved roads may be more permeable to some small mammalian species than wider paved roads (Brehme et al. 2013). 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, 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 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 habitats is summarized in Table 4-68.

TABLE 4-68
ELK 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						
WYCO-B (Agency and Applicant Preferred Alternative)	263,456	6,226	313	162	6,701	256,755
WYCO-C	263,456	6,226	313	162	6,701	256,755
WYCO-D	310,104	12,239	8,227	0	20,466	289,638
WYCO-F	263,456	6,226	313	161	6,701	256,755
Crucial Summer/Summer Concentration						
WYCO-B (Agency and Applicant Preferred Alternative)	272,236	3,952	346	162	4,460	267,776
WYCO-C	272,236	3,952	346	162	4,460	267,776
WYCO-D	355,187	18,540	5,142	0	23,683	331,504
WYCO-F	272,236	3,952	346	161	4,459	267,776
Crucial/Severe Winter Range						
WYCO-B (Agency and Applicant Preferred Alternative)	461,718	21,919	1,722	416	24,057	437,662
WYCO-C	461,718	21,919	1,722	415	24,056	437,662
WYCO-D	1,080286	104,788	3,620	1,196	109,604	970,681
WYCO-F	461,718	21,919	1,722	413	24,054	437,664
Crucial Year-long						
WYCO-B (Agency and Applicant Preferred Alternative)	299,860	11,933	149	45	12,128	287,733
WYCO-C	299,860	11,933	149	45	12,127	287,733
WYCO-D	382,896	12,679	149	0	12,828	370,069
WYCO-F	299,860	11,933	149	45	12,127	287,733
Migration Corridors						
WYCO-B (Agency and Applicant Preferred Alternative)	362,077	8,009	133	43	8,185	353,892
WYCO-C	362,077	8,009	133	43	8,185	353,892
WYCO-D	622,129	34,218	2,378	341	36,937	585,192
WYCO-F	362,077	8,009	133	43	8,185	353,892

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 habitats from any of the WYCO alternative routes would contribute to the cumulative loss, fragmentation, and degradation of elk habitats in the CIAA (Table 4-68).

Past and present actions in the CIAA for all WYCO alternative routes that have affected designated elk crucial habitat include:

- oil and gas development
- coal mines
- wind-energy development

RFFAs in the CIAA for elk calving grounds, crucial/severe winter and crucial year-long habitat include:

- coal mine
- TransWest Express Transmission Project

The Gateway West Transmission Project is a past or present action in the CIAA for elk migration routes. A wind-energy facility is an RFFA in elk migration routes.

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, elk crucial habitat affected by wildfires and vegetation management occurs in the CIAA for all WYCO alternative routes. Several fires in Colorado, including Winter Valley (2000), Lone Tree (2007), Mud Springs (2007), and Bitter Brush (2006), and several BLM vegetation management activities in Wyoming have affected areas of elk crucial habitat in the CIAA. Wildfires and vegetation management may result in initial temporary losses in elk crucial habitat, but the quality of elk crucial habitat affected by fire is anticipated to improve in the long-term as a result of increased forage availability.

The majority of elk crucial/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 2005). 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 compared to other WYCO alternative routes. Elk crucial/severe range and migration corridors affected by the WYCO alternative routes are located in areas previously disturbed by past and present human activities, suggesting local elk populations have some level of tolerance towards human activity and habitat disturbance.

Research suggests 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 the 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 after 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 habitats, and the cumulative disturbance from all actions considered could add to carrying capacity pressure of local herds by limiting the availability of habitat in the CIAA. However, the effects of the Project are anticipated to

be small compared to the effects of other actions (Table 4-68). Under all WYCO alternative routes, the majority of available elk habitats 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 habitats is summarized in Table 4-69.

TABLE 4-69
MULE DEER HABITAT 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			
Crucial/Critical Winter Range						
WYCO-B (Agency and Applicant Preferred Alternative)	585,578	37,071	2,217	380	39,668	545,909
WYCO-C	585,578	37,071	2,217	380	39,668	545,910
WYCO-D	877,772	76,577	3,036	719	80,331	797,441
WYCO-F	585,578	37,071	2,217	378	39,666	545,911
Crucial Year-long						
WYCO-B (Agency and Applicant Preferred Alternative)	622,086	54,058	2,281	353	56,691	565,394
WYCO-C	622,086	54,058	2,281	322	56,660	565,425
WYCO-D	898,837	73,073	2,281	602	75,956	822,881
WYCO-F	622,086	54,058	2,281	496	56,834	565,251
Migration Corridors						
WYCO-B (Agency and Applicant Preferred Alternative)	220,746	15,359	1,566	62	16,987	203,759
WYCO-C	220,746	15,359	1,566	60	16,985	203,761
WYCO-D	248,169	18,470	1,573	157	20,200	227,969
WYCO-F	220,746	15,359	1,566	211	17,136	203,610

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 habitats from any of the WYCO alternative routes would contribute to the cumulative loss, fragmentation, and degradation of mule deer habitats in the CIAA (Table 4-69).

Past and present actions in the CIAA for all WYCO alternative routes that have affected designated mule deer habitats include:

- oil and gas development
- coal mines
- industrial development
- wind-energy development
- Gateway West Transmission Project

RFFAs in the CIAA for all WYCO alternative routes include:

- oil and gas development
- coal mines
- wind-energy development
- TransWest Express Transmission Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, mule deer habitat affected by wildfires and vegetation management occurs in the CIAA for all WYCO alternative routes. Several fires in Colorado, including Lone Tree (2007), Mud Springs (2007), and Bitter Brush (2006), and several BLM vegetation management activities in Wyoming have affected areas of mule deer habitat in the CIAA. Wildfires and vegetation management may result in initial temporary losses in mule deer habitat, but the quality of mule deer habitat is anticipated to improve in the long-term as a result of increased forage availability.

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 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 2011c). 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 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 habitat, and the cumulative disturbance from all actions considered could contribute to ongoing loss, fragmentation, and alteration of habitat 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 4-69). Under all WYCO alternative routes, the majority of available mule deer habitat in Wyoming and Colorado 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 habitat is summarized in Table 4-70.

TABLE 4-70
PRONGHORN HABITAT 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			
Crucial/Severe Winter Range						
WYCO-B (Agency and Applicant Preferred Alternative)	228,024	14,315	924	252	15,491	212,533
WYCO-C	228,024	14,315	924	251	15,490	212,533
WYCO-D	258,271	22,763	1,421	591	24,776	233,496
WYCO-F	228,024	14,315	924	250	15,489	212,534
Crucial Year-long						
WYCO-B (Agency and Applicant Preferred Alternative)	785,791	46,166	7,091	461	53,717	732,074
WYCO-C	785,791	46,166	7,091	418	53,674	732,117
WYCO-D	1,109,063	80,802	7,091	539	88,432	1,020,630
WYCO-F	785,791	46,166	7,091	523	53,780	732,011
Migration Corridors						
WYCO-B (Agency and Applicant Preferred Alternative)	192,733	8,542	1,950	141	10,633	182,099
WYCO-C	192,733	8,542	1,950	115	10,607	182,126
WYCO-D	225,064	11,075	1,948	86	13,109	211,955
WYCO-F	192,733	8,542	1,950	166	10,658	182,075

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 habitats from any of the WYCO alternative routes would contribute to the cumulative loss, fragmentation, and degradation of pronghorn habitats in the CIAA (Table 4-70).).

Past and present actions in the CIAA for all WYCO alternative routes that have affected designated pronghorn habitat include:

- oil and gas development
- coal mines
- residential development
- wind-energy development
- Gateway West Transmission Project

RFFAs in the CIAA for all WYCO alternative routes include:

- oil and gas development
- coal mines
- wind-energy development
- TransWest Express Transmission Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, pronghorn habitat affected by wildfires and vegetation management occurs in the CIAA for all WYCO

alternative routes. Several fires in Colorado, including Lone Tree (2007), Mud Springs (2007), and Bitter Brush (2006), and several BLM vegetation management activities in Wyoming have affected areas of pronghorn habitat. Wildfires and vegetation management may result in initial temporary losses in pronghorn habitat, but the quality of pronghorn crucial habitat is anticipated to improve in the long-term as a result of increased forage availability.

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 habitat. 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.

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 2011b). 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 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 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 habitat, and the cumulative disturbance from all actions considered could contribute to ongoing loss, fragmentation, and alteration of habitat and the availability of habitat 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 4-70). Under all WYCO alternative routes, the majority of available pronghorn habitat in Wyoming and Colorado would remain undisturbed by the Project and other actions in the CIAA (Table 4-70).

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 habitats is summarized in Table 4-71.

TABLE 4-71 ELK HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
Calving Grounds						
COUT BAX-B	275,394	7,547	249	72	7,869	267,525
COUT BAX-C	275,394	7,547	249	72	7,869	267,525
COUT BAX-E	275,394	7,547	249	71	7,868	267,526
Crucial Summer/Summer Concentration						
COUT BAX-B	849,861	69,072	918	357	70,346	779,514
COUT BAX-C	1,010,484	85,329	1,086	355	86,770	923,714
COUT BAX-E	1,101,484	85,329	1,086	241	86,656	923,828
Crucial/Severe Winter Range						
COUT BAX-B	894,696	63,252	4,009	581	67,842	826,855
COUT BAX-C	1,041,050	66,726	4,408	577	71,711	969,339
COUT BAX-E	1,041,050	66,726	4,408	793	71,927	969,123
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 habitats from any of the COUT BAX alternative routes would contribute to the cumulative loss, fragmentation, and degradation of elk habitats in the CIAA (Table 4-71).

Past and present actions in the CIAA for all COUT BAX alternative routes that have affected designated elk habitat include:

- oil and gas development
- oil shale and tar sands development
- gravel pits
- oil shale development
- pipelines
- coal mines
- mineral development
- residential development
- communication facilities

RFFAs in the CIAA include:

- coal mines
- recreational development
- tunnel
- transportation infrastructure
- sand and gravel mining
- reservoir
- dam
- Pipelines
- TransWest Express Transmission Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, elk habitat affected by wildfires and vegetation management occurs in the CIAA for all COUT BAX alternative routes. Several large fires in Utah, including Seeley (2012), Wood Hollow (2012), and Salt Creek (2007), in addition to smaller fires in Utah and Colorado and a timber sale on the Manti-La Sal National Forest have affected areas of elk habitat. Wildfires and vegetation management may result in initial temporary losses in elk habitat, but the quality of elk habitat is anticipated to improve in the long-term as a result of increased forage availability.

Elk herds that could be affected by the COUT BAX alternative routes include the Yellow Creek (DAU E-10) herd in Colorado (CDOW 2006a) 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 2006a). However, elk crucial/severe range affected by the COUT BAX alternative routes are located in areas previously disturbed by past and present human activities, suggesting 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 2006a), 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 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 habitat, and the cumulative disturbance from all actions considered could further limit availability of habitat in the CIAA necessary for maintaining local elk herd populations currently close to or exceeding the carrying capacity of current resources (CDOW 2006a; UDWR 2012a). However, the effects of the Project would be anticipated to be small compared to the effects of other actions (Table 4-71). Under all COUT BAX alternative routes, the majority of available elk habitat would remain undisturbed by the Project and other actions in the CIAA (Table 4-71).

Mule Deer

The estimated area (in acres) of cumulative development in mule deer habitats is summarized in Table 4-72.

TABLE 4-72
MULE DEER 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			
Crucial Spring/Fall Range						
COUT BAX-B	0	0	0	0	0	0
COUT BAX-C	0	0	0	0	0	0
COUT BAX-E	0	0	0	0	0	0
Crucial Summer/Summer Concentration						
COUT BAX-B	881,930	75,335	948	136	76,419	805,510
COUT BAX-C	1,090,463	97,400	2,121	136	99,656	990,807
COUT BAX-E	1,090,463	97,400	2,121	36	99,557	990,906

TABLE 4-72 MULE DEER HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO BAXTER PASS TO CLOVER (COUT BAX) ALTERNATIVE ROUTES IN ACRES						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
Crucial/Critical Winter Range						
COUT BAX-B	2,030,119	114,593	6,052	1,013	121,659	1,908,460
COUT BAX-C	2,232,236	126,149	6,215	1,007	133,371	2,098,865
COUT BAX-E	2,232,236	126,149	6,215	1,040	133,404	2,098,832
Crucial Winter/Spring Range						
COUT BAX-B	535,735	23,861	2,577	41	26,479	509,256
COUT BAX-C	535,735	23,861	2,577	41	26,479	509,256
COUT BAX-E	535,735	23,861	2,577	73	26,511	509,224
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 habitats from any of the COUT BAX alternative routes would contribute to the cumulative loss, fragmentation, and degradation of mule deer habitats 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 habitat include:

- 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
- Gateway West Transmission Project

RFFAs in the CIAA for all COUT BAX alternative routes include:

- oil and gas development
- coal mines
- gypsum mines
- sand and gravel mining
- reservoir
- dam
- tunnel
- pipelines
- power generation facilities
- wind-energy development
- TransWest Express, Mona North, and Mona South transmission projects

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, mule deer habitat affected by wildfires and vegetation management occurs in the CIAA for all COUT BAX alternative routes. Several large fires in Utah, including Seeley (2012), Wood Hollow (2012), and Salt Creek (2007), in addition to smaller fires in Utah and Colorado and a timber sale on the Manti-La Sal National Forest have affected areas of mule deer habitat in the CIAA. Wildfires and vegetation management may result in initial temporary losses in mule deer crucial habitat, but the quality of mule deer habitat is anticipated to improve in the long-term as a result of increased forage availability.

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 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 2006b). The Central Mountains herd has a current population size of approximately 60,000 animals and is currently within management objectives (UDWR 2012c). 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 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 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 habitat, and the cumulative disturbance from all actions considered could contribute to ongoing loss, fragmentation, and alteration of habitat in the CIAA necessary for maintaining local mule deer herds. This includes the Book Cliffs herd in Colorado that 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 2006b; UDWR 2006c). 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 BAX alternative routes, the majority of available mule deer habitat in Colorado and Utah would remain undisturbed by the Project and other actions in the CIAA (Table 4-72).

Pronghorn

The estimated area (in acres) of cumulative development in pronghorn habitats is summarized in Table 4-73.

TABLE 4-73
PRONGHORN 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			
Fawning Areas						
COUT BAX-B	534,266	16,936	4,728	940	22,603	511,663
COUT BAX-C	602,519	19,208	4,792	843	24,843	577,676
COUT BAX-E	602,519	19,208	4,792	1,084	25,084	577,435
Crucial/Severe Winter Range						
COUT BAX-B	58,471	3,690	117	39	3,845	54,626
COUT BAX-C	58,471	3,690	117	38	3,845	54,626
COUT BAX-E	58,471	3,690	117	38	3,845	54,626
Crucial Year-long						
COUT BAX-B	1,093,553	24,677	4,933	940	30,549	1,063,004
COUT BAX-C	1,161,819	26,953	4,998	843	32,794	1,129,025
COUT BAX-E	1,161,819	26,953	4,998	1,124	33,075	1,128,745

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 habitats from any of the COUT BAX alternative routes would contribute to the cumulative loss, fragmentation, and degradation of pronghorn habitats in the CIAA (Table 4-73).

Past and present actions in the CIAA for all COUT BAX alternative routes that have affected designated pronghorn habitat include:

- oil and gas development
- coal mines
- residential development
- wind-energy development
- Gateway West Transmission Project

RFFAs in the CIAA for all COUT BAX alternative routes include:

- oil and gas development
- coal mines
- wind-energy development
- TransWest Express Transmission Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, pronghorn habitat affected by wildfires occurs in the CIAA for all COUT BAX alternative routes. Several small fires in Utah, including MM-218 (2007) and Bryson Wash (2006), have affected areas of pronghorn habitat in the CIAA. Wildfires may result in initial temporary losses in pronghorn habitat, but the quality of pronghorn habitat is anticipated to improve in the long-term as a result of increased forage availability.

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 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 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 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 habitat, 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 4-73). Under all COUT BAX alternative routes, the majority of available pronghorn habitat would remain undisturbed by the Project and other actions in the CIAA (Table 4-73).

Moose

The estimated area (in acres) of cumulative development in moose habitats is summarized in Table 4-74.

TABLE 4-74
MOOSE 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			
Calving Grounds						
COUT BAX-B	111,449	6,999	325	8	7,332	104,117
COUT BAX-C	111,449	6,999	325	8	7,332	104,117
COUT BAX-E	111,449	6,999	325	5	7,329	104,120
Crucial Winter Range						
COUT BAX-B	768,086	96,470	1,001	151	97,622	670,464
COUT BAX-C	900,003	116,021	2,646	150	118,818	781,185
COUT BAX-E	900,003	116,021	2,646	32	118,699	781,304
Crucial Year-long						
COUT BAX-B	111,449	6,999	325	8	7,332	104,117
COUT BAX-C	111,449	6,999	325	8	7,332	104,117
COUT BAX-E	111,449	6,999	325	5	7,329	104,120

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 habitats from any of the COUT BAX alternative routes would contribute to the cumulative loss, fragmentation, and degradation of moose habitats in the CIAA (Table 4-74).

Past and present actions in the CIAA for all COUT BAX alternative routes that have affected designated moose habitat include:

- oil and gas development
- coal mines
- sand and gravel mining
- residential development

RFFAs in the CIAA for all COUT BAX alternative routes include:

- coal mines
- TransWest Express Transmission Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, moose habitat affected by wildfires and vegetation management occurs in the CIAA for all COUT BAX alternative routes. The Seeley (2012) fire in Utah and a timber sale on the Manti-La Sal National Forest have affected areas of moose habitat in the CIAA. Wildfires and vegetation management may result in initial temporary losses in moose habitat, but the quality of moose habitat is anticipated to improve in the long-term as a result of increased forage availability.

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 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 4-74). 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 4-74).

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

Elk

The estimated area (in acres) of cumulative development in elk habitats is summarized in Table 4-75.

TABLE 4-75
ELK 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			
Calving Grounds						
COUT-A	1,071,079	14,855	1,246	84	16,184	1,054,895
COUT-B	1,128,397	20,721	1,786	38	22,546	1,105,851
COUT-C (Agency and Applicant Preferred Alternative)	483,736	43,878	1,890	109	45,878	437,858
COUT-H	481,265	43,723	1,150	65	44,938	436,326
COUT-I	414,526	38,863	734	64	39,661	374,865
Crucial Spring/Fall Range						
COUT-A	463,284	7,032	5,109	281	12,421	450,863
COUT-B	463,284	7,032	5,109	38	12,179	451,105
COUT-C (Agency and Applicant Preferred Alternative)	460,397	6,873	5,065	41	11,979	448,418
COUT-H	274,779	4,917	162	0	5,079	269,700
COUT-I	147,774	3,508	65	0	3,572	144,202
Crucial Summer/Summer Concentration						
COUT-A	1,696,168	74,568	2,195	116	76,879	1,619,289
COUT-B	1,916,696	93,913	2,639	93	96,646	1,820,050
COUT-C (Agency and Applicant Preferred Alternative)	1,272,035	117,070	2,744	0	119,814	1,152,221
COUT-H	1,215,059	115,388	2,010	78	117,475	1,097,584
COUT-I	1,087,291	111,077	1,276	254	112,607	974,684
Crucial/Severe Winter Range						
COUT-A	1,504,761	118,764	5,692	988	125,444	1,379,318
COUT-B	1,742,057	126,198	6,403	813	133,413	1,608,643
COUT-C (Agency and Applicant Preferred Alternative)	1,706,074	114,666	6,381	1,139	122,186	1,583,887
COUT-H	1,647,606	112,491	5,961	391	118,843	1,528,762
COUT-I	1,332,277	91,728	4,401	580	96,709	1,235,568
Crucial Year-long						
COUT-A	136,718	8,366	1,536	44	9,946	126,772
COUT-B	250,328	17,672	2,077	41	19,789	230,539
COUT-C (Agency and Applicant Preferred Alternative)	257,112	18,009	2,077	136	20,212	236,890
COUT-H	251,442	17,784	1,336	65	19,186	232,256
COUT-I	183,399	12,884	897	132	13,913	169,487

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 habitats from any of the COUT alternative routes would contribute to the cumulative loss, fragmentation, and degradation of elk habitats in the

CIAA (Table 4-75). 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 habitat include:

- oil and gas development
- oil shale and tar sands development
- sand and gravel pits
- pipelines
- coal mines
- mineral development
- residential development
- communication facilities

RFFAs in the CIAA include:

- coal mines
- oil and gas development
- tunnel
- transportation infrastructure
- dam
- Pipelines
- residential development
- development of recreation sites
- TransWest Express Transmission Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, elk habitat affected by wildfires and vegetation management occurs in the CIAA for all COUT alternative routes. Several large fires in Utah, including Seeley (2012), Wood Hollow (2012), and Salt Creek (2007), in addition to smaller fires in Utah and Colorado, and the Sheep Creek Vegetation Management Project on the Uinta-Wasatch-Cache National Forest have affected areas of elk habitat in the CIAA. Wildfires and vegetation management may result in initial temporary losses in elk habitat, but the quality of elk crucial habitat is anticipated to improve in the long-term as a result of increased forage availability.

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 affected by any of the COUT alternative routes, but is located in areas previously disturbed by past and present human activities, suggesting 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 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 habitat and the cumulative disturbance from all actions considered could contribute to loss, fragmentation, and modification of 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 4-75). Under all COUT alternative routes, the majority of available elk habitat would remain undisturbed by the Project and other actions in the CIAA (Table 4-75).

Mule Deer

The estimated area (in acres) of cumulative development in mule deer habitats is summarized in Table 4-76.

TABLE 4-76
MULE DEER 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			
Crucial Spring/Fall Range						
COUT-A	187,874	2,981	5,357	221	8,558	179,315
COUT-B	187,874	2,981	5,357	0	8,337	179,537
COUT-C (Agency and Applicant Preferred Alternative)	187,874	2,981	5,357	0	8,337	179,537
COUT-H	4,977	41	6	0	47	4,930
COUT-I	0	0	0	0	0	0
Crucial Summer/Summer Concentration						
COUT-A	2,254,072	92,881	7,704	317	100,902	2,153,170
COUT-B	2,495,212	116,600	8,938	41	125,579	2,369,633
COUT-C (Agency and Applicant Preferred Alternative)	1,770,129	122,821	8,867	539	132,227	1,637,903
COUT-H	1,489,152	119,335	4,513	40	123,887	1,365,265
COUT-I	1,072,742	106,616	2,183	215	109,014	963,727
Crucial/Critical Winter Range						
COUT-A	1,824,165	142,637	6,720	1,042	150,400	1,673,766
COUT-B	2,067,765	156,425	7,026	844	164,295	1,903,470
COUT-C (Agency and Applicant Preferred Alternative)	2,003,345	164,888	7,026	851	172,765	1,830,579
COUT-H	1,967,178	162,651	6,736	726	170,113	1,797,065
COUT-I	1,718,109	135,408	5,643	955	142,006	1,576,103
Crucial Winter/Spring Range						
COUT-A	608,008	25,551	4,751	463	30,765	577,243
COUT-B	608,008	25,551	4,751	376	30,678	577,330
COUT-C (Agency and Applicant Preferred Alternative)	608,008	25,551	4,751	796	30,698	577,310
COUT-H	537,287	24,085	2,605	80	26,770	510,517
COUT-I	535,735	23,861	2,577	43	26,482	509,254

TABLE 4-76 MULE DEER HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
Crucial Year-long						
COUT-A	262,529	94,035	387	40	94,462	168,067
COUT-B	310,384	102,662	568	29	103,259	207,125
COUT-C (Agency and Applicant Preferred Alternative)	163,180	34,207	272			
COUT-H	163,180	34,207	272	47	34,525	128,655
COUT-I	189,929	26,020	4,051	46	30,117	159,812
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 habitats from any of the COUT alternative routes would contribute to the cumulative loss, fragmentation, and degradation of mule deer habitats in the CIAA (Table 4-76).

Past and present actions in the CIAA for all COUT alternative routes that have affected designated mule deer habitat include:

- oil and gas development
- oil shale and tar sands development
- coal mines
- gypsum mines
- pipelines
- sand and gravel pits
- mineral leasing activities
- residential development
- educational and communication facilities

RFFAs in the CIAA for all COUT alternative routes include:

- oil and gas development
- coal mining
- gypsum mining
- sand and gravel mining
- reservoir
- transportation infrastructure
- helicopter port
- tunnel
- pipelines
- power generation facilities, including wind-energy development
- TransWest Express, Mona North, and Mona South transmission projects

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, mule deer habitat affected by wildfires and vegetation management occurs in the CIAA for all COUT

alternative routes. Several large fires in Utah, including Seeley (2012), Wood Hollow (2012), and Salt Creek (2007), in addition to smaller fires in Utah and Colorado on the Uinta-Wasatch-Cache National Forest have affected areas of mule deer habitat in the CIAA. Wildfires and vegetation management may result in initial temporary losses in mule deer habitat, but the quality of mule deer habitat is anticipated to improve in the long-term as a result of increased forage availability.

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 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 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 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 habitat 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 Desired Component Index 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 4-76). Under all COUT alternative routes, the majority of available mule deer habitat in Colorado and Utah would remain undisturbed by the Project and other actions in the CIAA (Table 4-76).

Pronghorn

The estimated area (in acres) of cumulative development in pronghorn habitats is summarized in Table 4-77.

TABLE 4-77
PRONGHORN 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			
Fawning Areas						
COUT-A	421,678	37,071	2,154	663	39,888	381,790
COUT-B	728,872	54,564	8,959	648	64,171	664,701
COUT-C (Agency and Applicant Preferred Alternative)	858,879	88,048	9,071	819	97,938	760,940
COUT-H	858,879	88,048	9,071	812	97,931	760,948
COUT-I	1,121,237	95,023	12,063	1,058	108,145	1,013,092

TABLE 4-77 PRONGHORN HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
		No Action Alternative				
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource
Crucial Year-long						
COUT-A	597,487	42,418	2,359	663	45,441	552,046
COUT-B	918,159	60,916	9,165	648	70,728	847,431
COUT-C (Agency and Applicant Preferred Alternative)	1,048,165	94,400	9,277	819	104,495	943,670
COUT-H	1,048,165	94,400	9,277	812	104,488	943,677
COUT-I	1,693,999	103,768	12,269	1,115	117,152	1,576,847
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 habitats from any of the COUT alternative routes would contribute to the cumulative loss, fragmentation, and degradation of pronghorn habitats in the CIAA (Table 4-77).

Past and present actions in the CIAA for all COUT alternative routes that have affected designated pronghorn habitat include:

- oil and gas development
- oil shale and tar sands development
- coal mining
- development of recreation sites
- construction of transportation infrastructure
- military training
- mineral leasing

RFFAs in the CIAA for all COUT alternative routes include:

- oil and gas development
- construction of power generation facilities
- development of recreation sites
- TransWest Express Transmission Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, pronghorn habitat affected by vegetation management occurs in the CIAA for all COUT alternative routes. BLM Vernal Field Office habitat/rangeland management projects have affected areas of pronghorn habitat in the CIAA. Vegetation management is anticipated to improve the quality of pronghorn habitat as a result of increased forage availability.

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 habitat. Development that includes fences or roads can sever pronghorn migration corridors and restrict movement between seasonal ranges and watering and feeding areas (Sawyer et al. 2002) that 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 habitat affected by any of the COUT alternative routes is located in areas previously disturbed by past and present human activities, suggesting 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 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 habitat, 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 4-77). Under all COUT alternative routes, the majority of available pronghorn habitat would remain undisturbed by the Project and other actions in the CIAA (Table 4-77).

Moose

The estimated area (in acres) of cumulative development in moose habitats is summarized in Table 4-78.

TABLE 4-78
MOOSE 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			
Calving Grounds						
COUT-A	238,515	8,518	423	0	8,941	229,575
COUT-B	238,515	8,518	423	8	8,949	229,566
COUT-C (Agency and Applicant Preferred Alternative)	238,515	8,518	423	48	8,989	229,527
COUT-H	147,993	7,632	420	5	8,057	139,936
COUT-I	111,449	6,999	325	8	7,332	104,116
Crucial Spring/Fall Range						
COUT-A	187,874	2,981	5,357	221	8,558	179,315
COUT-B	187,874	2,981	5,357	0	8,337	179,537
COUT-C (Agency and Applicant Preferred Alternative)	187,874	2,981	5,357	0	8,337	179,537
COUT-H	4,977	41	6	0	47	4,930
COUT-I	0	0	0	0	0	0
Severe Winter Range						
COUT-A	1,177,119	113,970	2,826	189	116,986	1,060,133
COUT-B	1,319,148	133,667	4,507	69	138,243	1,180,905

TABLE 4-78 MOOSE HABITAT CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES IN ACRES						
		No Action Alternative				
Alternative Route	**Total Available Resource**	**Past and Present Development**	**Reasonably Foreseeable Future Actions**	**Incremental Project Development**	**Estimated Cumulative Development**	**Remaining Available Resource**
COUT-C (Agency and Applicant Preferred Alternative)	1,224,449	132,114	4,436	640	137,189	1,087,260
COUT-H	1,213,836	131,722	4,297	81	136,100	1,077,736
COUT-I	910,115	116,167	2,682	333	119,181	790,934
Crucial Year-long						
COUT-A	1,100,932	15,683	424	0	16,107	1,084,825
COUT-B	1,100,932	15,683	424	8	16,115	1,084,817
COUT-C (Agency and Applicant Preferred Alternative)	190,267	8,081	420	48	8,549	181,217
COUT-H	153,733	7,679	420	5	8,105	145,629
COUT-I	111,449	6,999	325	8	7,332	104,116
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 habitats from any of the COUT alternative routes would contribute to the cumulative loss, fragmentation, and degradation of moose habitats in the CIAA (Table 4-78.

Past and present actions in the CIAA for all COUT alternative routes that have affected designated moose habitat include:

- oil and gas development
- coal mining
- mineral leasing
- residential development

RFFAs in the CIAA for all COUT alternative routes include:

- coal mining
- vegetation management
- transportation infrastructure
- residential development
- TransWest Express Transmission Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, moose habitat affected by wildfires and vegetation management occur in the CIAA for all COUT alternative routes. The Seeley (2012) and Church Camp (2012) fires in Utah, and the Sheep Creek Vegetation Management Project on the Uinta-Wasatch-Cache National Forest have affected areas of moose habitat in the CIAA. Wildfires and vegetation management may result in initial temporary losses in moose habitat, but the quality of moose habitat is anticipated to improve in the long-term as a result of increased forage availability.

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 is located in areas previously disturbed by past and present human activities, suggesting 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 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 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 4-78). Under all COUT alternative routes, the majority of available moose habitat would remain undisturbed by the Project and other actions in the CIAA (Table 4-78).

Rocky Mountain Bighorn Sheep

The estimated area (in acres) of cumulative disturbance on Rocky Mountain bighorn sheep habitat is summarized in Table 4-79.

TABLE 4-79
ROCKY MOUNTAIN BIGHORN SHEEP 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			
COUT-A	544,197	17,490	1,812	0	19,302	524,895
COUT-B	895,479	28,695	1,893	0	30,588	864,891
COUT-C (Agency and Applicant Preferred Alternative)	1,211,652	73,400	2,057	136	75,593	1,136,059
COUT-H	1,201,175	73,087	696	132	73,914	1,127,261
COUT-I	1,041,340	62,976	276	130	63,382	977,959

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 habitat from any of the COUT alternative routes would contribute to the cumulative loss, fragmentation, and degradation of Rocky Mountain bighorn sheep habitat in the CIAA with the exception that Alternatives COUT-A and COUT-B would not affect habitat (Table 4-79).

Past and present actions in the CIAA for all COUT alternative routes that have affected designated Rocky Mountain bighorn sheep habitat include:

- oil and gas development
- oil shale and tar sands development
- coal mining

- pipelines
- mineral leasing
- development of educational areas

RFFAs in the CIAA for all COUT alternative routes include:

- oil and gas development
- residential development
- TransWest Express Transmission Project

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, Rocky Mountain bighorn sheep habitat affected by wildfires occurs within the CIAA for all COUT alternative routes. The Salt Creek (2007) and Church Camp (2012) fires in Utah have affected areas of Rocky Mountain bighorn sheep habitat in the CIAA, although the majority of Rocky Mountain bighorn sheep habitat in the CIAA was unaffected by these fires. Wildfires may result in initial temporary losses in Rocky Mountain bighorn sheep habitat, but the quality of Rocky Mountain bighorn sheep habitat is anticipated to improve in the long-term as a result of increased forage availability.

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 2008a). 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 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 2008a). 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 (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 4-79). Under all COUT alternative routes, 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 4-79).

4.3.8 Special Status Wildlife

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

The approach for analysis of cumulative effects on special status wildlife resources, including the geographic and temporal scopes of analysis, is presented in Table 4-3. The cumulative effects analysis for special status wildlife considers direct and indirect impacts from the Project (described in Section 3.2.8) in conjunction with the past and present actions and 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 4-80). 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 histories and a list of species that may potentially occur in the Project area that support the analysis of cumulative effects, refer to Section 3.2.8.4 and Appendix J.

CIAAs were established for special status wildlife based on available information regarding species-specific home ranges or territory sizes. The geographic scope for analysis of cumulative effects on special status wildlife resources is identified by species in Table 4-80. 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 Special Status Wildlife Report (USFS 2015b).

TABLE 4-80 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			
Greater sage-grouse core areas or priority habitat Greater sage-grouse general habitat and transmission line corridors designated in Wyoming Executive Order 2011-5	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 2014b; UDWR 2014a; WGFD 2013); Core habitat areas (WGFD 2010b); Preliminary priority and preliminary general habitats (CPW 2012h); Occupied habitats (UDWR 2012d)
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-foot) buffer is recommended (BLM 2011o).	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 2012)

TABLE 4-80
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 2014)
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 2012b, i;CPW 2012) Reintroduction sites (BLM 2012; FWS 2011c)
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 2014)
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 2014)

NOTES:
[1]Cumulative impacts analysis areas were established for special status wildlife potential habitats based on available information regarding species-specific home range or territory size.
[2]Home 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.

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 and present actions 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 colocated in the same 2-mile-wide study corridor. 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.

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 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 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 and 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 and present actions 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 have proposed RMP and LRMP amendments to manage sage-grouse habitats in the Project area. If approved, the proposed BLM RMP and USFS LRMP amendments would adopt 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 in 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 alternative routes and other past and present actions and RFFAs (Tables 4-83 to 4-86, 4-94 to 4-96, and 4-104 to 4-106), 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 decrease the amount of sage-grouse habitat affected cumulatively by all alternative routes and other past and present actions and RFFAs (Tables 4-83 to 4-86, 4-94 to 4-96, and 4-104 to 4-106), 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 nineteenth 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, and road and fencing density could increase the potential for species mortality and alter and restrict large-scale movement patterns and seasonal migrations (Andrén 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 1995, Leung et al. 2000). However, 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 alter plant

assemblages and increase exotic grass introduction, potentially impacting fire regimes and habitat effectiveness.

4.3.8.3 Results

4.1.1.1.1 Qualitative Assessment of Cumulative Impacts on Special Status Wildlife Resources

Upland Game 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, past and present actions, and RFFAs. Appendix J contains information about 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 4.3.7, 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 WYCO, COUT BAX, and COUT alternative routes are similar and these habitats have been and will continue to be affected by similar past and present actions 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 4.3.9.

Mammals

All alternative routes 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). Appendix J contains information about 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 could have a cumulative effect on 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 refuges for special status reptiles (Newbold 2005, Stebbins 2003, Vitt 1994).

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

4.3.8.3.1 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 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.

4.3.8.3.2 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 (Table 4-80) for each species and an estimation of the extent of development in these habitats associated with the Project, other past and present actions, and RFFAs. Areas affected by wildfires were excluded from the quantitative analysis, as vegetation communities can recover from these events. Recovery from wildfires depends on the time since the occurrence, precipitation amounts, plant species, and degree of associated degradation (weed invasion, soil loss, and fire intensity). Vegetation management areas were also excluded for similar reasons; additionally, these areas were assumed to have beneficial effects.

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 past and present 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 route 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 designated habitats
- Pygmy rabbit potential habitat
- White-tailed prairie dog potential colonies
- Black-footed ferret management areas

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

Southwestern Willow Flycatcher Potential Habitat

Since the WYCO alternative routes would have no direct or indirect impacts on potential southwestern willow flycatcher habitat, cumulative effects on this habitat were not analyzed.

Yellow-billed Cuckoo Potential Habitat

The estimated area of cumulative development in potential yellow-billed cuckoo habitat for the WYCO alternative routes is summarized in Table 4-81.

TABLE 4-81
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			
WYCO-B (Agency and Applicant Preferred Alternative)	50	2	0	0	2	47
WYCO-C	50	2	0	0	2	47
WYCO-D	377	49	1	13	63	314
WYCO-F	50	2	0	0	2	47

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 is the TransWest Express Transmission Project. Yellow-billed cuckoo potential habitat has not been affected by recent wildfires or vegetation management in the CIAA for any of the WYCO alternative routes.

The extent of development that would be associated with implementation of Alternative WYCO-D would be anticipated to contribute incrementally to fragmentation and modification of the yellow-billed cuckoo potential habitat in the CIAA. For the 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 4-81).

If construction and site stabilization actions for the Project along the alignments of Alternative WYCO-D 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 the WYCO alternative routes is summarized in Table 4-82.

TABLE 4-82
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			
WYCO-B (Agency and Applicant Preferred Alternative)	18,816	1,505	1,290	735	3,530	15,286
WYCO-C	20,757	2,429	898	765	4,092	16,666
WYCO-D	12,952	1,809	786	472	3,067	9,884
WYCO-F	18,241	1,561	1,389	633	3,483	14,658

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:

- coal and uranium mining
- oil and gas development
- wind and other energy development
- Gateway West Transmission Project

RFFAs in the CIAA for mountain plover include:

- TransWest Express Transmission Project
- coal mining
- oil and gas development
- wind-energy development

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, mountain plover potential habitat affected by wildfires and vegetation management occurs in the CIAA for all WYCO alternative routes. Several fires in Colorado, including Winter Valley (2000), Lone Tree (2007), and Mud Springs (2007), and several BLM vegetation management activities in Colorado and Wyoming have affected areas of mountain plover potential habitat in the CIAA. Wildfires and vegetation management may result in initial temporary losses in mountain plover potential habitat but may also create grassland and sparsely vegetation communities preferred by the species. The majority of mountain plover potential habitat in the CIAA was unaffected by these fires or vegetation management.

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 likely would continue to use habitats affected by the transmission line and ancillary facilities, access roads, and 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 4-82).

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

Since the WYCO alternative routes would have no direct or indirect impact on potential Mexican spotted owl habitat, cumulative effects on this habitat were not analyzed.

Greater Sage-grouse Designated Habitats

The types of potential effects on greater sage-grouse that could occur for the 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 the WYCO alternative routes is summarized in Tables 4-83 to 4-86.

TABLE 4-83
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			
WYCO-B (Agency and Applicant Preferred Alternative)	1,121,851	41,919	15,566	411	57,896	1,063,954
WYCO-C	1,105,984	41,537	15,554	411	57,502	1,048,482
WYCO-D	1,409,262	80,842	16,555	1,195	98,593	1,310,668
WYCO-F	1,168,771	46,412	15,608	409	62,429	1,106,342

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

TABLE 4-84
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			
WYCO-B (Agency and Applicant Preferred Alternative)	1,718,769	72,016	32,660	2,633	107,308	1,611,461
WYCO-C	1,788,417	69,929	35,630	2,563	108,123	1,680,294
WYCO-D	1,725,224	122,266	26,088	2,011	150,365	1,574,859
WYCO-F	1,824,495	87,597	33,936	2,673	124,205	1,700,290

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

TABLE 4-85
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			
WYCO-B (Agency and Applicant Preferred Alternative)	1,320,402	47,402	17,886	786	66,075	1,254,327
WYCO-C	1,300,897	46,882	17,824	785	65,492	1,235,406
WYCO-D	1,637,964	93,825	18,734	1,475	114,035	1,523,929
WYCO-F	1,398,646	54,394	17,933	782	73,109	1,325,537

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

TABLE 4-86
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			
WYCO-B (Agency and Applicant Preferred Alternative)	1,020,840	38,476	24,751	747	63,974	956,867
WYCO-C	1,016,900	35,847	25,631	822	62,299	954,601
WYCO-D	1,187,780	69,076	21,379	1,075	91,530	1,096,250
WYCO-F	1,124,878	47,528	25,920	974	74,422	1,050,456

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:

- coal mining
- oil and gas development
- wind and other energy development
- Gateway West Transmission Project

RFFAs in the CIAA for designated sage-grouse habitats include:

- TransWest Express Transmission Project
- coal mining
- oil and gas development
- wind-energy development

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, sage-grouse habitats affected by wildfires and vegetation management occurs in the CIAA for all WYCO alternative routes. Numerous large fires in Colorado, including Mayberry (2006), Alkalai (2014), Winter Valley (2000), and Wolf (2012) have affected areas of sage-grouse habitat in the CIAA. The Mayberry and Alkalai fires affected priority habitat and habitat within 4 miles of leks in priority habitat in the CIAA for WYCO-B, WYCO-C and WYCO-F. The Winter Valley and Wolf fires affected priority habitat and habitat within 4 miles of leks in priority habitat in the CIAA for all WYCO alternative routes. Fires in sage-grouse habitat may result in substantial loss of habitat that could last for decades because sagebrush does not resprout from roots following wildfires and can be slow to become re-established on a site following a fire. Re-establishment rate is largely dependent on precipitation, soil conditions, and fire severity. Therefore, especially in areas with low precipitation, wildfires can account for substantial modification or loss of sage-grouse habitats. BLM vegetation management activities in Wyoming and Colorado are intended to result in improved wildlife habitat conditions in the CIAA.

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 4-83 to 4-86).

Some Project impacts on sage-grouse associated with the 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 that would 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 4-83 to 4-86).

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 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 the WYCO alternative routes and route 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. 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 alternative 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 the WYCO alternative routes is summarized in Table 4-87.

TABLE 4-87
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			
WYCO-B (Agency and Applicant Preferred Alternative)	218,683	10,120	4,248	1,381	15,748	202,935
WYCO-C	212,959	10,280	3,916	1,318	15,514	197,445
WYCO-D	243,553	13,412	8,333	1,361	23,106	220,447
WYCO-F	235,944	11,011	5,706	1,598	18,315	235,629

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:

- coal and uranium mining
- oil and gas development
- wind and other energy development
- Gateway West Transmission Project

RFFAs in the CIAA for pygmy rabbit include:

- TransWest Express Transmission Project
- coal mining
- oil and gas development
- wind-energy development

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, pygmy rabbit potential habitat affected by wildfires and vegetation management occurs in the CIAA for all WYCO alternative routes, although the majority of pygmy rabbit potential habitat in the CIAA has been unaffected by wildfires and vegetation management. Fires in pygmy rabbit potential habitat may result in substantial loss of habitat that could last for decades because sagebrush does not resprout from roots following wildfires and can be slow to become re-established on a site following a fire. Re-establishment rate is largely dependent on precipitation, soil conditions, and fire severity. Therefore, especially in areas with low precipitation, wildfires can account for substantial modification or loss of sage-grouse habitats. BLM vegetation management activities in Wyoming and Colorado are intended to result in improved wildlife habitat conditions in the CIAA.

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 incurred previously some of the effects described in Section 3.2.8.4. The magnitude of effects of the WYCO alternative routes on pygmy rabbit habitat may be reduced, relative to areas where development structures are absent in areas where the alternative routes 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 4-87).

White-tailed Prairie Dog Potential Colonies

The estimated area of cumulative development in white-tailed prairie dog potential colonies for WYCO alternative routes is summarized in Table 4-88.

TABLE 4-88
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			
WYCO-B (Agency and Applicant Preferred Alternative)	2,886	212	416	282	910	1,976
WYCO-C	3,031	486	312	233	1,031	2,001
WYCO-D	2,230	445	292	165	902	1,328
WYCO-F	2,921	213	374	276	863	2,058

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:

- oil and gas development
- wind-energy development
- Gateway West Transmission Project

RFFAs in the CIAA for white-tailed prairie dog include:

- TransWest Express Transmission Project
- oil and gas development
- wind-energy development

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, white-tailed prairie dog potential colonies affected by wildfires and vegetation management occurs in the CIAA for all WYCO alternative routes. The Winter Valley fire (2000) and several small fires in Colorado affected areas of white-tailed prairie dog potential colonies in the CIAA, although the majority of white-tailed prairie dog potential colonies in the CIAA was unaffected by these fires. BLM vegetation management activities in Wyoming and Colorado are intended to result in improved wildlife habitat conditions in the CIAA.

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 incurred previously some of the effects described in Section 3.2.8.4. The magnitude of development associated with implementation of the 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 routes 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 4-88).

Black-footed Ferret Potential Habitat

The estimated area of cumulative development in black-footed ferret management areas for the WYCO alternative routes is summarized in Table 4-89.

TABLE 4-89
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			
WYCO-B (Agency and Applicant Preferred Alternative)	33,851	3,954	413	268	4,635	29,216
WYCO-C	33,850	3,954	413	268	4,634	29,216
WYCO-D	36,394	6,322	3,498	233	10,053	26,341
WYCO-F	33,851	3,954	413	267	4,633	29,218

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:

- coal mining
- oil and gas development
- wind-energy development

RFFAs in the CIAA for black-footed ferret include:

- TransWest Express Transmission Project
- coal mining

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, black-footed ferret management areas affected by wildfires occur in the CIAA for all WYCO alternative routes. Small fires in Colorado have affected black-footed ferret management areas in the CIAA, although the majority of black-footed ferret management areas in the CIAA was unaffected by these fires.

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.

The WYCO alternative routes would intersect the Shirley Basin black-footed ferret management area (MV-10a). 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 the WYCO alternative routes unlikely would support black-footed ferrets at this time or in the future.

The WYCO alternative routes also would intersect the Wolf Creek black-footed ferret management area. Black footed-ferret occurrences have not been recorded since a plague event in 2008 and 2009 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 4-89).

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 the COUT BAX alternative routes is summarized in Table 4-90.

TABLE 4-90 SOUTHWESTERN WILLOW FLYCATCHER 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						
		No Action Alternative				
Alternative Route	Total Available Habitat	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
COUT BAX-B	884	103	3	2	108	776
COUT BAX-C	832	100	17	1	119	714
COUT BAX-E	1,742	92	604	6	702	1,040
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
- pipeline corridors

RFFAs in the CIAA for southwestern willow flycatcher include:

- TransWest Express Transmission Project
- 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 and present actions 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 4-90).

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 the COUT BAX alternative routes is summarized in Table 4-91.

TABLE 4-91
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	456	57	12	5	73	383
COUT BAX-C	479	78	12	5	94	384
COUT BAX-E	681	72	115	11	198	482

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:

- coal and mineral mining
- oil and gas development
- pipeline corridors

RFFAs in the CIAA for yellow-billed cuckoo include:

- TransWest Express Transmission Project
- industrial development

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, yellow-billed cuckoo potential habitat affected by wildfires occurs in the CIAA for all COUT-BAX alternatives. The Salt Creek Fire (2007) in Utah has affected areas of yellow-billed cuckoo potential habitat in the CIAA. Wildfires can result in substantial modification to yellow-billed cuckoo potential habitat as the large trees required for nesting habitat may take decades to become re-established on a site following a fire.

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 and present actions 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 4-91).

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 the COUT BAX alternative routes is summarized in Table 4-92.

TABLE 4-92
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	442	29	28	17	73	368
COUT BAX-C	442	29	28	17	73	368
COUT BAX-E	442	29	28	17	73	369

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:

- coal and mineral mining
- oil and gas development
- pipeline corridors

RFFAs in the CIAA for mountain plover include:

- TransWest Express Transmission Project
- industrial development

Mountain plover potential habitat has not been affected by recent wildfires or vegetation management in the CIAA for any of the COUT BAX alternative routes.

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 likely would continue to use habitats 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 4-92).

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 the COUT BAX alternative routes is summarized in Table 4-93.

TABLE 4-93 MEXICAN SPOTTED OWL 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						
		No Action Alternative				
Alternative Route	Total Available Habitat	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
COUT BAX-B	26,171	549	328	229	1,106	25,065
COUT BAX-C	28,483	553	392	220	1,166	27,317
COUT BAX-E	24,815	541	280	219	1,040	23,774
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
- pipeline corridors

The RFFA in the CIAA for Mexican spotted owl is the TransWest Express Transmission Project.

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, Mexican spotted owl potential habitat affected by wildfires occurs in the CIAA for all COUT-BAX alternative routes. One small fire in Colorado has affected Mexican spotted owl potential habitat in the CIAA, although the majority of Mexican spotted owl potential habitat in the CIAA was unaffected by fires.

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 for 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. 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), and habitat within 4 miles of leks in core areas or priority habitat for the COUT BAX alternative routes is summarized in Tables Table 4-94 through Table 4-96.

TABLE 4-94
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	201,678	36,326	829	126	37,281	164,397
COUT BAX-C	201,681	36,326	829	125	37,280	164,401
COUT BAX-E	264,029	41,054	1,350	232	42,635	221,394

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

TABLE 4-95
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	138,772	12,431	873	207	13,511	125,262
COUT BAX-C	138,772	12,431	873	205	13,510	125,263
COUT BAX-E	138,772	12,431	873	204	13,508	125,265

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

TABLE 4-96
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	57,043	1,341	221	0	1,562	55,482
COUT BAX-C	57,046	1,341	221	0	1,562	55,484
COUT BAX-E	67,624	1,675	221	0	1,895	65,728

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
- communication development

RFFAs in the CIAA for designated sage-grouse habitats include:

- TransWest Express Transmission Project
- coal mining
- oil and gas development
- wind-energy
- reservoir development

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, sage-grouse habitats affected by wildfires and vegetation management occurs in the CIAA for all COUT BAX alternative routes. Numerous large fires in Utah, including Diamond Creek (2002), Seeley (2012), Wood Hollow (2012), and Salt Creek (2007) have affected areas of sage-grouse occupied habitat in the CIAA. Fires in sage-grouse habitat may result in substantial loss of habitat that could last for decades because sagebrush does not resprout from roots following wildfires and can be slow to become re-established on a site following a fire. Re-establishment rate is largely dependent on precipitation, soil conditions, and fire severity. Therefore, especially in areas with low precipitation, wildfires can account for substantial modification or loss of sage-grouse habitats. Sage-grouse habitat burned in the Seeley Fire is in a high precipitation zone for sagebrush, which may allow for faster sagebrush recovery than areas with low precipitation. BLM vegetation management activities in Utah include the BLM Vernal Field Office fuel treatments and fuel treatments on the Manti-La Sal National Forest, which are intended to result in improved wildlife habitat conditions in the CIAA.

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 the 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 the 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 COUT BAX alternative routes by sage-grouse population in Utah is summarized in Table 4-97.

The 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 the 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 COUT BAX alternative routes by sage-grouse population is summarized in Table 4-97.

TABLE 4-97
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	48,999	6,518	133	62	6,713	42,286
COUT BAX-C	48,999	6,518	133	61	6,713	42,287
COUT BAX-E	3,594	118	0	0	118	3,475
Emma Park						
COUT BAX-B	0	0	0	0	0	0
COUT BAX-C	0	0	0	0	0	0
COUT BAX-E	54,372	10,288	0	0	10,288	44,083
Deadman's Bench						
COUT BAX-B	11,626	1,294	0	0	1,294	10,332
COUT BAX-C	11,626	1,294	0	0	1,294	10,332
COUT BAX-E	11,626	1,294	0	0	1,294	10,332

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 3-5) 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:

- coal mining
- oil and gas development

The RFFA in the CIAA for sage-grouse core areas and priority habitats is the TransWest Express Transmission Project.

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, sage-grouse habitats supporting the Horn Mountain Population affected by wildfires and vegetation management occurs in the CIAA for all COUT BAX alternative routes. The Seeley Fire (2012) and several smaller fires have affected areas of sage-grouse occupied habitat supporting the Horn Mountain population in the CIAA. Fires in sage-grouse habitat may result in substantial loss of habitat that could last for decades because sagebrush does not resprout from roots following wildfires and can be slow to become re-established on a site following a fire. Re-establishment rate is largely dependent on precipitation, soil conditions, and fire severity. Wildfires can account for substantial modification or loss of sage-grouse habitats. Sage-grouse habitat burned in the Seeley Fire is in a high precipitation zone for sagebrush, which may allow for faster sagebrush recovery than areas with low precipitation. Vegetation

management activities for sage-grouse habitats supporting the Horn Mountain population in the CIAA include fuel treatments on the Manti-La Sal National Forest, which are intended to result in improved wildlife habitat conditions in the CIAA.

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 4-97). 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 4-97).

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 2013c), 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 the COUT BAX alternative routes is summarized in Table 4-98.

TABLE 4-98
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	1,717	40	217	92	349	1,368
COUT BAX-C	1,909	31	270	79	380	1,529
COUT BAX-E	1,430	110	221	103	435	996

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:

- coal and mineral mining
- oil and gas development
- pipeline corridors

The primary RFFA in the CIAA for white-tailed prairie dog is the TransWest Express Transmission Project.

White-tailed prairie dog potential colonies have not been affected by recent wildfires or vegetation management in the CIAA for any of the COUT BAX alternative routes.

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 likely previously incurred previously 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 4-98).

Black-footed Ferret

The estimated area of cumulative development in black-footed ferret management areas for COUT BAX alternative routes is summarized in Table 4-99.

TABLE 4-99
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	3,432	125	139	28	291	3,140
COUT BAX-C	3,432	125	139	28	291	3,141
COUT BAX-E	3,432	125	139	28	291	3,141

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. The RFFA in the CIAA for black-footed ferret includes the construction of the TransWest Express Transmission Project.

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, black-footed ferret management areas affected by wildfires occur in the CIAA for all COUT BAX alternative routes. Small fires in Colorado have affected black-footed ferret management areas in the CIAA, although the majority of black-footed ferret management areas in the CIAA were unaffected by these fires.

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. The COUT BAX alternative routes would intersect the Wolf Creek black-footed ferret management area. Black footed-ferret occurrences have not been recorded since a plague event in 2008 and 2009 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 the 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 4-99).

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 the COUT alternative routes is summarized in Table 4-100.

TABLE 4-100
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	10	10	0	0	10	0
COUT-I	197	43	7	1	52	145

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 is the TransWest Express Transmission Project.

Southwestern willow flycatcher potential habitat has not been affected by recent wildfires or vegetation management in the CIAA for the COUT alternative routes.

The extent of development that would be associated with implementation of the COUT alternative routes would not be anticipated to contribute to fragmentation and modification of southwestern willow flycatcher potential habitat in the CIAA. For Alternatives COUT-H and COUT-I, 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 4-100). 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 the COUT alternative routes is summarized in Table 4-101.

TABLE 4-101 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						
		No Action Alternative				
Alternative Route	Total Available Habitat	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Habitat
COUT-A	1,234	558	25	16	599	636
COUT-B	1,184	240	80	13	333	851
COUT-C (Agency and Applicant Preferred Alternative)	406	78	13	8	99	306
COUT-H	350	58	12	6	76	274
COUT-I	343	56	10	7	73	270
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 RFFAs in the CIAA for yellow-billed cuckoo include the construction of the TransWest Express Transmission Project and the Victory Pipeline Project.

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, yellow-billed cuckoo potential habitat affected by wildfires occurs in the CIAA for all COUT alternative routes. The Salt Creek Fire (2007) in Utah has affected areas of yellow-billed cuckoo potential habitat in the CIAA. Wildfires can result in substantial modification to yellow-billed cuckoo potential habitat as the large trees required for nesting habitat may take decades to become re-established on a site following a fire.

The extent of development that would be associated with implementation of the COUT alternative routes would be anticipated to contribute incrementally to fragmentation and modification of yellow-billed cuckoo potential habitat in the CIAA. For the 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 4-101). 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 the COUT alternative routes is summarized in Table 4-102.

TABLE 4-102 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						
		No Action Alternative				
Alternative Route	**Total Available Potential Habitat**	**Past and Present Development**	**Reasonably Foreseeable Future Actions**	**Incremental Project Development**	**Estimated Cumulative Development**	**Remaining Available Potential Habitat**
COUT-A	6,959	593	437	289	1,319	5,640
COUT-B	8,141	773	572	286	1,632	6,510
COUT-C (Agency and Applicant Preferred Alternative)	11,670	2,955	281	428	3,664	8,006
COUT-H	11,670	2,955	281	424	3,660	8,010
COUT-I	11,670	2,955	281	417	3,653	8,017
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:

- coal and other mineral mining
- oil and gas development
- pipeline corridors
- residential and industrial development

RFFAs in the CIAA for mountain plover include:

- TransWest Express Transmission Project
- Victory Pipeline Project
- oil and gas development

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, mountain plover potential habitat affected by wildfires and vegetation management occurs in the CIAA for all COUT alternative routes. Several small fires in Utah and Colorado and several BLM vegetation management activities in Utah have affected areas of mountain plover potential habitat in the CIAA. Wildfires and vegetation management may result in initial temporary losses in mountain plover potential habitat, but may also create grassland and sparsely vegetation communities preferred by the species. The majority of mountain plover potential habitat in the CIAA was unaffected by these fires or vegetation management.

The extent of development associated with implementation of the 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 likely would continue to use habitats affected by the transmission line and ancillary facilities, access roads, temporary work areas, and 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 4-102).

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 the COUT alternative routes is summarized in Table 4-103.

TABLE 4-103
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			
COUT-B	7,634	185	185	6	376	7,258
COUT-C (Agency and Applicant Preferred Alternative)	12,789	366	492	152	1,009	11,780
COUT-H	12,868	312	512	102	925	11,943
COUT-I	17,862	1,923	509	150	2,582	15,280

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:

- oil and gas development
- pipeline corridors

The RFFA in the CIAA for Mexican spotted owl is the TransWest Express Transmission Project.

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, Mexican spotted owl potential habitat affected by wildfires occurs in the CIAA for Alternative COUT-B. The Church Camp Fire (2012) in Utah has affected Mexican spotted owl potential habitat in the CIAA, although the majority of Mexican spotted owl potential habitat in the CIAA was unaffected by fires.

The extent of development associated with implementation of Alternatives COUT-C, 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 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 4-103).

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 for 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. 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), and habitat within 4 miles of leks in core areas or priority habitat for COUT alternative routes is summarized in Tables 4-104 to 4-106.

TABLE 4-104
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			
COUT-A	751,572	125,292	2,887	774	128,953	622,619
COUT-B	738,543	107,704	2,774	408	110,886	627,657
COUT-C (Agency and Applicant Preferred Alternative)	612,105	71,759	1,960	380	74,100	538,005
COUT-H	657,683	85,449	2,405	403	88,257	569,427
COUT-I	619,882	84,478	2,127	517	87,122	532,760

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

TABLE 4-105
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			
COUT-A	134,014	12,254	880	385	13,519	120,494
COUT-B	134,008	12,254	880	376	13,510	120,498
COUT-C (Agency and Applicant Preferred Alternative)	137,678	12,408	880	402	13,690	123,988
COUT-H	137,682	12,408	880	399	13,687	123,996
COUT-I	137,682	12,408	880	393	13,681	124,002

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

TABLE 4-106
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			
COUT-A	375,478	45,366	1,312	433	47,110	328,367
COUT-B	395,307	31,949	1,345	127	33,420	361,887
COUT-C (Agency and Applicant Preferred Alternative)	312,047	21,632	936	56	22,624	289,423
COUT-H	285,124	20,545	764	56	21,364	263,760
COUT-I	269,715	19,949	703	109	20,762	248,953

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:

- coal and mineral mining
- oil and gas development
- pipeline corridors
- communication, transportation, and residential developments
- Gateway West Transmission Project

RFFAs in the CIAA for designated sage-grouse habitats include:

- TransWest Express Transmission Project
- Victory Pipeline Project
- coal mining,
- oil and gas development
- wind-energy and reservoir development

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, sage-grouse habitats affected by wildfires and vegetation management occurs in the CIAA for all COUT alternative routes. Numerous large fires in Utah, including Seeley (2012), Wood Hollow (2012), and Salt Creek (2007) have affected areas of sage-grouse occupied habitat in the CIAA. Fires in sage-grouse habitat may result in substantial loss of habitat that could last for decades because sagebrush does not resprout from roots following wildfires and can be slow to become re-established on a site following a fire. Re-establishment rate is largely dependent on precipitation, soil conditions, and fire severity. Therefore, especially in areas with low precipitation, wildfires can account for substantial modification or loss of sage-grouse habitats. Sage-grouse habitat burned in the Seeley Fire is in a high precipitation zone for sagebrush, which may allow for faster sagebrush recovery than areas with low precipitation. BLM vegetation management activities in Utah include the BLM Vernal Field Office fuel treatments and habitat improvement projects, and fuel treatments on the Manti-La Sal National Forest, which are intended to result in improved wildlife habitat conditions in the CIAA.

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 4-104 to 4-106).

Some of the Project impacts on sage-grouse associated with the 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 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. The majority of the total available designated habitats for sage-grouse would not be developed by the Project or other cumulative actions (Tables 4-104 to 4-106).

Some of the Project impacts on sage-grouse associated with the COUT alternative routes in Utah would occur in areas where the alternative routes would parallel an existing high-voltage transmission line that has degraded the existing quality of sage-grouse habitats. The 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 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 the 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, and habitat within 4 miles of leks in core areas for all alternative routes by sage-grouse population in Utah, is summarized in Tables 4-104 to 4-106.

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 the 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 the COUT alternative routes by sage-grouse population is summarized in Tables 4-107 and 4-108.

TABLE 4-107
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						
COUT-A	147,677	52,607	483	150	53,240	94,437
COUT-B	97,567	28,091	490	2	28,582	68,985
Halfway Hollow Population						
COUT-A	144,657	34,103	447	222	34,772	109,885
COUT-B	144,652	34,100	447	217	34,764	109,888
Deadman's Bench Population						
COUT-A	92,194	5,510	435	160	6,105	86,088
COUT-B	92,188	5,509	435	157	6,101	86,087
COUT-C (Agency and Applicant Preferred Alternative)	121,982	15,443	435	267	16,145	105,837
COUT-H	121,984	15,444	435	265	16,143	105,841
COUT-I	121,984	15,444	435	261	16,139	105,845
Strawberry/Fruitland Population						
COUT-A	155,782	11,090	809	241	12,140	143,641
COUT-B	3,651	107	0	0	107	3,543
COUT-C (Agency and Applicant Preferred Alternative)	3,652	107	0	0	107	3,545
Emma Park Population						
COUT-A	10,335	1,003	118	0	1,121	9,214
COUT-B	148,751	16,008	801	33	16,843	131,908
COUT-C (Agency and Applicant Preferred Alternative)	148,402	15,245	801	44	16,090	132,312
COUT-H	127,831	22,400	516	0	22,917	104,914
COUT-I	67,598	11,474	453	55	11,981	55,617
Anthro Mountain Population						
COUT-A	35	5	0	0	5	31
COUT-B	50,748	2,912	0	0	2,912	47,837
COUT-C (Agency and Applicant Preferred Alternative)	74,751	6,453	129	69	6,651	68,100
COUT-H	75,239	6,501	129	69	6,698	68,540
COUT-I	75,238	6,501	129	68	6,697	68,541
Horn Mountain Population						
Alternatives COUT-H and COUT-I						
COUT-H	3,591	118	0	0	118	3,473
COUT-I	48,476	6,515	133	65	6,713	41,763

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

TABLE 4-108
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						
COUT-A	66,873	22,011	267	129	22,407	44,466
COUT-B	42,680	7,353	267	0	7,620	35,060
Halfway Hollow Population						
COUT-A	80,479	10,604	142	72	10,818	69,661
COUT-B	80,478	10,604	142	71	10,816	69,661
Deadman's Bench Population						
COUT-A	29,311	2,009	69	43	2,121	27,190
COUT-B	29,311	2,009	69	42	2,120	27,191
COUT-C (Agency and Applicant Preferred Alternative)	29,311	2,009	69	56	2,134	27,177
COUT-H	29,311	2,009	69	56	2,133	27,177
COUT-I	29,311	2,009	69	55	2,123	27,178
Strawberry/Fruitland Population						
COUT-A	88,358	8,192	608	189	8,989	79,369
Emma Park Population						
COUT-A	1,828	58	6	0	64	1,764
COUT-B	101,282	7,643	647	14	8,304	92,978
COUT-C (Agency and Applicant Preferred Alternative)	101,281	8,901	647	0	9,548	91,733
COUT-H	73,841	7,796	475	0	8,270	65,571
COUT-I	52,587	7,082	414	55	7,551	45,036
Anthro Mountain Population						
COUT-B	32,941	1,848	0	0	1,848	31,093
COUT-C (Agency and Applicant Preferred Alternative)	32,757	1,838	0	0	1,838	30,918
COUT-H	32,941	1,848	0	0	1,848	31,093
COUT-I	32,941	1,848	0	0	1848	31,093

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 3-5) in the CIAA for the species, core areas and priority habitats and habitats within 4 miles of leks supporting the South Slope Uinta population would be affected directly by Alternative COUT-A .

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. RFFAs in the CIAA for core and priority habitats include the TransWest Express Transmission Project and the Victory Pipeline Project.

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, sage-grouse habitats supporting the South Slope Uinta population affected by vegetation management occurs in the CIAA for Alternative COUT-A. BLM vegetation management activities in the CIAA for sage-grouse habitats supporting the South Slope Uinta population include BLM Vernal Field Office habitat and rangeland management activities, which are intended to result in improved wildlife habitat conditions in the CIAA.

The extent of development associated with implementation of Alternative COUT-A would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse designated habitats in the CIAA (Tables 4-107 and 4-108).

Project impacts on sage-grouse habitat supporting the South Slope Uinta population associated with Alternative COUT-A 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 3-5) in the CIAA for the species, core areas and priority habitats, and habitats within 4 miles of leks supporting the Halfway Hollow population would be affected directly by Alternative COUT-A and COUT-B.

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 is the TransWest Express Project.

Sage-grouse habitats supporting the Halfway Hollow population have not been affected by recent wildfires or vegetation management in the CIAA for the COUT alternative routes.

A portion of the Project development of Alternative COUT-A and COUT-B would occur outside areas affected by past and present actions or RFFAs in the sage-grouse CIAA (Tables 4-107 and 4-108) 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 and COUT-B 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 parallel an existing high-voltage transmission line.

Deadman's Bench Population

Of the BLM-designated sage-grouse populations in Utah (Section 3.2.8, Map 3-5) in the CIAA for the species, core areas and priority habitats and habitats within 4 miles of leks supporting the Deadman's Bench population would be affected directly by all the COUT alternative routes.

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 TransWest Express Project and oil and gas development.

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, sage-grouse habitats supporting the Deadman's Bench population affected by vegetation management occurs in the CIAA for all of the COUT alternative routes. BLM vegetation management activities in the CIAA for sage-grouse habitats supporting the Deadman's Bench population include BLM Vernal Field Office habitat and rangeland management activities, which are intended to result in improved wildlife habitat conditions in the CIAA.

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 4-107 and 4-108).

Project impacts on sage-grouse habitat supporting the Deadman's Bench population associated with implementation of the COUT alternative routes 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 3-5) in the CIAA for the species, core areas and priority habitats and habitats within 4 miles of leks supporting the Strawberry/Fruitland population are directly affected by Alternative COUT-A.

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 TransWest Express Transmission Project and oil and gas development.

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, sage-grouse habitats supporting the Strawberry/Fruitland population affected by vegetation management occurs in the CIAA for Alternative COUT-A. BLM vegetation management activities in the CIAA for sage-grouse habitats supporting the Strawberry/Fruitland population include BLM Vernal Field Office habitat and rangeland management activities, which are intended to result in improved wildlife habitat conditions in the CIAA.

The extent of development associated with implementation of Alternative COUT-A would be anticipated to contribute incrementally to fragmentation and modification of sage-grouse designated habitats in the CIAA (Tables 4-107 and 4-108).

Project impacts on sage-grouse habitat supporting the Strawberry/Fruitland population associated with implementation of Alternative COUT-A 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 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 3-5) in the CIAA for the species, core areas and priority habitats and habitats within 4 miles of leks supporting the Emma Park population would be affected directly by Alternatives COUT-B, COUT-C, and 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:

- coal and other mineral mining
- residential and oil and gas development

RFFAs in the CIAA for core and priority habitats include:

- TransWest Express Transmission Project
- coal mining

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, sage-grouse habitats supporting the Emma Park population affected by wildfires occurs in the CIAA for all COUT alternative routes. The Price Canyon Fire (2002) and the Mathis Fire (2007) have affected areas of sage-grouse occupied habitat supporting the Emma Park population in the CIAA. Fires in sage-grouse habitat may result in substantial loss of habitat that could last for decades because sagebrush does not resprout from roots following wildfires and can be slow to become re-established on a site following a fire. Re-establishment rate is largely dependent on precipitation, soil conditions, and fire severity. Therefore, especially in areas with low precipitation, wildfires can account for substantial modification or loss of sage-grouse habitats. Some of the sage-grouse habitat burned in these fires was in a higher precipitation zone for sagebrush, which may allow for faster sagebrush recovery than areas with low precipitation.

The extent of development associated with implementation associated with Alternatives COUT-B and COUT-C 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 4-107 and 4-108).

The extent of development associated with implementation associated with implementation of Alternatives COUT-B, COUT-C, 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 4-107 and 4-108). However, Alternatives COUT-B and COUT-C 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 and present actions or RFFAs in the sage-grouse CIAA (Tables 4-107 and 4-108) 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 COUT-I would be in priority and core area habitat as well as habitat within 4 miles of known leks. Where they cross the Emma Park area, Alternatives COUT-B and COUT-C 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 3-5) in the CIAA for the species, core areas and priority habitats and habitats within 4 miles of leks supporting the Anthro Mountain population are directly affected by Alternatives COUT-C, 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 is the TransWest Express Transmission Project.

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, sage-grouse habitats supporting the Anthro Mountain population affected by wildfires and vegetation management occurs in the CIAA for Alternatives COUT-B, COUT-C, COUT-H, and COUT-I. The Twin Hollow Fire (2009) has affected a small area of sage-grouse occupied habitat supporting the Anthro Mountain population in the CIAA. Fires in sage-grouse habitat may result in substantial loss of habitat that could last for decades because sagebrush does not resprout from roots following wildfires and can be slow to become re-established on a site following a fire. Re-establishment rate is largely dependent on precipitation, soil conditions, and fire severity. Therefore, especially in areas with low precipitation, wildfires can account for substantial modification or loss of sage-grouse habitats. Some of the sage-grouse habitat burned in these fires was in a higher precipitation zone for sagebrush, which may allow for faster sagebrush recovery than areas with low precipitation. BLM vegetation management activities for sage-grouse habitats supporting the Anthro Mountain population in the CIAA include BLM Vernal Field Office habitat and rangeland management activities, which are intended to result in improved wildlife habitat conditions in the CIAA.

The extent of development associated with implementation of Alternatives COUT-C, 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 4-107 and 4-108).

Project impacts on sage-grouse habitat supporting the Anthro Mountain population associated with Alternative COUT-C, 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 3-5) in the CIAA for the species, core areas and priority habitats and 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:

- coal mining
- oil/gas development

The RFFA in the CIAA for core and priority habitats is the TransWest Express Transmission Project.

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, sage-grouse habitats supporting the Horn Mountain population affected by wildfires and vegetation management occurs in the CIAA for Alternative COUT-I. Several small fires have affected a small area of sage-grouse occupied habitat supporting the Horn Mountain population in the CIAA. Fires in sage-

grouse habitat may result in substantial loss of habitat that could last for decades because sagebrush does not resprout from roots following wildfires and can be slow to become re-established on a site following a fire. Re-establishment rate is largely dependent on precipitation, soil conditions, and fire severity. Wildfires can account for substantial modification or loss of sage-grouse habitats. Sage-grouse habitat supporting the Horn Mountain population is in a high precipitation zone for sagebrush, which may allow for faster sagebrush recovery than areas with low precipitation. Vegetation management activities in sage-grouse habitats supporting the Horn Mountain population in the CIAA include fuel treatments on the Manti-La Sal National Forest, which are intended to result in improved wildlife habitat conditions in the CIAA.

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 4-107 and 4-108).

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 it crosses the Horn Mountain area would parallel an existing EHV transmission line.

White-tailed Prairie Dog

The estimated area of cumulative development in potential white-tailed prairie dog habitat for the COUT alternative routes is summarized in Table 4-109.

TABLE 4-109
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			
COUT-A	2,936	425	420	301	1,146	1,790
COUT-B	3,037	416	449	294	1,159	1,878
COUT-C (Agency and Applicant Preferred Alternative)	2,426	354	315	288	957	1,469
COUT-H	2,499	416	314	284	1,013	1,486
COUT-I	2,906	416	321	332	1,068	1,838

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:

- coal and other mineral mining
- oil and gas development
- residential and industrial development
- pipeline corridors

RFFAs in the CIAA for white-tailed prairie dog include:

- TransWest Express Transmission Project
- Victory Pipeline Project
- oil and gas development

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, white-tailed prairie dog potential colonies affected by wildfires and vegetation management occurs in the CIAA for all COUT alternative routes. The Mellen fire (2009) in Utah affected areas of white-tailed prairie dog potential colonies in the CIAA, although the majority of white-tailed prairie dog potential colonies in the CIAA was unaffected by this fire. BLM vegetation management activities in Utah include BLM Vernal Field Office fuel and habitat treatments, which are intended to result in improved wildlife habitat conditions in the CIAA.

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 routes 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 4-109).

Black-footed Ferret

The estimated area of cumulative development in black-footed ferret management areas for the COUT alternative routes is summarized in Table 4-110.

TABLE 4-110
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			
COUT-A	11,272	422	324	95	840	10,432
COUT-B	11,272	422	324	92	838	10,434
COUT-C (Agency and Applicant Preferred Alternative)	16,968	642	139	159	939	16,029
COUT-H	16,968	642	139	157	938	16,030
COUT-I	16,968	642	139	155	935	16,032

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

The RFFA in the CIAA for black-footed ferret is the TransWest Express Transmission Project.

In addition to the effects of the past and present actions and RFFAs analyzed quantitatively in this section, black-footed ferret management areas affected by vegetation management occurs in the CIAA for all COUT alternative routes in Utah. Vegetation management activities include BLM Vernal Field Office fuel and habitat treatments, which are intended to result in improved wildlife habitat conditions in the CIAA.

The extent of development associated with implementation of the Alternatives COUT-A and COUT-B, 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, 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 for 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. The COUT alternative routes would intersect the Wolf Creek black-footed ferret management area. Black footed-ferret occurrences have not been recorded since a plague event in 2008 and 2009 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 4-110).

4.3.9 Migratory Birds

The section addresses potential cumulative effects on migratory birds and their habitat resulting from the Project in addition to past and present actions and RFFAs. Resources addressed in this section are the same as those described in Section 3.2.9.

Migratory birds protected under the MBTA include species and individuals that may never migrate but are protected by the MBTA, and species that may migrate across North America or between continents. The geographic scope for this cumulative effects analysis does not attempt to capture all cumulative actions throughout the range of all migratory birds that may pass through or reside in the Project area. However, this is not intended to minimize the threats that migratory birds face in various parts of their ranges. Some Neotropical migratory species observed to be declining in North America may be affected by habitat loss or other factors in Central and South America more strongly than by stressors in North America. Climate change can alter resource availability differentially across the migration routes of some species or trigger changes in migration dates (Jones and Cresswell 2010, Butler 2003). In North America, migratory birds that pass through the Project area but nest further north, up to the Arctic circle, may be affected by factors in their nesting range independently of factors they may be exposed to while crossing through the Project area. While any of these factors anywhere in each species' range may contribute to population trajectories, this analysis is intended to reflect how the Project may contribute to existing impacts on migratory birds in the Project area.

The geographic scope for the quantitative portion of this cumulative effects analysis is focused on past and present actions and RFFAs in 12-digit HUCs that would be crossed by each alternative route. The cumulative effects analysis for migratory birds considers direct and indirect impacts from the Project (described in Sections 3.2.7 and 3.2.9) in conjunction with the past and present actions and RFFAs listed in Tables 4-1 and 4-2.

4.3.9.1 Issues Identified for Analysis

4.3.9.1.1 Cumulative Loss of Migratory Bird Habitat

Loss of migratory bird habitats was identified by the agencies and public during scoping as an issue relating to migratory birds. Habitat types such as wetlands and riparian vegetation are regionally rare and disproportionally valuable to migratory birds, and other habitat types such as big sagebrush are declining regionally, in part due to anthropogenic disturbance and development.

4.3.9.1.2 Cumulative Contributions to Human-caused Bird Mortality and Disturbance

Many human activities contribute to accidental deaths of migratory birds, and this was identified as an issue by the agencies and public during scoping. Collision mortality is caused in the greatest numbers by window strikes, but energy facilities such as transmission and distribution lines and wind turbines are a substantial proportion of annual collision mortality as well. Each source of collision mortality likely affects certain species or groups of species more than others. The CIAA supports ongoing energy extraction, generation, and transmission projects, which cumulatively pose a mortality risk to migratory birds.

4.3.9.2 Existing Condition

Migratory birds, particularly long-distance Neotropical migrants, face a range of man-made obstacles and landscape-scale habitat changes across their migration routes and in their nesting, migration, and wintering habitat. Because appropriate resources must be present along an entire migratory route, long-distance migrants can be highly sensitive to changes on the landscape. Climate change may further contribute to stressors on migratory birds by altering seasonal cues or by shifting resource availability in relation to migration dates. Short-distance migrants and resident birds protected under the MBTA also may be exposed to these threats and changes, but often to a lesser degree. Conservation of these species also may be more efficient and effective, as international communication and cooperation is limited.

Loss, alteration, and fragmentation of migratory bird habitat can adversely affect survival and breeding success, which can cause or contribute to population declines in migratory bird species (Finch 1991; Robinson et al. 1995). While habitat loss to permanent development is assumed to affect any bird species that may have been present, the cumulative effects of habitat alteration and vegetation change on birds can be subtle, and may not always represent a complete loss of habitat for all birds. Many bird species can use highly modified landscapes, including farmland, high-density urban areas, and logging clear-cuts. However, species adapted to disturbed habitats and resilient to human disturbance often are not declining or considered at risk.

Migratory bird species of concern identified in Table J-7 of Appendix J use the Project area at various times of the year, for nesting, migration, wintering, or as year-round residents. Many other species, not identified as bird species of concern, also are present in the Project area but are not listed individually. Breeding Bird Survey (BBS) results from 1966 to 2013 (Sauer et al. 2014) were reviewed for all species listed in Table J-6 of Appendix J to provide a summary of the general trends exhibited by bird species of concern in the Project area and the West. BBS results do provide important long-term information on apparent trends and are used by some organizations to identify priority species, but the data are not intended to provide insight into the causes of declines or trigger particular management and policy outcomes. Because the BBS reports surveys conducted during the summer nesting season, trends were not reported for species that do not nest in the areas covered by each BBS data query. The data were reviewed by species for BBS routes in the Western Region, Wyoming, Colorado, and Utah.

Some bird species naturally exhibit strong fluctuations in population levels in response to resource availability, and other species are uncommon and provided a small sample size in the BBS results. Thus,

trends for many species may appear to be generally positive or negative, but are not statistically significant (i.e., the 95 percent confidence interval includes a neutral trend) in the geographic area covered by a given query. Table 4-15 presents summary results for BBS data for the 133 bird species of concern listed in Table J-6 of Appendix J.

TABLE 4-111
BREEDING BIRD SURVEY TRENDS FOR 133 SPECIAL STATUS BIRD SPECIES IN THE PROJECT AREA

Trend	Western Region	Wyoming	Colorado	Utah
Positive (Total)	34	38	42	46
Positive (Significant)	14	8	13	14
Negative (Total)	70	47	43	33
Negative (Significant)	32	6	17	10
Non-breeding in Breeding Bird Survey query	29	48	48	54

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).

Humans cause or contribute to an estimated 1 billion unintentional bird deaths annually in North America, from sources such as domestic cats, collision with buildings and other infrastructure, environmental contaminants, and numerous other causes (Erickson et al. 2005, Lilley and Firestone 2008), although a review of studies on predation by cats estimated that more birds may be killed by cats than all other sources combined under previous estimates (Loss et al. 2013). Estimates of the contribution of transmission line collisions to total human-caused mortality vary, but consistently indicate that this can be a substantial cause of mortality, particularly for high-risk species. While no single study can provide reliable estimates for collision across the geographically and biologically diverse continent, reviews of multiple studies have estimated that annual collision mortality is likely to be in the tens of millions and may be up to 10 percent of accidental human-caused bird mortality (Erickson et al. 2001, Loss et al. 2014a).

On a continental scale, factors such as collisions with buildings or domestic cat predation may be a greater threat to birds than collision with transmission lines (Loss et al. 2014b, Loss et al. 2013). However, the CIAA supports a relatively low population density with few tall buildings; and as a result, is also likely to have a relatively low domestic cat density. Also on a continental scale, hazards associated with oil and gas development and collision with wind turbines are relatively minor contributions to overall mortality (Erickson et al. 2005), but the CIAA supports substantial oil and gas development, and wind-energy production continues to increase. Wind energy in particular causes a high risk of collision to some long-lived species sensitive to additional mortality, such as the golden eagle and other raptors (Drewitt and Langston 2008).

4.3.9.3 Results

Land administered by the USFS and 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; transmission lines; pipelines; highways; wind and solar energy

development; military training and testing; residential subdivision expansion; communication site development; and municipal and irrigation water production, protection, and storage. Past and present actions have contributed to incremental loss, alteration, and fragmentation of foraging, nesting, and breeding habitat and cover for migratory bird species. Continuation of past and present actions into the future, in addition to other RFFAs, is anticipated to contribute to the incremental modification of migratory bird habitat and disturbance of migratory birds in the CIAA. Existing and future communication towers, transmission and distribution lines, and wind-energy projects will continue to increase the collision mortality risk for migratory birds in the CIAA. For a comprehensive summary of past and present actions and RFFAs, refer to Tables 4-1 and 4-2.

In the context of this cumulative effects analysis, any action alternative would result in the creation of a transmission line between the Aeolus and Clover substations, which would result in lost habitat, disturbance during construction and operation of the Project, and the creation of a collision hazard, particularly at all major river crossings, agricultural areas, and wetlands. These impacts would occur regardless of the selected alternative route and would contribute to the ongoing and future effects of past and present actions and RFFAs, but would vary in scale and intensity approximately in proportion to the length of each alternative route.

4.3.9.3.1 Cumulative Impacts on Migratory Bird Habitat

Section 4.3.5 provides detailed comparisons of the cumulative impacts on vegetation in the CIAA for each alternative route. Because of the mobility of migratory birds, their use of multiple habitat types throughout the year, and the potential for many species to be exposed to almost any cumulative action in the CIAA, individual alternative routes are not compared for cumulative impacts in this section. This section provides a summary of the existing and projected cumulative impacts by alternative route for each habitat type analyzed in Section 4.3.5. That analysis was conducted by overlaying cumulative actions and vegetation communities, analyzed by 12-digit HUCs. However, in the context of migratory birds, an analysis at nearly any geographic scale would be anticipated to show that human impacts on migratory bird habitat are substantial and widespread, and the proportion of some types of habitat lost to development can reasonably be considered a contributor to observed declines in species populations.

Past and present actions in the CIAA include the following:

- coal mines
- communication facilities
- pipelines
- mineral leases
- oil and gas development
- oil shale development
- recreational and residential development
- wind-energy facilities
- Energy Gateway West Transmission Project

RFFAs in the CIAA include the following:

- coal mines
- industrial development
- oil and gas development
- pipelines
- power generation facilities
- recreational and residential development

- habitat restoration projects
- TransWest Express, Mona South, Mona North, and West Desert Express transmission projects

However, many of these cumulative actions were quantified conservatively in the analysis, and the total area affected by cumulative actions may be overestimated. Oil and gas leases are restricted in the total proportion of the lease that can be subject to ground disturbance, and other types of actions may cause temporary disturbance but allow migratory bird habitat to recover or remain in place. A detailed description of past and present actions and RFFAs associated with each specific habitat type crossed by the Project and likely to be used by migratory bird species is included in Section 4.3.5.

The loss, fragmentation and modification of potentially suitable migratory bird habitat under all alternative routes 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 events such fires and vegetation management projects are not considered in the quantitative analysis. Although fires may temporarily reduce available habitat, and can contribute to long-term changes in some vegetation communities, they also may contribute to the long-term health of some vegetation communities such as grassland. In other vegetation communities, such as big sagebrush or riparian woodlands, fire may be a generally negative effect and can result in conversion to another vegetation community. Each of these effects can benefit some bird species and may contribute to declines in others. Vegetation management and rangeland improvement projects are not included in the quantitative analysis, as they may contribute positively to the maintenance of migratory bird habitat in some vegetation communities.

Table 4-112 presents the regional conditions and degree of habitat alteration from all cumulative actions, presented by alternative route grouping. The proportional range of affected and remaining habitat presented by alternative route in Section 4.3.5 is summarized as a range of impacts for each vegetation type, by alternative route. A detailed analysis of the acres of cumulative impacts by vegetation type, and by alternative route, is presented in each table in Section 4.3.5. Although the results in Table 4-112 provide regional context for how the Project would contribute to past and present actions and RFFAs in the CIAA, these results should be considered as an approximation of the magnitude of habitat loss and alteration but not a precise estimate of its impacts on migratory birds. Many actions in the CIAA, such as oil and gas leases, may not cause ground disturbance to the entire area leased. However, offsite effects such as noise, structure avoidance, and vegetation changes can contribute to impacts on migratory birds.

4.3.9.3.2 Cumulative Contributions to Human-caused Bird Mortality and Disturbance

The alternative routes cross similar ecosystems that support migratory birds, and the types of past and present actions and RFFAs in the CIAA for all alternative routes also are similar. Due to the similarity of resources affected and past, present, and future actions in the CIAA, many cumulative effects on migratory birds would be common to all alternative routes. Therefore, the potential effects are analyzed qualitatively. Information that supports the analysis of potential cumulative effects on migratory birds includes the quantitative analysis of cumulative impacts on vegetation communities that provide habitat for migratory birds included in Section 4.3.5.

TABLE 4-112
PROPORTION OF EACH HABITAT TYPE WITHIN THE CUMULATIVE IMPACTS ANALYSIS AREA AFFECTED BY ESTIMATED CUMULATIVE DEVELOPMENT

	Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO)			Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX)			Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)		
Vegetation Community	**Incremental Project Development**	**Estimated Cumulative Development**	**Remaining Available Resource**	**Incremental Project Development**	**Estimated Cumulative Development**	**Remaining Available Resource**	**Incremental Project Development**	**Estimated Cumulative Development**	**Remaining Available Resource**
Alpine	0%	0 to 10%	90 to 100%	0.1%	15 to 18%	82 to 85%	0.1 to 0.3%	10 to 29%	71 to 90%
Aspen	0%	3 to 13%	87 to 97%	0.1 to 0.2%	14 to 17%	83 to 86%	0.1 to 0.3%	5 to 19%	81 to 95%
Barren/Sparsely Vegetated	0.1 to 0.3%	4 to 6%	94 to 96%	0.2%	7 to 10%	90 to 93%	0.1 to 0.2%	6 to 10%	90 to 94%
Big Sagebrush	0.2 to 0.3%	6 to 7%	93 to 94%	0.2 to 0.3%	9 to 13%	87 to 91%	0.2 to 0.5%	8 to 14%	86 to 92%
Grassland	0.3%	4 to 5%	95 to 96%	0.2%	8 to 9%	91 to 92%	0.2 to 0.5%	6 to 16%	84 to 94%
Montane Forest	0%	0 to 1%	99 to 100%	0 to 0.1%	13 to 15%	85 to 87%	0 to 0.1%	4 to 22%	78 to 96%
Mountain Shrub	0%	1 to 24%	76 to 99%	0.2 to 0.3%	6%	94%	0.3%	3 to 9%	91 to 97%
Pinyon-Juniper	0.1 to 0.2%	2%	98%	0.1 to 0.2%	4 to 5%	95 to 96%	0.2 to 0.3%	5 to 9%	91 to 95%
Shrub/Shrub Steppe	0.2 to 0.3%	7 to 10%	90 to 93%	0.2 to 0.3%	9 to 10%	90 to 91%	0.2 to 0.3%	11 to 16%	84 to 89%
Riparian	0.2 to 0.3%	11 to 20%	80 to 89%	0.1%	24 to 41%	59 to 76%	0.1 to 0.3%	12 to 32%	68 to 88%
Water	0.1%	4 to 10%	90 to 96%	0 to 0.1%	18 to 19%	81 to 82%	0.1%	7 to 24%	76 to 93%
Wetland	0.1 to 0.2%	11 to 38%	62 to 89%	0.2%	30 to 34%	66 to 70%	0 to 0.2%	22 to 81%	19 to 78%

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 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 action alternatives would contribute to the collision risk created by all transmission lines, particularly in areas where transmission lines cross bird landing or take-off flight paths (Janss 2000). Physiological factors that increase the risk of collision with transmission line wires are described in Section 3.2.9. Locations where the Project would be constructed parallel and adjacent to existing transmission lines would limit the area of disturbance, increase the cumulative visibility of all obstacles in the corridor, require birds to make only one flight adjustment to avoid obstacles, and potentially lower the overall collision risk (APLIC 2012; Bevanger 1994). However, locations where the Project is parallel to lower-voltage transmission lines may result in the placement of wires at different heights across the corridor, which can cause birds to avoid one obstacle but fail to detect and avoid others (APLIC 2012).

The potential for temporal and/or spatial synergistic, adverse effects on migratory birds resulting from the construction of the Project and other transmission line projects (i.e., the TransWest Express and Gateway West transmission projects) was identified. This analysis assumes the selected route for the Project and the selected routes for the TransWest Express and the Gateway West (in Wyoming) transmission projects would be colocated in the same corridor. Construction of the Project may follow and temporally overlap with construction and stabilization efforts of the TransWest Express Transmission Project and the Gateway West Transmission Project in Wyoming. Overlapping construction and stabilization periods for the projects could result in temporal effects that could prolong displacement and disturbance of migratory birds; cause a greater total area of localized temporary habitat loss prior to reclamation; and by increasing the corridor width, amplify any potential effects of habitat fragmentation. Cumulative effects of the Project and the TransWest Express and the Gateway West transmission projects are discussed qualitatively.

Synergistic effects also include a potential increase in collision risk where these transmission lines would be constructed in the same corridor. However, there also are technical considerations for the location of multiple transmission lines across the landscape (APLIC 2012). Colocating the Project and TransWest Express Transmission Project, or any other parallel transmission lines, 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 two transmission lines directly adjacent to one another (within 250 feet). Potential collisions with wires located at different heights are unlikely to occur as similar clearance standards would be required for both the Project and TransWest Express transmission lines, which carry similar voltages.

4.3.10 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 3.2.10 and are considered in conjunction with the past and present actions and RFFAs listed in Tables 4-1 and 4-2.

Special status fish and aquatic species known for 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 3.2.10.5.

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 and present actions 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 and present actions 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 3.2.10).

4.3.10.1 Issues Identified for Analysis

Issues related to the effects of the Project and other past and present actions and RFFAs 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.

4.3.10.1.1 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.

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

Modification of habitat components, on which regionally rare or justifiably sensitive fish and aquatic species are dependent, 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.

4.3.10.1.3 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.

4.3.10.2 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 the public's 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 that 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 that would not be conducive for agriculture without water storage facilities. 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 that 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.

In addition to agricultural practices, wildfires and vegetation management practices that modify riparian and wetland habitats can affect aquatic habitats by decreasing soil stability, inhibiting the ability to moderate heavy flows, and removing shade. Modification of this nature results in higher water temperatures, decreased oxygen potential, and embeddedness of the substrate, which reduces breeding habitat that many species rely on for reproduction. The subsequent outcome of these results 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. Fish and aquatic resources affected by wildfires and vegetation management were excluded from the quantitative analysis as aquatic communities can recover from these events. Recovery from wildfires depends on the time since the occurrence, precipitation amounts, vegetation community type, fire intensity, and degree of associated degradation (weed invasion, soil loss, soil hydrophobicity, and alteration of riparian community structure).

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.

4.3.10.3 Results

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

Results of the cumulative effects analysis on aquatic habitats in the WYCO alternative routes are summarized in Section 4.3.4.3.1, Tables 4-37 and 4-38.

Aquatic habitats in the CIAA for the WYCO alternative routes are distributed throughout nine subbasins (refer to Section 3.2.4) and include between 184,552 and 236,067 acres (refer to Tables 4-37 and 4-38 in Section 4.3.4.3.1) of aquatic habitats associated with surface water resources and between 194,291 and 209,399 acres of aquatic habitats associated with wetland-riparian water resources, depending on the alternative 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 alternative routes that may currently be affecting aquatic habitats include:

- coal mines
- 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
- renewable energy facilities

Past and present development has contributed to some level of ground disturbance that, over time, is expected to be reclaimed in compliance 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 BLM 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 for the WYCO alternative routes. Where past and present development are not meeting reclamation requirements, some adverse effects could be impacting aquatic habitats on riparian, wetland, and/or aquatic habitats as well as increased sediment loading and water turbidity in the intermittent and perennial habitats close to the CIAA for the WYCO alternative routes.

In addition to the effects of past and present actions, fish and aquatic resources in the CIAA in association with the WYCO alternative routes have been affected by wildfires and vegetation management actions. The fish and aquatic resources affected by wildfires in the CIAA for the WYCO routes occur mostly in

Moffat County, Colorado, with the greatest concentration of wildfires associated with the CIAA for Alternative WYCO-D. Fish and aquatic resources affected by vegetation management actions, including prescribed burns, occur mostly in Carbon County, Wyoming, in association with Alternative WYCO-D. The Mud Springs (2007), Bitter Brush (2006), Lone Tree (2007), and Winter Valley (2000) fires as well as prescribed burns and other vegetation management treatments conducted by the BLM Rawlins and Little Snake Field Offices account for most of the effect on fish and aquatic resources resulting from wildfires or vegetation management actions. As recovery from disturbance events depends on the time since the occurrence, precipitation amounts, vegetation community type, disturbance intensity, and degree of associated degradation, it is difficult to determine the degree of localized recovery relative to each of the listed events. However, due to the amount of time that has elapsed since many of the listed events, fish and aquatic resources and their affected habitats in the CIAA as a whole are likely in various stages of recovery.

The Gateway West Transmission Project is a present action in the CIAA for the WYCO alternative routes.

RFFAs in the CIAA for the WYCO alternative routes include:

- the Rosebud coal mine
- Continental Divide-Creston Junction and Kerr-McGee oil and gas projects
- TransWest Express Transmission Project
- Hogback Ridge (Whirlwind I) 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 alternative routes. 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 and present actions 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.

In terms of aquatic habitats associated with surface water resources, the incremental effect of Project development estimated for the WYCO alternative routes differ marginally between alternative routes. The incremental Project development would account for approximately 11 to 26 acres (0.07 to 0.1 percent) of the total estimated cumulative effect on aquatic habitats associated with surface water resources in the CIAA. Development of the Project when added to the past and present actions and RFFAs could result in potential cumulative effects on 13,956 to 20,817 acres (8 to 9 percent) of the total available aquatic habitats associated with surface water resources in the CIAA (refer to Tables 4-37 and 4-38 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, would minimize cumulative impacts on fish and aquatic resources as well as the aquatic habitats on which they rely.

In terms of aquatic habitats associated with wetland-riparian water resources, the incremental effect of Project development estimated for the WYCO alternative routes differ marginally between alternative routes. The incremental Project development would account for approximately 35 to 46 acres (0.07 to 0.09 percent) of the total estimated cumulative effect on aquatic habitats associated with wetland-riparian water resources in the CIAA. Development of the Project when added to the past and present actions and RFFAs could result in potential cumulative effects on 45,232 to 48,845 acres (23 percent) of the total available aquatic habitats associated with wetland-riparian water resources in the CIAA (refer to Tables 4-37 and 4-38 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, would minimize cumulative impacts on fish and aquatic resources as well as the aquatic habitats on which they rely.

4.3.10.3.2 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 alternative routes are summarized in Section 4.3.4.3.2, Tables 4-39 and 4-40.

Aquatic habitats in the CIAA for the COUT BAX alternative routes are distributed throughout nine subbasins (refer to Section 3.2.4) and range between 206,691 and 223,389 acres of aquatic habitats associated with surface water resources and between 84,804 and 99,087 acres of aquatic habitats associated with wetland-riparian water resources, depending on the alternative route (refer to Tables 4-39 and 4-40, 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 alternative routes, which likely are affecting aquatic habitats, include:

- coal mines
- noncoal mines
- oil and gas developments
- oil shale and tar sands development
- pipelines, including the Enterprise Mid-America and Western Expansion II projects
- Clear Creek residential development

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 alternative routes. 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 COUT BAX alternative routes. 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.

In addition to the effects of past and present actions, fish and aquatic resources in the CIAA in association with the COUT BAX alternative routes have been affected by wildfires and vegetation management actions. The fish and aquatic resources affected by wildfires and vegetation management occur mostly along the Wasatch Plateau and occur in comparatively equal concentrations relative to each COUT BAX

alternative route. The Seeley (2012), Wood Hollow (2012), and Salt Creek (2007) fires as well as USFS timber sales and fuel treatments conducted by Manti-La Sal National Forest account for most of the effect to fish and aquatic resources associated with the COUT BAX alternative routes. As recovery from disturbance events depends on the time since the occurrence, precipitation amounts, vegetation community type, disturbance intensity, and degree of associated degradation, it is difficult to determine the degree of localized recovery relative to each of the listed events. However, due to the amount of time that has elapsed since many of the listed events, fish and aquatic resources and their affected habitats in the CIAA as a whole are likely in various stages of recovery.

Ground disturbance is expected to be reclaimed in compliance with federal and state reclamation requirements, which will mitigate 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 alternative routes. 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 likely are not affecting the endangered Colorado River fishes from past and present projects.

RFFAs in the CIAA for the COUT BAX alternative routes 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 and present actions and RFFAs would discharge greater than normal volumes of sediment into aquatic habitats. Aquatic habitats in the COUT BAX alternative routes 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 4.3.2.

In terms of aquatic habitats associated with surface water resources, the incremental effect of Project development estimated for the COUT BAX alternative routes differ marginally between alternative routes. The incremental Project development would account for approximately 47 to 57 acres (0.2 to 0.3 percent) of the total estimated cumulative effect on aquatic habitats associated with surface water resources in the CIAA. Development of the Project when added to the past and present actions and RFFAs could result in potential cumulative effects on 16,447 to 19,057 acres (8 to 9 percent) of the total available aquatic habitats associated with surface water resources in the CIAA (refer to Tables 4-39 and 4-40, 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.

In terms of aquatic habitats associated with wetland-riparian water resources, the incremental effect of Project development estimated for the COUT BAX alternative routes differ marginally between alternative routes. The incremental Project development would account for approximately 15 to 17 acres (0.07 percent) of the total estimated cumulative effect on aquatic habitats associated with wetland-riparian water resources in the CIAA. Development of the Project when added to the past and present actions and RFFAs could result in potential cumulative effects on 20,985 to 25,768 acres (25 to 26 percent) of the total available aquatic habitats associated with wetland-riparian water resources in the CIAA (refer to Tables 4-39 and 4-40, 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.

4.3.10.3.3 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 alternative routes are summarized in Section 4.3.4.3.3, Tables 4-41 and 4-42.

Aquatic habitats in the CIAA for the COUT alternative routes are distributed throughout nine subbasins (refer to Section 3.2.4) and range between 203,932 and 222,720 acres of aquatic habitats associated with surface water resources and between 167,437 and 195,635 acres of aquatic habitats associated with wetland-riparian water resources, depending on the alternative route (refer to Tables 4-41 and 4-42, 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 alternative routes that currently may be affecting aquatic habitats include:

- active coal mines
- Central Utah Telephone Fiber Optic communication lines
- lower Duchesne River Wetlands Project
- noncoal mine leases on SITLA lands
- oil and gas development on BLM-administered land, 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 projects

- Carbon County proposed ATV trail
- residential developments

Impacts of past and present projects in the COUT alternative routes on endangered Colorado River fishes and critical habitats are expected to be the same as those discussed for the COUT BAX alternative routes.

In addition to the effects of past and present actions, fish and aquatic resources in the CIAA in association with the COUT alternative routes have been affected by wildfires and vegetation management actions. The fish and aquatic resources potentially affected by wildfires occur mostly along the Wasatch Plateau and occur in comparatively equal concentrations relative to each COUT alternative route. The Seeley (2012), Wood Hollow (2012), Salt Creek (2007), Church Camp (2012) and Mellen (2009) fires account for the most notable wildfire events associated with the COUT alternative routes. Fish and aquatic resources potentially affected by vegetation management actions also occur mostly along the Wasatch Plateau and secondarily occur in association with lands administered by the BLM Vernal Field Office. Vegetation management actions occur in comparatively equal concentrations relative to each COUT alternative route. USFS timber sales and fuel treatments conducted by Manti-La Sal National Forest as well as habitat projects conducted by the BLM Vernal Field Office account for most of the effect on fish and aquatic resources associated with vegetation management actions. As recovery from disturbance events depends on the time since the occurrence, precipitation amounts, vegetation community type, disturbance intensity, and degree of associated degradation, it is difficult to determine the degree of localized recovery relative to each of the listed events. However, due to the amount of time that has elapsed since many of the listed events, fish and aquatic resources and their affected habitats within the CIAA as a whole are likely in various stages of recovery.

RFFAs in the CIAA for the COUT alternative routes with assumed or implied ground disturbance would include:

- Flat Canyon and Long Canyon coal mine leases
- Narrows Reservoir, East Bench diversion dam, Narrows tunnel, and associated Upper Cottonwood and Oak Creek pipelines
- Price industrial complex
- oil and gas development from the Kerr-McGee and Monument Butte projects
- Woodside power-generation facility
- Narrows highway relocation project
- Shalom Electric Boulger timber salvage project
- 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 alternative routes are expected to be the same as those described under the COUT BAX alternative routes.

In terms of aquatic habitats associated with surface water resources, the incremental effect of Project development estimated for the COUT alternative routes differ marginally between alternative routes. The incremental Project development would account for approximately 17 to 36 acres (.1 to 0.2 percent) of the total estimated cumulative effect on aquatic habitats associated with surface water resources in the CIAA. Development of the Project when added to the past and present actions and RFFAs could result in potential cumulative effects on 12,938 to 17,739 acres (6 to 8 percent)of the total available aquatic habitats associated with surface water resources in the CIAA (refer to Tables 4-41 and 4-42, 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.

In terms of aquatic habitats associated with wetland-riparian water resources, the incremental effect of Project development estimated for the COUT alternative routes differ marginally between alternative routes. The incremental Project development would account for approximately 7 to 66 acres (0.01 to 0.1 percent) of the total estimated cumulative effect on aquatic habitats associated with wetland-riparian water resources in the CIAA. Development of the Project when added to the past and present actions and RFFAs could result in potential cumulative effects on 52,201 to 57,239 acres (29 percent) of the total available aquatic habitats associated with wetland-riparian water resources in the CIAA (refer to Tables 4-41 and 4-42, 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, would minimize cumulative impacts on fish and aquatic resources as well as the aquatic habitats on which they rely.

4.3.11 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 3.2.11) and considers them in conjunction with the past and present actions 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 route is presented, but no cumulative effects analysis was completed for this resource.

4.3.11.1 Issues Identified for Analysis

4.3.11.1.1 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 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.

4.3.11.1.2 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.

4.3.11.2 Existing Condition

4.1.1.1.2 Existing and Future Land Use

The predominant existing land uses in the Project area include grazing, rangeland, and agriculture. These land uses, 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.

4.3.11.3 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 4-113 to 4-119. 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 3.2.11.4.1), 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 4.3.13. 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 tables in each section 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 4-3 with the list of the RFFAs by alternative route.

4.3.11.3.1 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. A qualitative discussion follows each summary table. Each table lists by alternative route the total available resource, the development in acres (Project, past and present actions, 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 for the WYCO, COUT BAX, and COUT alternative routes. The discussion includes the past and present actions and/or RFFAs that have occurred, or could occur, in the boundary of these existing land uses, in addition to the Project.

Grazing/Rangeland

The cumulative effects summary for existing land use (grazing/rangeland) by land-use jurisdiction is presented in Tables 4-113 to 4-115.

TABLE 4-113
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							
WYCO-B (Agency and Applicant Preferred Alternative)	1,538,577	52,817	29,872	2,956	85,646	1,452,931	<1
WYCO-C	1,599,385	52,335	31,672	2,891	86,898	1,512,487	<1
WYCO-D	1,233,361	52,300	25,887	2,845	81,031	1,152,330	<1
WYCO-F	1,563,556	54,330	32,651	2,994	89,975	1,473,582	<1
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	1,386,521	52,309	6,614	2,730	61,654	1,324,868	<1
COUT BAX-C	1,515,640	58,515	51,448	2,348	112,311	1,403,329	<1
COUT BAX-E	1,508,845	60,701	31,140	2,721	94,563	1,414,282	<1
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
COUT-A	363,315	28,676	2,700	1,097	32,473	330,841	<1
COUT-B	401,955	29,685	3,663	1,071	34,420	367,535	<1
COUT-C (Agency and Applicant Preferred Alternative)	779,360	98,831	5,816	1,997	106,644	672,715	<1
COUT-H	866,678	107,339	6,028	1,704	115,071	751,606	<1
COUT-I	941,286	109,666	6,607	2,301	118,574	822,712	<1

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

TABLE 4-114
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	120,625	46,337	357	193	46,887	73,738	<1
COUT BAX-C	120,625	46,337	357	192	46,886	73,739	<1
COUT BAX-E	31,366	7,543	230	46	7,819	23,547	<1
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
COUT-A	207,556	1,996	891	337	3,225	204,331	<1
COUT-B	209,878	2,778	717	152	3,647	206,231	<1
COUT-C (Agency and Applicant Preferred Alternative)	189,184	1,651	419	92	2,163	187,021	<1
COUT-H	31,366	7,543	230	50	7,823	23,543	<1
COUT-I	120,625	46,337	357	205	46,899	73,725	<1

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

TABLE 4-115
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							
WYCO-B (Agency and Applicant Preferred Alternative)	9,245	1,648	379	189	2,216	7,029	2
WYCO-C	9,800	1,759	411	193	2,363	7,437	2
WYCO-D	18,317	2,832	367	309	3,508	14,809	2
WYCO-F	9,805	1,694	414	189	2,297	7,508	2
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	118,604	12,552	1,451	386	14,389	104,216	<1
COUT BAX-C	127,640	16,837	1,477	176	18,491	109,149	<1
COUT BAX-E	132,348	17,408	1,447	137	18,992	113,355	<1

TABLE 4-115
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				
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
COUT-A	21,463	1,307	220	122	1,649	19,815	<1
COUT-B	36,469	1,555	484	127	2,166	34,302	<1
COUT-C (Agency and Applicant Preferred Alternative)	64,762	41,654	1,285	201	43,140	21,622	<1
COUT-H	59,112	41,159	244	87	41,490	17,622	<1
COUT-I	97,031	43,185	914	248	44,346	52,685	<1
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 for all WYCO alternative routes would be less than 1 percent on BLM land and approximately 2 percent 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 activates 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 grazing allotments for all COUT BAX alternative routes would be less than 1 percent on BLM-administered land, less than 1 percent on USFS-administered land, and less than 1 percent on state land. Various past and present actions and RFFAs would occur throughout the grazing allotments on BLM- and USFS-administered and state lands. The short- and long-term cumulative effects would be similar to those discussed for the 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 for all COUT alternative routes would be less than 1 percent on BLM-administered land, less than 1 percent on USFS-administered land, and less than 1 percent on state land. Various past and present actions and RFFAs would occur throughout the grazing allotments on BLM- and USFS-administered and state lands. The short- and long-term cumulative effects would be similar to those discussed for the WYCO alternative routes.

Agriculture

The cumulative effects summary for existing land use (agriculture) is presented in Table 4-116.

TABLE 4-116
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							
WYCO-B (Agency and Applicant Preferred Alternative)	648	11	2	0	13	635	0
WYCO-C	645	11	2	0	13	631	0
WYCO-D	17,905	388	284	84	756	17,149	<1
WYCO-F	645	11	2	0	13	632	0
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	5,735	156	80	50	286	5,449	<1
COUT BAX-C	5,735	156	80	49	286	5,449	<1
COUT BAX-E	6,268	137	49	57	242	6,026	<1
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
COUT-A	12,781	1,441	138	105	1,684	11,097	<1
COUT-B	11,362	861	150	82	1,093	10,270	<1
COUT-C (Agency and Applicant Preferred Alternative)	6,624	102	51	82	235	6,389	1
COUT-H	6,714	94	76	61	231	6,483	<1
COUT-I	11,659	198	116	102	416	11,244	<1
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 Agriculture

The percentage of the Project alternative routes located in agriculture areas would be less than 1 percent for WYCO alternative routes. Past and present actions occurring in agricultural areas include:

- 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
- Wyoming state land oil and gas leases
- Chokecherry Wind Farm Expansion
- Gateway West Transmission Project
- 16-inch and 12-inch diameter pipeline owned by El Paso Corporation
- 20-inch diameter pipeline owned by General Electric Company
- 8-inch diameter pipeline owned by Kinder Morgan Incorporated
- 6-inch diameter pipeline owned by MidAmerican Energy Holdings Corporation

- 10-inch and 6-inch diameter pipelines owned by Plains All American GP LLC
- 8-inch diameter pipeline owned by Questar Corporation
- 6-inch diameter pipeline owned by Source Gas LLC
- 6-inch diameter pipeline owned by Xcel Energy Incorporated
- Hayden to Artesia 138kV transmission line
- Craig to Rifle 230kV transmission line
- Hayden to Craig 230kV transmission line
- Bears Ears to Bonanza 345kV transmission line
- Craig to Ault 345kV transmission line
- Craig to Rifle 345kV transmission line
- D&RGW Railroad
- Secondary roads

RFFAs proposed or planned in agricultural areas include:

- TransWest Express Transmission Project
- Continental Divide-Creston Junction oil and/or gas project
- Hogback Ridge (Whirlwind I) Wind Energy 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.

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 all 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
- historic fire perimeters (2000 to 2011, and 2012)
- Hiawatha Complex coalmine
- Narrows reservoir and east bench and oak creek pipelines
- Clouse No. 1 Exemption Plat and Simple Land Division
- 20-inch and 6-inch diameter pipelines owned by Questar Corporation
- 10-inch diameter pipeline owned by The Williams Companies Incorporated
- Nebo to Martian Marietta 138kV transmission line
- Rangely to Meeker 138kV transmission line
- Huntington to Emery 345kV transmission line
- Huntington to Pinto 345kV transmission line
- Mona to Bonanza 345kV transmission line
- Mona to Huntington 345kV transmission line
- Spanish Fork to Emery 345kV transmission line
- D&RGW Railroad
- Union Pacific Railroad
- Secondary roads
- Historic wild fires

RFFAs proposed or planned in agricultural areas include:

- TransWest Express Transmission Project
- Woodside power-generation facility

The short- and long-term cumulative effects would be similar to those discussed for the 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 all COUT alternative routes. Past and present actions occurring in agricultural areas include:

- BLM habitat projects for the Vernal Field Office
- oil and gas units for the BLM 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
- Victory Pipeline
- Narrows reservoir and East Bench and Oak Creek pipelines
- Residential developments in Duchesne County
- 10-inch diameter pipeline owned by Chevron Pipeline Company
- 18-inch, 12-inch, and 8-inch diameter pipelines owned by Questar Pipeline Company
- Nebo to Martin Marietta 138kV transmission line
- Mona to Bonanza 345kV transmission line
- Mona to Huntington 345kV transmission line
- Upalco to Panther 138kV transmission line
- Mounds SW PK to Helper 138kV transmission line
- D&RGW Railroad
- Union Pacific Railroad
- Secondary roads

One RFFA is proposed or planned in agricultural areas, the TransWest Express Transmission Project. The short- and long-term cumulative effects would be similar to those discussed for the WYCO alternative routes.

Industrial

The cumulative effects summary for existing land use (industrial) is presented in Table 4-117.

TABLE 4-117 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (INDUSTRIAL) FOR ALL ALTERNATIVE ROUTES IN ACRES							
		No Action Alternative					
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes							
WYCO-B (Agency and Applicant Preferred Alternative)	1,477	30	87	0	117	1,360	0
WYCO-C	1,160	51	82	1	134	1,026	<1
WYCO-D	1,280	37	47	9	93	1,187	<1
WYCO-F	1,438	22	93	0	115	1,322	0
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	1,130	144	22	4	169	962	<1
COUT BAX-C	1,087	103	22	3	128	959	<1
COUT BAX-E	952	137	48	0	185	767	0
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
COUT-A	1,106	166	7	6	179	927	<1
COUT-B	1,665	90	26	2	119	1,547	<1
COUT-C (Agency and Applicant Preferred Alternative)	1,670	455	1	1	456	1,213	<1
COUT-H	1,868	529	4	1	533	1,335	<1
COUT-I	2,230	554	3	3	559	1,672	<1
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 the WYCO alternative routes. Past and present actions occurring in industrial areas include:

- BLM oil and gas units for the BLM 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
- Atlantic Rim Oil and Gas development
- prescribed burns completed by the field office
- 12-inch and 8-inch diameter pipelines owned by General Electric Company
- 14-inch diameter pipeline owned by ONEOK Incorporated
- 10-inch and 6-inch diameter pipelines owned by Anadarko Petroleum Corporation
- 24-inch and 20-inch diameter pipelines owned by El Paso Corporation
- 36-inch diameter pipeline owned by Kinder Morgan Incorporation
- 10-inch and 6-inch diameter pipelines owned by Plains All American GP LLC
- 10-inch and 8-inch diameter pipelines owned by Questar Corporation
- 6-inch diameter pipeline owned by Source Gas LLC
- Sinclair to Bar X 230kV transmission line

- Hayden to Artesia 138kV transmission line
- Craig PP to Sub 2 230kV transmission line
- Craig PP to Sub 3 230kV transmission line
- Craig Sub 1 to Sub 2 230kV transmission line
- Craig PP to Craig Sub 1 345kV transmission line
- Secondary roads

The RFFAs proposed or planned in industrial areas include:

- TransWest Express Transmission Project
- Hogback Ridge (Whirlwind I) wind-energy facility
- 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 create 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 the COUT BAX alternative routes. Past and present actions occurring in industrial areas include:

- BLM oil and gas units for the BLM Grand Junction, Price, Moab, White River and Little Snake Field Offices
- Deer Creek coal lease
- historic fire perimeters (2000 to 2011, and 2012)
- Anadarko Petroleum Corporation Ferron natural gas project
- SITLA-administered leases for metalliferous mineral leases, oil and gas, potash, and sand and gravel
- UDOGM oil and/or gas development
- Star Point waste-fuel coal mine
- Whites Sands missile launch facility at Green River
- 20-inch diameter pipeline owned by El Paso Corporation
- 12-inch and 10-inch diameter pipelines owned by Enterprise Products Partners LP
- 14-inch diameter pipeline owned by Questar Corporation
- 6-inch diameter pipeline owned by Source Gas LLC
- Jerusalem to Nebo 138kV transmission line
- McFadden to Huntington Plant 138kV transmission line
- Huntington to Pinto 345kV transmission line
- Mona to Huntington 345kV transmission line
- Spanish Fork to Huntington 345kV transmission line
- Rio Grande Railroad
- Secondary roads

An RFFA proposed or planned in industrial areas include the TransWest Express Transmission Project.

The short- and long-term cumulative effects on industrial uses would be similar to those discussed for the 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 the COUT alternative routes. Past and present actions occurring in industrial areas include:

- BLM oil and gas units for the BLM Price and Vernal Field Offices
- UDOGM 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
- Rye Patch oil project
- Red Leaf oil shale project
- Wildcat Loadout
- Residential Development in Duchesne County
- Victory pipeline
- 10-inch and 6-inch diameter pipelines owned by Chevron Corporation
- 20-inch, 16-inch, and 12-inch diameter pipelines owned by Questar Corporation
- 6-inch diameter pipeline owned by Anadarko Petroleum Corporation
- Bonanza to Vernal 138kV transmission line
- Jerusalem to Nebo 138kV transmission line
- Mona to Bonanza 345kV transmission line
- Mona to Huntington 345kV transmission line
- Spanish Fork to Carbon 138kV transmission line
- Upalco to Panther 138kV transmission line
- McFadden to Huntington Plant 138kV transmission line
- D&RGW Railway
- Utah Railway
- Rio Grande Railroad

An RFFA proposed or planned in industrial areas includes the TransWest Express Transmission Project.

The short- and long-term cumulative effects on industrial uses would be similar to those discussed for the WYCO alternative routes.

Residential

The cumulative effects summary for existing land use (residential) is presented in Table 4-118.

TABLE 4-118
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							
WYCO-B (Agency and Applicant Preferred Alternative)	69	3	1	0	4	65	0
WYCO-C	69	3	1	0	4	65	0
WYCO-D	562	31	2	0	33	529	0
WYCO-F	69	3	1	0	4	65	0
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	739	42	0	0	42	697	0
COUT BAX-C	739	42	0	0	42	697	0
COUT BAX-E	785	53	1	0	54	731	0
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
COUT-A	1,860	464	3	1	468	1,392	<1
COUT-B	1,290	212	1	2	215	1,075	<1
COUT-C (Agency and Applicant Preferred Alternative)	619	53	1	0	54	566	0
COUT-H	860	119	1	0	120	740	0
COUT-I	655	33	1	0	34	620	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 COUT-B. Past and present actions occurring in residential areas include:

- BLM oil and/or gas units for the BLM Vernal, 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

- historic fire perimeters (2000 to 2011, and 2012)
- Roosevelt Pipeline
- Victory Pipeline
- Bill Barrett Corporation Blacktail Ridge EDA oil and/or gas development
- Bill Barrett Corporation Lake Canyon
- Residential developments in Duchesne County
- Narrows East Bench and Oak Creek pipelines
- 18-inch and 8-inch diameter pipelines owned by Questar Corporation
- Mona to Bonanza 345kV transmission line
- Spanish Fork to Carbon 138kV transmission line
- Upalco to Panther 138 kV transmission line
- Mounds SW PK to Helper 138kV transmission line
- D&RGW Railway
- Rio Grande Railroad
- Secondary roads

RFFAs, proposed or planned, in residential areas include:

- TransWest Express Transmission Project
- Strawberry Highlands – Strawberry Phase residential development

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

The cumulative effects summary for existing land use (utilities) is presented in Table 4-119.

TABLE 4-119
CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (UTILITIES) FOR ALL ALTERNATIVE ROUTES IN ACRES

Alternative Route	Total Available Resource	No Action Alternative: Past and Present Development	No Action Alternative: Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
Wyoming to Colorado – Aeolus to U.S. Highway 40 (WYCO) Alternative Routes							
WYCO-B (Agency and Applicant Preferred Alternative)	1,733	78	1	16	95	1,639	<1
WYCO-C	1,765	78	0	16	95	1,670	<1
WYCO-D	5,281	142	1,016	59	1,217	4,064	1
WYCO-F	1,861	79	6	17	102	1,759	<1
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT BAX) Alternative Routes							
COUT BAX-B	110	10	7	1	17	93	<1
COUT BAX-C	112	10	7	0	17	94	0
COUT BAX-E	50	5	2	2	9	41	4

TABLE 4-119 CUMULATIVE EFFECTS SUMMARY FOR EXISTING LAND USE (UTILITIES) FOR ALL ALTERNATIVE ROUTES IN ACRES							
		No Action Alternative					
Alternative Route	**Total Available Resource**	**Past and Present Development**	**Reasonably Foreseeable Future Actions**	**Incremental Project Development**	**Estimated Cumulative Development**	**Remaining Available Resource**	**Percent of Project Impact**
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT) Alternative Routes							
COUT-A	65	12	0	0	12	54	0
COUT-B	115	17	2	0	19	96	0
COUT-C (Agency and Applicant Preferred Alternative)	78	41	0	0	41	37	0
COUT-H	96	42	2	2	47	49	2
COUT-I	102	40	0	0	40	62	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 Utilities

The percentage of the Project located in the land-use category of utilities would be less than 2 percent for WYCO alternative routes. Past and present actions occurring in utility areas include:

- Atlantic Rim oil and/or gas field final boundary
- Chokecherry Wind Farm Expansion
- Colorado state land and Wyoming state land oil and/or gas leases
- Gateway West Transmission Project
- Colorado state land oil and or gas leases
- Seven Mile Hill wind-energy facility
- spike treatment (vegetation management) for the BLM Rawlins Field Office
- 16-inch and 12-inch diameter pipelines owned by El Paso Corporation
- 20-inch diameter pipeline owned by General Electric Company
- 42-inch diameter pipeline owned by Kinder Morgan Incorporated
- 16-inch diameter pipeline owned by ONEOK Incorporated
- 10-inch and 6-inch diameter pipelines owned by Plains All American GP LLC
- Happy Jack to Seminoe 115kV transmission line
- Laramie to Seminoe 115kV transmission line
- Difficulty to Miners 230kV transmission line
- Sinclair to Bar X 230kV transmission line
- Miners to Medicine Bow 115kV transmission line
- Craig to Rifle 230kV transmission line
- Craig PP to Sub 2 230kV transmission line
- Craig PP to Sub 3 230kV transmission line
- Craig Sub 1 to Sub 2 230kV transmission line
- Hayden to Craig 230kV transmission line
- Miners to Foote Creek 230kV transmission line
- Miners to Sinclair 230kV transmission line
- Bears Ears to Bonanza 345kV transmission line

- Craig to Ault 345kV transmission line
- Craig to Bears Ears 345kV transmission line
- Craig to Rifle 345kV transmission line
- D&RGW Railroad
- Secondary roads

RFFAs, proposed or planned, in utility areas include:

- Continental Divide-Creston Junction oil and/or gas project
- TransWest Express Transmission Project
- Rosebud coal exploration (permit boundary)
- Hogback Ridge (Whirlwind I) Wind Energy Project

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 not only by the Project but by other new transmission lines. No long-term cumulative effects are 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 land-use category of utilities would be less than 1 percent for the COUT BAX alternative routes. Past and present actions occurring in utility areas include:

The percentage of the Project located in the land-use category of utilities would range from 0 to 4 percent for the COUT BAX alternative routes. Past and present actions occurring in utility areas include:

- BLM oil and/or gas units for the BLM White River Field Office
- SITLA-administered active oil and/or gas
- Ferron natural gas project
- historic fire perimeters (2000 to 2011, and 2012)
- 6-inch diameter pipeline owned by Energy Transfer Partners LP
- 20-inch and 6-inch diameter pipelines owned by Questar Corporation
- 26-inch and 6-inch diameter pipelines owned by The Williams Companies Inc.
- 8-inch diameter pipeline owned by Xcel Energy Inc.
- Huntington to Emery 345kV transmission line
- Huntington to Pinto 345kV transmission line
- Spanish Fork to Emery 345kV transmission line
- Mounds SW OK to Helper 138kV transmission line
- Mounds SW PK to Moab 138kV transmission line
- Mounds SW PK to East Carbon 138kV transmission line
- Secondary roads

An RFFA proposed or planned in utility areas includes the TransWest Express Transmission Project.

The short- and long-term cumulative effects on utilities would be similar to those discussed for the 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 the COUT alternative routes. Past and present actions occurring in utility areas include:

- BLM oil and/or gas units for the BLM Vernal, Price, and White River Field Offices
- fuel treatments (vegetation management) and habitat projects for the BLM 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
- historic fire perimeters (2012)
- Victory pipeline
- 20-inch diameter pipeline owned by El Paso Corporation
- 20-inch, 18-inch, and 16-inch diameter pipelines owned by Questar Corporation
- 12-inch diameter pipelines owned by The Williams Companies Inco.
- 10-inch diameter pipeline owned by Chevron Corporation
- Upalco to Panther 138kV transmission line
- Upalco to Ashley 138kV transmission line
- Bonanza to Rangely 138kV transmission line
- Bonanza to Vernal 138kV transmission line
- Bears Ears to Bonanza 345kV transmission line
- Mona to Bonanza 345kV transmission line
- Carbon to Helper 138kV transmission line
- Mounds SW PK to Helper 138kV transmission line
- Spanish Fork to Carbon 138kV transmission line
- Wellington to Coal Creek SW RK 138kV transmission line
- D&RGW Railway

An RFFA proposed or planned in utility areas includes the TransWest Express Transmission Project.

The short- and long-term cumulative effects on utilities would be similar to those discussed for the WYCO alternative routes.

4.3.12 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 3.2.12) and considers them in conjunction with the past and present actions and RFFAs listed in Tables 4-1 and 4-2. Potential cumulative effects on the visual resources (i.e., scenery and views) are addressed in Section 4.3.18. Also, impacts on National Trails Systems are discussed in Section 4.3.19.

4.3.12.1 Issues Identified for Analysis

4.3.12.1.1 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.

4.3.12.2 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.

4.3.12.3 Results

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

Past and present actions and RFFAs in parks, preservation, and recreation resource areas crossed by the WYCO alternative routes are presented in Table 4-120, and the potential cumulative effects are discussed for each park, preservation, and recreation resource area below.

Effects

The following text summarizes the cumulative effects on recreational uses and resources in parks and preservation areas associated with other recreation resources crossed by a WYCO alternative route, including 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 as the Project would be located in an area of existing cumulative development for past actions. Also, because the Project would be designed to span the site, 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
- Hayden to Artesia 138kV transmission line
- Bears Ears to Bonanza 345kV transmission line
- Craig to Rifle 345kV transmission line
- D&RGW Railroad
- 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 and present actions 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.

TABLE 4-120
PARKS AND RECREATION CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES

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[1]	Bureau of Land Management (BLM) Rawlins Field Office	All WYCO	5,866	126	0	0	126	5,740	0
Outlaw Trail Loop Scenic Drive[2]	Carbon County	WYCO-B, WYCO-C, WYCO-F	3,397	984	134	2	1,120	2,278	<1
		WYCO-D	3,397	984	134	151	1,269	2,128	<1
Rawlins to Baggs Historic Road (historic trail)[2]	BLM Rawlins Field Office	WYCO-B, WYCO-C, WYCO-F	5,501	555	30	2	587	4,914	<1
		WYCO-D	5,501	555	30	5	590	4,911	<1
Colorado									
South Beach Public River Access[1]	Colorado Parks and Wildlife	WYCO-D	141	141	0	0	141	0	0
Yampa River State Park and Yampa River	Colorado Parks and Wildlife	WYCO-D	282	169	0	1	170	112	<1
Juniper Mountain Special Recreation Management Area	BLM Little Snake Field Office	WYCO-D	1,776	19	0	21	40	1,737	1
Motorized trails[3]	BLM Little Snake Field Office	WYCO-B, WYCO-C, WYCO-F	1,333	28	32	14	74	1,259	1
		WYCO-D	1,045	110	9	7	125	919	<1

NOTES:
[1]Zero in Incremental Project Development indicates the alternative route and associated right-of-way overlaps past and present actions and/or spans a recreation area.
[2]Because 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.
[3]Due 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.

Yampa River State Park

The Project would not contribute incrementally to cumulative effects on the Yampa River State Park as the Project right-of-way would be located in an area of existing cumulative development for past actions. Also, because the Project would be designed to span the site, permanent infrastructure would not affect the site. Past and present actions in the Yampa River State Park include:

- active oil and gas leases on Colorado State Land
- Bears Ears to Bonanza 345kV transmission line
- Craig to Rifle 345kV transmission line
- Hayden to Artesia 138kV transmission line
- D&RGW Railroad
- County Road 23, Colorado State Highway 13, and U.S. Highway 40

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.

Motorized Trails

The Project would not contribute incrementally to cumulative effects on motorized trails as the Project would be designed to span the trails; consequently, 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, a 10-inch diameter pipeline owned by Plains All American GP LLC, 10-inch diameter pipeline owned by Plains All American GP LLC, 10-inch diameter pipeline owned by Questar Corporation, Craig to Rifle 345kV transmission line and Hayden to Artesia 138kV transmission line, U.S. Highway 40 and County roads, and oil and/or gas leases on Colorado state lands. An 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.

Outlaw Trail Loop Scenic Drive

The Project would not contribute incrementally to cumulative effects on the Outlaw Trail Loop Scenic Drive as the Project would be designed to span the scenic highway; consequently, no permanent infrastructure would be located directly on the scenic highway.

Past and present actions in the CIAA for the Outlaw Trail Loop Scenic Drive include:

- Atlantic Rim oil and/or gas field
- Gateway West Transmission Project
- 12-inch diameter pipeline owned by General Electric Co., 14-inch diameter pipeline owned by ONEOK Inc., and a 6-inch diameter pipeline owned by Plains All American GP LLC
- Sinclair to Bar X 230kV transmission line
- Union Pacific Railroad
- I-80, Wyoming Highway 789, Colorado State Highway 13, and County Road 2N
- spike treatments in the BLM Rawlins Field Office
- Wyoming state land coal and oil and gas leases

RFFAs in the CIAA for the scenic highway include:

- Continental Divide-Creston Junction oil and gas project
- 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 4.3.18.

Rawlins to Baggs Historic Road

The Project would not contribute incrementally to cumulative effects on the Rawlins to Baggs Historic Road (historic trail) as the Project would be designed to span the historic trail; consequently, no permanent infrastructure would be located directly on the historic trail. Past or present actions that affect the historic trail in the CIAA for the WYCO alternative routes include:

- prescribed fires in BLM Rawlins Field Office
- Atlantic Rim oil and or gas field
- coal, oil, and gas leases on Wyoming State Land
- Gateway West Transmission Project
- 42-inch diameter pipeline owned by Kinder Morgan Inc.; a 36-inch diameter pipeline owned by El Paso Corporation, a 24-inch diameter pipeline owned by El Paso Corporation, a 22-inch diameter pipeline owned by El Paso Corporation, a 20-inch diameter pipeline owned General Electric Co., a 16-inch diameter pipeline owned by ONEOK Inc., a 8-inch diameter pipeline owned by Plains All American GP, LLC, and a 6-inch diameter pipeline owned by MidAmerican Energy Holdings Company
- Sinclair to Bar X 230kV transmission line
- Union Pacific Railroad
- I-80, Wyoming Highway 789, U.S. Highway 287, and County Road 63

An RFFA in the historic trail includes the Hogback Ridge (Whirlwind I) Wind Energy Project, Continental Divide-Creston Junction Oil and Gas Project, and the TransWest Express Transmission 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 Special Recreation Management Area

The Project would not contribute incrementally to cumulative effects on the Juniper Mountain SRMA as the Project right-of-way is located in an area that has past and present actions. Past and present actions in the SRMA include secondary roads. There are no RFFA proposed in the SRMA. The short-term cumulative effects of the Project and past and present actions 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 Special Recreation Management Area

The Project would not contribute incrementally to cumulative effects on the North Platte SRMA as the Project right-of-way is located in an area that has past and present actions. Past and present actions in the SRMA include:

- 8-inch diameter pipeline owned by ConocoPhillips
- 36-inch, 24-inch, and 22-inch diameter pipelines owned by El Paso Corporation
- 42-inch diameter pipeline owned by Kinder Morgan, Inc.
- 16-inch diameter pipeline owned by ONEOK, Inc.
- Gateway West Transmission Project
- Seminoe to Sinclair 115kV transmission line
- prescribed fires in the BLM Rawlins Field Office
- Chokecherry Wind Farm Expansion
- Union Pacific Railroad
- secondary roads

There is no RFFA proposed in the SRMA. The short-term cumulative effects of the Project and past and present actions 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.

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

Past and present actions and RFFAs in parks, preservation, and recreation resource areas crossed by the COUT BAX alternative routes are presented in Table 4-121 and the potential cumulative effects are discussed for each park, preservation, and recreation resource area below.

Effects

Nephi Shooting Range

The Project would not contribute incrementally to cumulative effects on Nephi Shooting Range as the Project would be designed to span the site; consequently, permanent infrastructure would not affect the site. There are no past and present actions or RFFAs that occur in the Nephi Shooting Range. The short-term cumulative effects of the Project crossing the Nephi Shooting Range would be the same as the affected environment and environmental consequences described in Section 3.2.12.

Snow Kite Play Areas

The Project would not contribute incrementally to cumulative effects on the snow-kite play areas as 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 Boulger 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 aboveground facilities associated with the proposed transmission facilities.

TABLE 4-121
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: Past and Present Development	No Action Alternative: Reasonably Foreseeable Future Actions	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
Multi-State									
Dinosaur Diamond Scenic Byway[1]	U.S. Department of Transportation, Federal Highway Administration	COUT BAX-B	27,072	16,133	450	6	16,589	10,483	<1
		COUT BAX-C	27,072	16,133	450	8	16,591	10,481	<1
		COUT BAX-E	27,072	16,133	450	8	16,591	10,481	<1
Motorized trails[1, 2]	Bureau of Land Management (BLM) and U.S. Forest Service	COUT BAX-B	4,977	491	82	62	635	4,342	1
		COUT BAX-C	6,202	498	973	60	1,531	4,671	<1
		COUT BAX-E	3,756	185	98	65	348	3,407	2
Colorado									
There are no parks, preservation, or recreation resources crossed by the COUT BAX alternative routes in Colorado.									
Utah									
Snow Kite Play Areas[3]	Sanpete County	COUT BAX-E, COUT-H	723	710	0	0	710	13	0
Nephi Shooting Range[2]	City of Nephi	All COUT BAX	37	37	0	0	37	0	0
Ephraim Recreation Camp	LDS Church	COUT BAX-E	172	172	0	0	172	0	0
Paradise Creek Trailhead[3]	Manti-La Sal National Forest	COUT BAX-B, COUT BAX-C	0	0	0	0	0	0	0
Labyrinth Canyon SRMA	BLM Price Field Office	All COUT BAX	37,203	26	3	1	30	37,173	<1
Labyrinth Rims/ Gemini Bridges SRMA	BLM Moab Field Office	All COUT BAX	299,971	4,290	71	39	4,400	295,572	<1
San Rafael Swell SRMA	BLM Price Field Office	COUT BAX-B	936,425	5,176	3,620	70	8,866	927,558	<1
		COUT BAX-C		5,176	3,620	0	8,796	927,628	0

TABLE 4-121
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				
Skyline Drive Scenic Backway[1, 3]	Manti-La Sal National Forest	COUT BAX-B, COUT BAX-C	4,151	1,539	3	1	1,544	2,608	<1
		COUT BAX-E	10	4	0	0	4	7	0
Energy Loop Scenic Byway[3]	Manti-La Sal National Forest	COUT BAX-B, COUT BAX-C	10	4	0	0	4	7	0
		COUT BAX-E	5,452	2,577	31	4	2,612	2,840	<1
Wedge Overlook/ Buckhorn Draw Scenic Backway[1, 3]	BLM Price Field Office	COUT BAX-B, COUT BAX-C	3,320	230	21	0	251	3,069	0
Maple Fork Trail[1]	Manti-La Sal National Forest	COUT BAX-E	64	1	0	2	2	61	3
Booths Canyon Trail[1]	Manti-La Sal National Forest	COUT BAX-B, COUT BAX-C	12	1	0	2	2	10	17

NOTES:
[1]Because 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.
[2]Due to the number of motorized trails located in the CIAA, motorized trails were not analyzed individually.
[3]Zero in Incremental Project Development indicates the alternative route and associated right-of-way overlap past and present actions and/or spans a recreation area.
Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.

LDS Church Ephraim Recreation Camp

The Project would not contribute incrementally to cumulative effects on the LDS Church Ephraim Recreation Camp as the Project would be located in an area where other past and present actions are located. Past and present actions in the LDS Church Ephraim Recreation Camp include the Flat Canyon Coal Lease tract, and oil and gas units in the BLM Richfield Field Office. There are no RFFAs proposed or planned in the LDS Church Ephraim Recreation Camp. The short-term cumulative effects of the Project crossing the Ephraim Recreation camp, in addition to the past and present actions, would potentially limit and/or hinder access to and/or in the recreation camp and increase noise during construction. The long-term cumulative effects would be additional industrial development in the recreation camp, which potentially could limit some recreational opportunities.

Paradise Creek Trailhead

The Project would not contribute incrementally to cumulative effects on the Paradise Creek Trailhead as the Project would be designed to span the site; consequently, permanent infrastructure would not affect the site. There are no past or present and RFFAs proposed or planned on the Paradise Creek trailhead. The cumulative effects of the Project crossing the Paradise Creek trailhead would be the same as those discussed in Section 3.2.12.

Booths Canyon Non-motorized Trail

The Project would not contribute incrementally to cumulative effects on the Booths Canyon Non-motorized Trail as the Project would be designed to span the non-motorized trail; consequently, 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. An RFFA planned in the area traversed by the Booths Canyon Non-motorized Trail includes 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 an 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 the Maple Fork Non-motorized Trail as the Project would be designed to span the non-motorized trail; consequently, 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 3.2.19.

Motorized Trails

The Project would not contribute incrementally to cumulative effects on motorized trails as the Project would be designed to span the trails; consequently, 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 BLM Grand Junction, Moab, Price, and Richfield Field Offices
- Deer Creek Coal Lease
- Ferron Natural Gas Project
- SITLA-administered oil and/or gas, coal leases
- 26-inch diameter pipeline owned by Williams Companies Inc., 12-inch and a 10-inch diameter pipelines owned by Enterprise Products Partners LP
- Huntington to Emery 345kV transmission line

- Huntington to Pinto 345kV transmission line
- Mona to Huntington 345kV transmission line
- Spanish Fork to Emery 345kV transmission line
- Historic fires
- U.S. Highway 6 and secondary roads

RFFAs proposed or planned in the area traversed by the motorized trails include:

- TransWest Express Transmission Project
- Woodside power-generation facility
- 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

The Project would not contribute incrementally to cumulative effects on Dinosaur Diamond Scenic Byway as the Project would be designed to span the scenic byway; consequently, permanent infrastructure would not be located directly on the scenic byway. Past and present actions in the area traversed by the scenic byway for COUT-BAX-B include:

- Banning Siding Loadout
- Emery County Lease – Mancos Hills Industrial Park
- Karren Industrial
- Roosevelt Pipeline
- Tuck it Away Storage
- Gilsonite mining
- Active oil and gas, humic shale, metalliferous minerals, tar sands, and potash SITLA leases
- oil and/or gas leases in the BLM Grand Junction, Moab, Price, Vernal, and White River Field Offices
- Victory pipeline
- Arches overlook recreation area
- Highland estates residential development
- New Helper Townsite residential development
- Uinta Mountain Vista residential development
- Private residential developments
- Woodside to Sphinx 46kV transmission line
- 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, an RFFA proposed or planned in the area traversed by the scenic byway is 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 4.3.18.

Energy Loop Scenic Byway

The Project would not contribute incrementally to cumulative effects on the Energy Loop Scenic Byway as the Project would be designed to span the scenic byway; consequently, permanent infrastructure would

not be located directly on the scenic byway. Past and present actions in the area traversed by the scenic byway include:

- Skyline Mine
- Flat Canyon Coal Tract
- Kinney No. 2 Mine
- Ferron Natural Gas Project
- Liberty Pioneer Gas Project
- Narrows East Bench, Oak Creek, and Upper Cottonwood Pipelines, highway relocation, reservoir, tunnel, and East Bench Diversion dam
- Active oil and or gas; sand and gravel SITLA leases
- 20-inch, 18-inch, and 6-inch diameter pipelines owned by Questar Corporation
- Spanish Fork to Carbon 138kV transmission line
- Spanish Fork to Emery 345kV transmission line
- Spanish Fork to Huntington 345kV transmission line
- oil and/or gas leases in the BLM Price and Richfield Field Offices
- D&RGW Railroad and Rio Grande Railroad
- Historic fires
- U.S. Highway 6 and 89 and state and secondary roads

An RFFA proposed in the area traversed by the scenic byway is the TransWest Express Transmission Project. Short-term cumulative effects of the Project crossing the scenic byway, in addition to past and present actions and an 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 4.3.18.

Skyline Drive Scenic Backway

The Project would not contribute incrementally to cumulative effects on the Skyline Drive Scenic Backway as the Project would be designed to span the scenic backway; consequently, 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
- Narrows Highway relocation
- 18-inch diameter pipeline owned by Questar Corporation
- Mona to Huntington 345kV transmission line
- U.S. Highway 6 and state highways .

RFFAs proposed or planned in the area traversed by the scenic backway include the TransWest Express Transmission Project. 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 4.3.18.

Wedge Overlook/Buckhorn Draw Scenic Backway

The Project would not contribute incrementally to cumulative effects on the Wedge Overlook/Buckhorn Draw Scenic Backway as the Project would be designed to span the scenic backway; consequently, 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 oil and/or gas leases,

Huntington to Emery 345kV transmission line, and Spanish Fork to Emery 345kV transmission line, I-70, state, and secondary roads. RFFAs proposed or planned in the area traversed by the scenic backway include the TransWest Express Transmission Project. 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 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 also are discussed in Section 4.3.18.

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:

- SITLA-administered metalliferous mineral and oil and/or gas leases
- I-70 and secondary roads

An RFFA proposed or planned in the SRMA is the TransWest Express Transmission Project. The short-term cumulative effects of the Project, in addition to past and present actions and RFFAs, would include: potentially limited and/or hindered access to and/or in the SRMA and increased 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
- active SITLA metalliferous mineral, oil and/or gas, and potash leases
- Grand County Arches Overlook
- 26-inch diameter pipeline owned by the Williams Companies Inc.
- 10-inch diameter pipeline owned by the Enterprise Products Partners LP
- Huntington to Pinto 345kV transmission line
- Moab to Hitch 138kV transmission line
- Mounds SW PK to Moab 138kV transmission line
- D&RGW Railroad
- U.S. Highway 191 and state highways
- secondary roads

An RFFA proposed or planned in the SRMA includes the TransWest Express Transmission Project.

The short-term cumulative effects of the Project, in addition to past and present actions and RFFAs, would be potentially limited and/or hindered access to and/or in the SRMA and increased 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:

- Huntington to Pinto 345kV transmission line
- historic wild fire activity
- active SITLA-administered building stone, metalliferous mineral, oil and/or gas leases
- I-70, state highway, and secondary roads

RFFAs proposed or planned in the SRMA include:

- TransWest Express Transmission Project
- potential wind farm location

The short-term cumulative effects of the Project, in addition to past and present actions and RFFAs, would include potentially limited and/or hindered access to and/or in the SRMA and increased noise during construction actions. The long-term cumulative effects would be additional industrial development in the SRMA, potentially limiting some recreational opportunities.

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

Past and present actions and RFFAs in parks, preservation, and recreation resource areas crossed by the COUT alternative routes are presented in Table 4-122, and the potential cumulative effects are discussed for each park, preservation, and recreation resource area below.

Effects

Nephi Shooting Range

The Project would not contribute incrementally to cumulative effects on the Nephi Shooting Range as the Project would be designed to span the site; consequently, permanent infrastructure would not affect the site. There are no past and present actions or RFFAs that occur in the Nephi Shooting Range. The cumulative effects of the Project crossing the Nephi Shooting Range would be the same as those discussed in Section 3.2.12.

LDS Church Ephraim Recreation Camp

The Project would not contribute incrementally to cumulative effects on the LDS Church Ephraim Recreation Camp as the Project would be located in an area where other past and present actions are located. Past and present actions in the LDS Church Ephraim Recreation Camp include the Flat Canyon Coal Lease tract and oil and gas units in the BLM Richfield Field Office. There are no RFFAs proposed or planned in the LDS Church Ephraim Recreation Camp. The short-term cumulative effects of the Project crossing the Ephraim Recreation Camp, in addition to the past and present actions, would potentially limit and/or hinder access to and/or in the recreation camp and increase noise during construction. The long-term cumulative effects would be additional industrial development in the recreation camp, which potentially could limit some recreational opportunities.

TABLE 4-122
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[1]	U.S. Department of Transportation Federal Highway Administration	COUT-A, COUT-B, COUT-C	27,072	16,133	450	2	16,585	10,487	<1
		COUT-H	27,072	16,133	450	5	16,587	10,485	<1
		COUT-I	27,072	16,133	450	6	16,589	10,483	<1
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[2]	Private	COUT-B, COUT-C	71	71	0	0	71	0	0
Snow Kite Play Areas[2]	Sanpete County	COUT-H	723	710	0	0	710	13	0
Nephi Shooting Range[2]	City of Nephi	COUT-A, COUT-B, COUT-C, COUT-H, COUT-I	37	37	0	0	37	0	0
Ephraim Recreation Camp[2]	LDS Church	COUT - H	172	172	0	0	172	0	0
Paradise Creek Trailhead[2]	Manti-La Sal National Forest	COUT-I	0	0	0	0	0	0	0
Nine Mile Canyon Backway[1, 2]	U.S. Department of Transportation, Federal Highway Administration	COUT-A. COUT-B	12	11	0	0	11	0	<1
		COUT-C, COUT-H, COUT-I	4,439	2,041	30	2	2,072	2,367	0

TABLE 4-122
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[1, 2]	U.S. Department of Transportation, Federal Highway Administration	COUT-B, COUT-C	2,777	1,334	30	0	1,365	1,411	0
Reservation Ridge Scenic Backway[2]	State of Utah	COUT-A	11	1	0	0	1	10	0
		COUT-B, COUT-C, COUT-H	6	1	1	0	1	4	0
Skyline Drive Scenic Backway[1, 2]	Manti-La Sal National Forest	COUT-I	4,151	1,539	3	1	1,544	7	<1
Energy Loop Scenic Byway[1, 2]	Manti-La Sal National Forest	COUT-B, COUT-H, COUT-I	5,452	2,577	31	0	2,608	2,844	0
White River/ Strawberry Road Scenic Backway[1]	Uinta-Wasatch-Cache National Forest	COUT-A	1,305	126	7	1	135	1,171	<1
Blind Canyon Trail[1]	Manti-La Sal National Forest	COUT-A, COUT-B, COUT-C	179	3	4	2	10	169	1
French Hollow Trail[1]	Uinta-Wasatch-Cache National Forest	COUT-A	343	6	3	2	12	331	<1
Maple Fork Trail[1]	Manti-La Sal National Forest	COUT-H	64	1	0	2	3	61	3
Quitchampau Trail[1]	Ashley National Forest	COUT-B	438	15	4	2	21	417	<1

TABLE 4-122
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[1]	Uinta-Wasatch-Cache National Forest	COUT-A	801	43	170	2	215	586	<1
Booths Canyon Trail[1]	Manti-La Sal National Forest	COUT-I	12	1	0	2	2	10	2
Semi-Primitive Non-Motorized Recreation Opportunity Spectrum	Bureau of Land Management (BLM) Price Field Office	COUT-C	5,834	20	41	18	79	5,755	<1
		COUT-H, COUT-I	5,834	20	41	0	61	5,773	0
Motorized trails[1, 3]	BLM/U.S. Forest Service	COUT-A	1,189	94	61	14	170	1,019	1
		COUT-B	872	109	27	5	140	732	<1
Motorized trails[1, 3]	BLM/U.S. Forest Service	COUT-C	446	82	27	5	114	332	1
		COUT-H	1,386	108	59	12	179	1,207	<1
		COUT-I	1,315	359	24	11	395	921	<1

NOTES:
[1]Because 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.
[2]Zero in Incremental Project Development indicates the alternative route and associated right-of-way overlaps past and present actions and or spans the area.
[3]Due 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.

Private Motor-cross Track

The Project would not contribute incrementally to cumulative effects on a private motor-cross track as the Project would be designed to span the track; consequently, permanent infrastructure would not affect the track. Past and present actions in the track include Spanish Fork to Carbon 138kV transmission line. RFFAs proposed or planned include the TransWest Express Transmission Project. 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 limited 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 as the Project would be in an area where other past and present actions are located. Past and present actions in the snow-kite play area include Skyline Mine and secondary roads. The RFFAs proposed or planned in the snow-kite play area include TransWest Express Transmission Line and Shalom Timber sale. 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 likely would 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 aboveground facilities associated with the proposed transmission facilities.

Paradise Creek Trailhead

The Project would not contribute incrementally to cumulative effects on the Paradise Creek Trailhead as the Project would be designed to span the site; consequently, permanent infrastructure would not affect the site. There are no past or present and RFFAs proposed or planned on the Paradise Creek trailhead. The cumulative effects of the Project crossing the Paradise Creek trailhead would be the same as those discussed in Section 3.2.12.

Blind Canyon Non-motorized Trail

The Project would not contribute incrementally to cumulative effects on the Blind Canyon Non-motorized Trail as the Project would be designed to span the non-motorized trail; consequently, permanent infrastructure would not affect the non-motorized trail. The past and present in the area traversed by the Blind Canyon Non-Motorized trail include oil and or gas units BLM Richfield Field Office and Mona to Bonanza 345kV transmission line. An RFFA planned in the area traversed by the non-motorized trail is TransWest Express Transmission Project. The short-term cumulative effects of the Project crossing the non-motorized trail would be potentially limited 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 the Booths Canyon Non-motorized Trail as the Project would be designed to span the non-motorized trail; consequently, 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. There are no RFFAs planned in the area traversed by the non-motorized trail. The short-term cumulative effects of the Project crossing the non-motorized trail, in addition to the past and present actions, 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 the French Hollow Non-motorized Trail as the Project would be designed to span the non-motorized trail; consequently, 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 3.2.17.

Maple Fork Non-motorized Trail

The Project would not contribute incrementally to cumulative effects on the Maple Fork Non-motorized Trail as the Project would be designed to span the non-motorized trail; consequently, permanent infrastructure would not affect the non-motorized trail. The past and present actions near the trail include historic wild fire boundaries. There are no 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 the Quitchampau Non-motorized Trail as the Project would be designed to span the non-motorized trail; consequently, 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, oil and or gas units in the BLM Vernal Field Office, 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. The short-term cumulative effects of the projects crossing the non-motorized trail would include potentially limited 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 as the Project would be designed to span the non-motorized trail; consequently, 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 Mona to Bonanza 345kV transmission line, and 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 and the Strawberry Highlands – Lost Bear and Willow Creek phases. The short-term cumulative effects of the Project crossing the non-motorized trail, in addition to past and present actions and an RFFA, would include potentially limited 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 as the Project would be designed to span the trails; consequently, permanent infrastructure would not be located directly on the trails. Past and present actions in the area traversed by the motorized trails include:

- Berry Petroleum South Unit EIS
- oil and/or gas leases in the BLM Price, Richfield, and Vernal Field Office
- Ferron Natural Gas Project
- Deer Creek Coal lease

- active SITLA oil and/or gas and sand and gravel leases
- Wildcat Loadout project
- 20-inch diameter pipeline owned by Questar Corporation
- Mona to Bonanza 345kV transmission line
- Spanish Fork to Carbon 138kV transmission line
- Spanish Fork to Emery 345kV transmission line
- Spanish Fork to Huntington 345kV transmission line
- Upalco to Panther 138kV transmission line
- D&RGW Railway
- Utah Railway
- U.S. Highway 6
- Historic wildfires

An RFFA proposed or planned in the area traversed by the motorized trails includes 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 for users to the trails during construction. Long-term cumulative effects on motorized trails would not be anticipated.

Dinosaur Diamond Scenic Byway

The Project would not contribute incrementally to cumulative effects on Dinosaur Diamond Scenic Byway as the Project would be designed to span the scenic byway; consequently, permanent infrastructure would not be located directly on the scenic byway. Past and present actions in the area traversed by the scenic byway include:

- Banning Siding Loadout
- Emery County Lease – Mancos Hills Industrial Park
- Karren Industrial Park
- Roosevelt Pipeline
- Tuck it Away Storage
- Gilsonite mining
- active SITLA-administered oil and/or gas, tar sands, humic shale, metalliferous minerals, and potash leases
- active oil and gas leases in the BLM Moab, Price, Vernal, and White River field offices
- Gusher oil and gas project
- Victory pipeline corridor
- Grand County Arches Overlook
- Highland Estates residential developments
- New Helper town site residential developments
- Uintah Mountain Vista residential developments
- Private residential developments
- Several pipelines
- Several transmission lines
- D&RGW Railroad, Rio Grande Railroad, and Utah Railway
- I-70, several state highways and secondary roads
- historic wildfires

RFFAs proposed or planned in the area traversed by the scenic byway include:

- TransWest Express Transmission Project (not in the area of Alternative COUT-C)
- Uinta Express Pipeline, East Canyon Route
- Carbon Coal Fire Plant
- Woodside geothermal development site

The short-term cumulative effects of the Project crossing the scenic byway, in addition to past and present actions and RFFAs, would include 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 4.3.18.

Energy Loop Scenic Byway

The Project would not contribute incrementally to cumulative effects on Energy Loop Scenic Byway as the Project would be designed to span the scenic byway; consequently, 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:

- Skyline Mine
- Flat Canyon Coal Lease Tract
- Kinney No. 2 Mine
- oil and/or gas leases in the BLM Price and Richfield Field Office
- Ferron Natural Gas Project
- Liberty Pioneer Gas Exploration
- active SITLA-administered sand and gravel and oil and/or gas leases
- Narrows Project reservoir, Upper Cottonwood, East Bench, and Oak Creek Pipeline, highway relocation, East Bench Diversion dam, and tunnel
- 20-inch, 16-inch, and 8-inch diameter pipelines owned by Questar Corporation
- Spanish Fork to Carbon 138kV transmission line
- Spanish Fork to Emery 345kV transmission line
- Spanish Fork to Huntington 345kV transmission line
- Historic wildfires
- D&RGW Railroad and Rio Grande Railroad
- U.S. Highway 6 and 89, state, and secondary roads

An RFFA proposed or planned in the area traversed by the scenic byway includes the TransWest Express Transmission Project. Short-term cumulative effects of the Project crossing the scenic byway, in addition to past and present actions and an 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 4.3.18.

Indian Canyon Scenic Byway

For Alternatives COUT-B, COUT-C, COUT-H, and COUT-I, the Project would not contribute incrementally to cumulative effects on Indian Canyon Scenic Byway as the Project would be designed to span the scenic byway; consequently, 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 gas units in the BLM Vernal Field Office, active SITLA-administered oil and/or gas leases, Blacktail Ridge oil and or gas

project, Lake Canyon oil and or gas project, Carbon to Helper 138kV transmission line, Spanish Fork to Carbon 138kV transmission line, and Upalco to Panther 138kV transmission line, Rio Grande railroad, U.S. Highways 191, 40, and 6. The RFFAs proposed or planned in the area traversed by the scenic byway include the TransWest Express Transmission Project.

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 also are discussed in Section 4.3.18.

Nine Mile Canyon Backway

The Project would not contribute incrementally to cumulative effects on Nine Mile Canyon Scenic Backway as the Project would be designed to span the scenic backway; consequently, 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 West Tavaputs Plateau oil and/or gas development
- active SITLA coal, and oil and gas leases
- Gasco oil and/or gas development
- Rye Patch Oil Drilling
- Solider Canyon Mine,
- Carbon County ATV trail
- 20-inch, 18-inch, and 6-inch diameter pipelines owned by Questar Corporation
- Mounds SW PK to Bar X 230kV transmission line
- U.S. Highway 40 and secondary roads

RFFAs proposed or planned in the area traversed by the backway include the TransWest Express Transmission Project, Monument Butte oil and or gas project, and Uinta Express Pipeline- East Canyon route. 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 4.3.18.

Reservation Ridge Scenic Backway

The Project would not contribute incrementally to cumulative effects on Reservation Ridge Scenic Backway as the Project would be designed to span the scenic backway; consequently, permanent infrastructure would not be located directly on the scenic backway. There are no past and present actions or RFFAs proposed or planned in the area traversed by the scenic backway. The cumulative effects of the Project would be the same that are discussed in Section 3.2.12.

Skyline Drive Scenic Backway

The Project would not contribute incrementally to cumulative effects on the Skyline Drive Scenic Backway as the Project would be designed to span the scenic backway; consequently, 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 Narrow Reservoir highway relocation, Mona to Huntington 345kV transmission line, 18-inch diameter pipeline owned by Questar Corporation, U.S. Highway 6 and state highways. RFFAs proposed or planned in the area traversed by the scenic backway would be the TransWest Express Transmission Project. The short-

term cumulative effects of the Project crossing the 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 backway. Cumulative effects for the scenic backway also are discussed in Section 4.3.18.

White River/Strawberry Road Scenic Backway

The Project would not contribute incrementally to cumulative effects on the White River/Strawberry Road Scenic Backway as the Project would be designed to span the scenic backway; consequently, 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. The RFFAs proposed or planned in the area traversed by the scenic backway include the TransWest Express Transmission Project. The short-term cumulative effects of the Project crossing the backway, in addition to the past and present action, would be potential increased of traffic, 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 is 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.

4.3.13 Transportation and Access

The approach for analysis of cumulative effects on transportation and access, 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 3.2.13.4.2) and considers them in conjunction with the past and present actions and RFFAs listed in Tables 4-1 and 4-2. The major transportation network and features are illustrated on MV-13a and MV-13b.

4.3.13.1 Issues Identified for Analysis

Issues that have been identified in relation to transportation and access (refer to Section 3.2.13.2) 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 operation and maintenance of the Project.

4.3.13.2 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).

4.3.13.3 Results

4.3.13.3.1 Roadways

Potential environmental effects of roadways discussed in Section 3.2.13.4.2 form the basis for cumulative effects of the Project and RFFAs on the environment as 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.

4.3.13.3.2 Aviation Facilities

The potential environmental effects of aviation facilities discussed in Section 3.2.13.4.2 form the basis for effects of the Project and RFFAs on the environment as discussed below.

Effects

Construction of the Project and RFFAs (refer to Table 4-2) with aboveground 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.

4.3.13.3.3 Railroads

The potential environmental effects of railroads discussed in Section 3.2.13.4.2 form the basis for effects of the Project and RFFAs on the environment as 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.

4.3.14 Congressional Designations

The approach for analysis of cumulative effects on congressional designations 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 3.2.14) and considers them in conjunction with the past and present actions and RFFAs listed in Tables 4-1 and 4-2. Direct or indirect project effects would not be anticipated for wilderness areas, national monuments, national heritage areas, and NCAs or WSAs. Thus, only potential cumulative effects on river segments found suitable for inclusion into the WSR System are discussed in this section.

4.3.14.1 Issues Identified for Analysis

4.3.14.1.1 Potential Impacts on Congressional Designations

The potential cumulative impacts on river segments found suitable for inclusion into the WSR system is impairment of its tentative classification and outstandingly remarkable values.

4.3.14.2 Existing Condition

Past and present actions occur on some congressional designations in the geographic scope, but the majority of these areas have little to no human influences. 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 features or values for which the congressional designation was designated.

4.3.14.3 Results

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

The WYCO alternative routes including Alternative WYCO-B, the Agency Preferred Alternative and the Applicant Preferred Alternative, in Wyoming and Colorado would not result in any direct or indirect impacts on any congressionally designated areas, WSAs, or suitable WSR segments. Thus, the Project would not contribute to cumulative impacts on these areas.

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

The COUT BAX alternative routes in Colorado and Utah would not have any direct or indirect impacts on congressionally designated areas, WSAs, or suitable WSR segments. Thus, the Project would not contribute to cumulative impacts on these areas.

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

Past and present actions and RFFAs in the CIAA crossed by the COUT alternative routes are listed in this section. Table 4-123 is a summary of the cumulative effects, including the incremental Project contribution.

TABLE 4-123
CONGRESSIONAL DESIGNATIONS OR POTENTIAL CONGRESSIONAL DESIGNATIONS
CUMULATIVE EFFECTS SUMMARY FOR ALL 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										
There are no congressional designations crossed in Wyoming for the WYCO alternative routes.										
Colorado										
There are no congressional designations crossed in Colorado for the WYCO, COUT BAX, and COUT alternative routes.										
Utah										
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, COUT-H, COUT-I	11,968	765	31	12	809	11,159	<1

NOTES:
Acreages are approximate and have been rounded to the nearest acre; therefore, the columns may not total.
Impacts on wilderness management areas associated Utah Reclamation Mitigation and Conservation Commission lands are discussed in Section 4.3.15.

Effects

Lower Green River Suitable Wild and Scenic River Segment

Past and present actions that occur in the CIAA for the suitable WSR segment 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
- Gasco Energy, Inc. Uinta natural gas development
- Bill Barrett Corporation West Tavaputs Plateau oil and/or gas development
- Developed rights-of-way for 20-inch diameter Questar pipelines (two)

RFFAs proposed or planned in the CIAA for the Lower Green River Suitable WSR segment include:

- TransWest Express Transmission Project
- Newfield's Monument Butte oil and/or gas development

The percentage of cumulative effects on the Lower Green River Suitable WSR that would be attributable to the Project would be less than 1 percent (refer to Table 4-123). The Project right-of-way is located in an area that has past and present actions and RFFAs.

If this route were selected for both the Project and the TransWest Express Transmission Project, and both projects were constructed, short-term effects from the two transmission projects crossing the suitable WSR would include increased noise and dust; increased activity along both sides of the river disturbing recreation users; and could affect recreational access to the river during construction in the Project area. No new access routes for the Project would be constructed within the 0.25 mile from the bank on each side of the river. It is also assumed that no new access routes for the TransWest Express Transmission Project would be constructed.

The construction of the two projects would not affect the river's free-flowing condition. Long-term cumulative effects on the outstandingly remarkable values described for recreational opportunities and fish would not be anticipated. The presence of the two projects would affect the view and experience of recreational users traveling on the river (i.e., rafting, canoeing) but would not hinder opportunities for fishing, hunting, waterfowl viewing, floating, and camping. Recreationists at the Fourmile Bottom put-in, as well as floating on this portion of the Green River, would have views intermittently influenced by development. These include views of an existing pipeline corridor from maintenance activities and potential views of existing wells and/or future development of 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 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 effects 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 reduce their dominance within the Lower Green River viewshed to the extent that is technically feasible. These measures would include limiting the construction of new access roads within view of the river and positioning the transmission line structures where they would less visible from the river to the extent practicable.

Utah Reclamation Mitigation and Conservation Commission Lands

The percentage of the Project impact on URMCC managed lands would be less than 1. There are no past and present actions or RFFAs that are directly related to these lands but past and present actions and

RFFAs are in the WMAs associated with these lands. Currant Creek and Tabby Mountain WMAs are discussed in more detail in Section 4.3.15.

4.3.15 Special Designations 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 3.2.15) and considers them in conjunction with the past and present actions and RFFAs listed in Tables 4-1 and 4-2.

4.3.15.1 Issues Identified for Analysis

4.3.15.1.1 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 an 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.

4.3.15.2 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.

4.3.15.3 Results

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

Past and present actions and RFFAs in special designation and other management areas crossed by the WYCO alternative routes are presented in Table 4-124, and the potential cumulative effects are discussed for each special designation and other management area below.

Effects

The following summarizes the cumulative effects on special designations and other management areas that would be crossed by the WYCO alternative routes, 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.

TABLE 4-124
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	25,990	1,348	118	62	1,528	24,462	<1%
Upper Muddy Creek Watershed/ Grizzly WHMA	Bureau of Land Management (BLM) 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	59, 783	764	506	8	1,278	58,506	<1%
Adobe Town Wild Horse Herd Management Area	BLM Rawlins Field Office	To provide a protected area for up to 812 wild horses after foaling season	WYCO-B	477,624	3,305	1,016	210	4,532	473,092	<1%
			WYCO-C		3,305	1,016	204	4,526	473,098	<1%
			WYCO-F		3,305	1,016	9	4,330	473,293	<1%
Colorado										
There are no special designations or other management areas crossed in Colorado for the WYCO alternative routes.										
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	590	38	3	1	43	547	<1%

TABLE 4-124
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				
Yampa River Recreation Area Land and Water Conservation Fund site	Moffat County, NPS	Funding provided by NPS to develop a recreation area	All WYCO	3,781	934	10	2	945	2,836	<1%
Bitterbrush State Wildlife Area	Colorado Parks and Wildlife	Provides hunters and wildlife viewers opportunities to see mule deer, elk, and pronghorn	WYCO-D	8,079	418	113	54	584	7,495	<1%
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, WYCO-C, WYCO-F	15,067	229	90	46	365	14,702	<1%
Cross Mountain Ranch Conservation Easement	Colorado Cattleman Agricultural Land Trust	To protect agricultural lands, big game habitat and migration corridors, habitat for special status species and the greater sage grouse	All WYCO	16,058	321	125	16	462	15,596	<1%

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:

- Anadarko Atlantic Rim natural gas development
- A uranium mining lease on Wyoming state land
- Gateway West Transmission Project
- 22-inch, 24-inch, and 36-inch diameter pipelines owned by El Paso Corporation;
- 12-inch and 20-inch diameter pipelines owned by General Electric Co.;
- 42-inch diameter pipeline owned by Kinder Morgan Inc.;
- 14-inch diameter pipeline owned by ONEOK Inc.
- Sinclair to Bar-X 230kV transmission line
- Union Pacific Railroad
- prescribed burns and vegetation treatments completed by the BLM Rawlins Field Office
- I-80 with additional secondary roads (county and access roads)

RFFAs proposed or planned in the Red Rim-Daley WHMA include:

- TransWest Express Transmission Project
- Hogback Ridge (Whirlwind I) Wind Energy Project
- 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:

- Anadarko Atlantic Rim natural gas development
- Power Company of Wyoming's Sierra Madre wind farm
- 12-inch diameter pipeline owned by Devon Energy Corporation
- prescribed burns completed by the BLM Rawlins Field Office
- Wyoming Highway 789

RFFAs proposed or planned in the Upper Muddy Creek Watershed/Grizzly WHMA include:

- BP Continental Divide – Creston Junction natural gas development
- 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
- 6-inch diameter pipeline owned by Anadarko Petroleum Corporation
- 20-inch, 24-inch diameter pipelines owned by El Paso Corporation
- 8-inch and 12-inch diameter pipelines owned by General Electric Co.
- 36-inch diameter pipeline owned by Kinder Morgan Inc.
- 14-inch diameter pipeline owned by ONEOK Inc.
- 8-inch, 10-inch, and 12-inch diameter pipelines owned by Questar Corporation
- County Road 144, 19, 25, 62, and 68
- prescribed burns completed by the BLM Rawlins Field Office

RFFAs proposed or planned in Adobe Town WHHMA include:

- BP Continental Divide – Creston Junction natural gas development
- Hiawatha Regional Energy Development oil and/or gas development
- 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 WHHMA are not anticipated.

Moffat County #11 Land and Water Conservation Fund Site

The percentage of the Project in the Moffat County #11 LWCF site would be 0 percent as the Project would span the site; consequently, 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, Colorado State Highway 13 and County Road 11. An RFFA proposed on the LWCF site is 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.

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 less than 1 percent as the Project would span the site; consequently, 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
- 20-inch and 24-inch diameter pipeline owned by El Paso Corporation
- 36-inch diameter pipeline owned by Kinder Morgan Inc.
- 14-inch diameter pipeline owned by ONEOK Inc.
- 10-inch diameter pipeline owned by Plains All American GP LLC
- 6-inch diameter pipeline owned by Source Gas LLC
- Hayden to Artesia 138kV transmission line
- Bears Ears to Bonanza 345kV transmission line
- Craig to Rifle 345kV transmission line
- D&RGW Railroad

- U.S. Route Highway 40
- Colorado State Highway 13 and 318
- County Roads 143, 17, 181, 19, 23, 25, 53 and 74

The RFFA proposed on the site is the TransWest Express Transmission Project. The short-term cumulative effects of the Project crossing the LWCF site, in addition to the past and present actions 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 less than 1 percent as 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 the Hayden to Artesia 138kV transmission line, Bears Ears to Bonanza 345kV transmission line, a 20-inch and 24-inch diameter pipelines and U.S. Highway 40, and County Highway 57, 143, 59. The RFFA proposed in the SWA 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 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.

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
- Bears Ears to Bonanza 345kV transmission line
- Hayden to Artesia 138kV transmission line
- U.S. Highway 40
- County Road 14C

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.

Cross Mountain Ranch Conservation Easement

The percentage of the Project in the Cross Mountain Ranch Conservation Easement would be less than 1 percent. Past and present actions that occur in the Cross Mountain Ranch Conservation Easement include:

- oil and/or gas leases on Colorado state lands
- 10-inch diameter pipeline owned by Plains All American GP LLC
- range improvement projects completed by the BLM White River Field Office
- Bears Ears to Bonanza 345kV transmission line
- Hayden to Artesia 138kV transmission line
- US Highway 40 and County roads 14, 143, 14A, 14B, 14C, 23, and 85

The RFFA proposed for Cross Mountain 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.

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

Past and present actions and RFFAs in special designation and other management areas crossed by the COUT BAX alternative routes are presented in Table 4-125, and the potential cumulative effects are discussed for each special designation and other management area 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 in the BLM White River Field Office
- Shell Frontier Oil and Gas, Incorporated oil shale research, development, and demonstration project
- 20-inch diameter pipeline owned by El Paso Corporation
- 36-inch diameter pipeline owned by Kinder Morgan Inc.
- 14-inch diameter pipeline owned by Questar Corporation
- 26-inch, 24-inch, 10-inch, and 8-inch diameter pipeline owned by Williams Companies Inc.
- 8-inch and 6-inch diameter pipeline owned by Xcel Energy Inc.
- Rangely to Meeker 138kV transmission line
- County Highway 5, 100, 103, 107, 108, 122, 128, 138, 20, 20A, 24, 24X, 27, 28, 68, 88, 89, and 91
- Colorado Highway 64E and 139
- range improvement projects managed and prescribed by the BLM White River Field Office

The RFFA proposed in the WHHMA is the 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. Because the Project would span the ACEC, no permanent infrastructure would affect the ACEC. There is the Huntington to Pinto 345kV transmission line and no RFFAs in the ACEC. The cumulative effects of the Project crossing the ACEC would be the same as direct and indirect impacts described in Section 3.2.14 and Section 3.2.20.

TABLE 4-125
SPECIAL DESIGNATIONS AND OTHER 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

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	189,835	11,698	26	11	11,735	178,100	<1
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	649	6	0	4	10	639	<1
North Moroni Conservation Easement	Utah Division of Wildlife Resources (UDWR)	To protect crucial deer and elk winter range	COUT BAX-B, COUT BAX-C	1,003	108	15	9	131	871	<1
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	4,004	167	0	1	168	3,836	<1
Gordon Creek WMA	UDWR	To protect critical big game winter range	COUT BAX-E	19,091	943	279	9	1,232	17,859	<1

TABLE 4-125
SPECIAL DESIGNATIONS AND OTHER 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

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				
Salt Creek WMA	UDWR	To protect important nesting, resting, and feeding habitat for waterfowl	All COUT BAX	2,078	59	36	15	110	1,968	<1
Crawford Farm Conservation Easement	UDWR	Designated to protect Columbia spotted frog habitat and to prevent any uses that may harm natural open space and ranching conditions on the property	COUT-H	75	45	0	2	47	28	<1
Nuttall Farm Conservation Easement	UDWR	Designated to retain natural, scenic, wetland, and agricultural conditions and to prevent any use from affecting the conservation values of the property, including Columbia spotted frog species, as well as the southern leatherside chub and rare native fish	COUT-H	71	25	0	0	25	46	0

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

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, Jerusalem to Nebo 138kV transmission line, and Mona to Huntington 345kV transmission line. The RFFA proposed in the 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 historic fires and active oil and/or gas leases on SITLA-managed land. There is no RFFA proposed on Fountain Green WMA. The short-term cumulative effects of the Project, in addition to past and present actions 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.

Gordon Creek Wildlife Management Area

The percentage of the Project in the Gordon Creek WMA would be less than 1 percent as 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 historic fires, active oil and/or gas leases managed by BLM Price Field Office and SITLA, a 20-inch diameter pipeline owned by Questar Corporation, the Spanish Fork to Emery 345kV and Spanish Fork to Huntington 345kV transmission lines. 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; and the Jerusalem to Nebo 138kV transmission line, Mona to Bonanza 345kV transmission line, and Mona to Huntington 345kV transmission line. 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.

Crawford Farms Conservation Easement

The percentage of the Project in the Crawford Farms Conservation Easement would be less than 1 percent. There are no past or present actions or RFFAs that occur in the Crawford Farms Conservation

Easement. The short-term and long-term cumulative effects of the Project on these easements would be the same as those documented in Section 3.2.15.

Nuttall Farms Conservation Easement

The percentage of the Project in the Nuttall Farms Conservation Easement would be zero. There are no past or present actions or RFFAs that occur in the Nuttall Farms Conservation Easement. The short-term and long-term cumulative effects of the Project on these easements would be the same as those documented in Section 3.2.15.

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

Past and present actions and RFFAs in special designation and other management areas crossed by the COUT alternative routes are presented in Table 4-126, and the potential cumulative effects are discussed for each special designation and other management area 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 WSR (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
- Active oil and or gas units in the Vernal Field Office
- Gasco Energy, Inc. Uinta natural gas development
- Bill Barrett Corporation West Tavaputs Plateau oil and/or gas development
- 20-inch diameter existing Questar pipeline

RFFAs proposed or planned in the ACEC include:

- TransWest Express Transmission Project
- 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 4.3.18.

TABLE 4-126
SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES

Name	Management 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 the COUT alternative routes.										
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, COUT-H, COUT-I	9,347	734	38	14	786	8,561	<1
Crawford Farm Conservation Easement	Utah Division of Wildlife Resources (UDWR)	Designated to protect Columbia spotted frog habitat and to prevent any uses that may harm natural open space and ranching conditions on the property	COUT-H	75	45	0	2	47	28	<1
Nuttall Farm Conservation Easement	UDWR	Designated to retain natural, scenic, wetland, and agricultural conditions and to prevent any use from affecting the conservation values of the property, including Columbia spotted frog species, as well as the southern leatherside chub and rare native fish	COUT-H	71	25	0	0	25	46	0

TABLE 4-126
SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES

Name	Management 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				
Sandwash/Sinkdraw Conservation Easement	UDWR	Designated to protect, grasslands, open space, crucial wintering areas for big game, sage grouse habitat, and other natural characteristics of the property	COUT-A	11,866	873	234	61	1,168	10,698	<1
North Moroni Conservation Easement	UDWR	To protect crucial deer and elk winter range	COUT-I	1,003	880	108	15	132	871	<1
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	16,550	1,313	60	48	1,421	15,129	<1
Birdseye WMA	UDWR	To protect big game winter range and threatened Deseret milkvetch populations	COUT-A, COUT-B, COUT-C	927	34	38	19	91	908	<1
Lake Fork WMA	UDWR	To protect big game winter range and threatened Deseret milkvetch populations	COUT-A, COUT-B, COUT-C	2,734	15	17	13	44	2,721	<1

TABLE 4-126
SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES

Name	Management 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				
Cottonwood WMA	UDWR	To protect big game winter range and to increase public access in an area of predominately private land	COUT-B	6,749	241	49	12	302	6,447	<1
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	21,403	919	109	41	1,069	20,334	<1
Dairy Fork WMA	UDWR	To protect and enhance mule deer and elk winter range	COUT-A, COUT-B, COUT-C	5,076	74	59	34	167	4,909	<1
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	4,004	167	0	1	168	3,836	<1
Gordon Creek WMA	UDWR	To protect critical big game winter range	COUT-H	19,091	943	279	9	1,232	17,859	<1
Rabbit Gulch WMA	UDWR	To protect important nesting, resting, and feeding habitat for waterfowl	COUT-A	9.194	767	93	58	918	8,276	<1

TABLE 4-126
SPECIAL DESIGNATIONS AND OTHER MANAGEMENT AREAS CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE ROUTES

Name	Management 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				
Salt Creek WMA	URMCC and UDWR	To protect critical big game winter range	All COUT	2,078	59	36	18	113	1,964	<1
Spencer Fork WMA	UDWR	To protect big game winter range	COUT-A, COUT-B, COUT-C	6,192	137	112	71	321	5,872	<1
Starvation WMA	UDWR	To protect and enhance mule deer and elk winter range	COUT-B, COUT-C	8,089	295	24	12	331	7,757	<1
Tabby Mountain WMA	URMCC and UDWR	To protect critical winter range for big game	COUT-A	8,127	340	113	19	472	7,655	<1

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

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 the Jerusalem to Nebo 138kV transmission line and Mona to Huntington 345kV transmission line. 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 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.

Crawford Farms Conservation Easement

The percentage of the Project in the Crawford Farms Conservation Easement would be less than 1 percent. There are no past or present actions or RFFAs that occur in the Crawford Farms Conservation Easement. The short-term and long-term cumulative effects of the Project on these easements would be the same as those documented in Section 4.3.15.

Nuttall Farms Conservation Easement

The percentage of the Project in the Nuttall Farms Conservation Easement would be zero. There are no past or present actions or RFFAs that occur in the Nuttall Farms Conservation Easement. The short-term and long-term cumulative effects of the Project on these easements would be the same as those documented in Section 4.3.15.

Sandwash/Sinkdraw Conservation Easement

The percentage of the Project in the Sandwash/Sinkdraw Conservation Easement would be less than 1 percent. Past and present actions that occur in the Sandwash/Sinkdraw Conservation Easement include the Blacktail Ridge Exploratory Drill Project, active oil and/or gas leases on SITLA-managed lands, Arch View Ranchettes, Cedar Mountain #9, Tabby Shadows, Vista Valley, West Star Properties, Mona to Bonanaza 345kV transmission line, and Utah State Route 208. The RFFA proposed for Sandwash/Sinkdraw 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 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 directly related to these lands but past and present actions and RFFAs are in the WMAs associated with these lands. The cumulative effects related to the URMCC-managed lands are discussed in more detail for the Currant Creek and Tabby Mountain WMAs below.

Birdseye/Lake Fork Wildlife Management Areas

The percentage of the Project in the Birdseye/Lake Fork WMAs would be less than 1 percent as the Project right-of-way is located in an area that has past and present actions and RFFAs. Past and present actions that occur in the WMA include active oil and/or gas leases located on SITLA-administered land

and the Mona to Bonanza 345kV transmission line. The RFFA proposed in the WMA 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 WMA during construction actions of the projects, and disturbance to the lands in the right-of-way. Long-term cumulative effects on big game and threatened Desert milkvetch management actions in the WMA in are not anticipated.

Cottonwood Canyon Wildlife Management Area

The percentage of the Project in the Cottonwood Canyon WMA would be less than 1 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, oil leases on Utah state lands, Upalco to Panther 138kV transmission line, and the Sliver Moon residential unit. The RFFA proposed in the WMA 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 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.

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 Sundown Ridge residential development, Mona to Bonanza 345kV transmission line, the Bill Barrett Lake Canyon Oil and/or Gas Project, vegetation treatments in the BLM Vernal Field Office, and U.S. Highway 40. The RFFA proposed in the WMA 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 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. Past and present projects actions that occur in the WMA include the D&RGW Railway, Spanish Fork to Carbon 138kV transmission line, and Mona to Bonanza 345kV transmission line present actions that occur in the WMA. The RFFA proposed in the WMA is the 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 elk and mule deer management actions in the WMA 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 historic fires and active oil and/or gas leases on SITLA-managed lands. There are no RFFA proposed in the WMA. The short-term cumulative effects of the Project, in addition to past and present actions 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 less than 1 percent as 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, 20-inch diameter pipeline owned by Questar Corporation, Spanish Fork to Emery 345kV transmission line and Spanish Fork to Huntington 345kV transmission line. The RFFA proposed in the WMA 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 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 habitat projects in the Vernal Field Office, Bill Barrett Corporation Blacktail Ridge oil and/or gas project, active oil and/or gas development and oil development on Utah state land, Cedar Mountain #8 and #9 residential developments, Great Basin Estates I residential development, River Heights residential development, a private residential development, and Mona to Bonanza 345kV transmission project. The RFFA proposed in the WMA 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 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, Jerusalem to Nebo 138kV transmission line, Mona to Bonanza 345kV transmission line, and Mona to Huntington 345kV transmission line. The RFFA proposed in the WMA 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 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 less than 1 percent. Past and present actions that occur in the WMA include historic fires, 18-inch diameter pipeline owned by the Questar Corporation, Mona to Bonanza 345kV transmission line, and D&RGW Railroad. The RFFA proposed in the WMA 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 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 less than 1 percent as 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 U.S. Highway 6, D&RGW Railway, Spanish Fork to Carbon 138kV transmission line, Spanish Fork to Emery 345kV transmission line, and Spanish Fork to Huntington 345kV transmission line. The RFFA proposed in the WMA 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 WMA during construction actions of the projects, and disturbance of land in the right-of-way. Long-term cumulative effects on mule deer and elk habitat management actions in the WMA 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 Mona to Bonanza 345kV transmission line, Utah State Route 208, 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 the TransWest Express Transmission 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.

4.3.16 Lands with Wilderness Characteristics

The approach for analysis of cumulative effects on lands with wilderness characteristics, including the geographic and temporal scopes defined for analysis is presented in Table 4-3. The cumulative effects on wilderness areas and WSAs are not discussed in this section. This analysis relies on the results of direct impacts from the Project (refer to Section 4.3.16) and considers them in conjunction with the past, present, and reasonably foreseeable future developments listed in Tables 4-1 and 4-2.

4.3.16.1 Issues Identified for Analysis

4.3.16.1.1 Potential Impacts on the Wilderness Characteristics or Management of Lands with Wilderness Characteristics

Potential conflicts include adversely impacting the wilderness characteristics for which a unit was considered for future wilderness designation (e.g., disrupting the apparent 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 unit.

4.3.16.2 Existing Condition

Past and present actions occur on almost all units in the geographic scope. This includes lands with wilderness characteristics in the BLM Rawlins, Grand Junction, Little Snake, Moab, Price, Vernal, and White River field offices. Some past and present actions such as recreational infrastructure, oil and/or gas development, roads, pipelines, transmission lines, etc. may have been inventoried in a unit, but the actions were found to be compatible with the wilderness characteristics for which the units were inventoried.

4.3.16.3 Results

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

Potential cumulative effects from past and present actions and RFFAs on lands with wilderness characteristics crossed by the WYCO alternative routes, are summarized below by unit.

Lands with Wilderness Characteristics in the BLM Rawlins Field Office

Rotten Springs Unit

Wilderness characteristics for this unit (refer to Section 3.2.16) have been minimally influenced by past and present development with existing pipelines in the BLM Rawlins Field Office designated utility corridor and minimal oil and gas exploration on BLM lands. The introduction of the Project (Alternative WYCO-C) and the proposed TransWest Express Transmission Project would affect the wilderness characteristics along the eastern portion of Rotten Springs; however, the remaining area would be intact. Opportunities for solitude and apparent naturalness would be influenced further in the unit by these projects due to the vertical prominence of the transmission line towers.

Lands with Wilderness Characteristics in the BLM Little Snake Field Office

Anthill Draw Unit

Wilderness characteristics for this portion of the unit (refer to Section 3.2.16) have been minimally influenced by past and present development with roads, oil and gas infrastructure disturbing a greater amount of the eastern portion of the unit, and potential oil and gas development on Colorado State Land Board lease. The introduction of the Project along all WYCO alternative routes and the proposed TransWest Express Transmission Project would affect the wilderness characteristics along the northwestern portion of Anthill Draw; however, the remaining area would be intact. Opportunities for solitude would be influenced further in the unit by these projects due to the vertical prominence of the transmission line towers.

Deep Canyon Unit

Wilderness characteristics for this portion of the unit (refer to Section 3.2.16) have been minimally influenced by past and present development with only one road in the northern portion and vegetation treatments conducted by the BLM Little Snake Field Office in the southern and eastern portion of the inventory area. The introduction of the Project (Alternatives WYCO-B, WYCO-C, and WYCO-F) and the proposed TransWest Express Transmission Project would affect the wilderness characteristics along the western portion of Deep Canyon unit; however, the remaining portion of the unit would be intact. Opportunities for solitude and apparent naturalness would be influenced further in the unit by these projects due to the vertical prominence of the transmission line towers.

West Sevenmile Unit

Wilderness characteristics for this unit (refer to Section 3.2.16) have been minimally influenced by past and present development including vegetation treatments conducted by the BLM 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 affect the wilderness characteristics along the eastern portion of the unit; however the remaining portion of the unit would be intact. Opportunities for solitude and apparent naturalness would be influenced further in the unit by these projects due to the vertical prominence of the transmission line towers.

Upper Little Snake Unit

Wilderness characteristics for this unit (refer to Section 3.2.16) have been minimally influenced by past and present development with just one road that crosses the northern portion of the unit. The introduction of the Project (Alternatives WYCO-B, WYCO-C, and WYCO-F) and the proposed TransWest Express Transmission Project would affect the wilderness characteristics by bisecting the western portion of the unit; however, the remaining eastern portion (more than 5,000 acres) would be intact. Opportunities for solitude and apparent naturalness would be influenced further in the unit by these projects due to the vertical prominence of the transmission line towers.

Simsberry Draw Unit

Wilderness characteristics for this unit have been minimally influenced by past and present development with vegetation treatments conducted by the BLM 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 Transmission Project would affect these characteristics since the transmission line projects would bisect this unit on Godiva Rim. Due 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 unit, the resulting areas would be less than the 5000-acre threshold for the size criteria for lands with wilderness characteristics.

Spence Gulch Unit

Wilderness characteristics for this unit have been minimally influenced by past and present development with a road that crosses the northern portion, vegetation treatments conducted by the BLM Little Snake Field Office in the western portion, and potential oil and gas development on Colorado State Land Board leases in the southern edge of the unit. The introduction of the Project (Alternatives WYCO-B, WYCO-C, and WYCO-F) and the proposed TransWest Express Transmission Project would not affect these wilderness characteristics since the transmission line projects would be on the southern corner of the unit. Opportunities for solitude and apparent naturalness would be influenced further in the unit by these projects due to the vertical prominence of the transmission line towers.

Lands with Wilderness Characteristics in the BLM White River Field Office

Lower Wolf Creek Unit

Wilderness characteristics for this portion of the unit (refer to Section 3.2.16) have been minimally influenced by past and present development with a road that would cross into the eastern portion of the unit and a 10-inch diameter pipeline owned by Plains All American GP, LLC that crosses the northwestern portion of the unit. The introduction of the Project (all WYCO alternative routes) and the proposed TransWest Express Transmission Project would not affect the wilderness characteristics along the northwestern edge of Lower Wolf Creek unit since the majority of the unit would remain intact. Opportunities for solitude and apparent naturalness would be influenced further in the unit by these projects due to the vertical prominence of the transmission line towers.

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

Potential cumulative effects from past and present actions and RFFAs in lands with wilderness characteristics units crossed by the COUT BAX alternative routes are summarized below by unit.

Lands with Wilderness Characteristics in BLM White River Field Office

Coal Ridge Unit

Wilderness characteristics for the Coal Ridge unit (refer to Section 3.2.16) have been minimally influenced by past and present development with a few scattered roads and historic fire boundaries . The introduction of the Project (all COUT BAX alternative routes) and the proposed TransWest Express Transmission 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 of the unit.

Gilsonite Hills Unit

Wilderness characteristics for this unit have been minimally influenced by past and present development, including roads and potential oil and gas development on the BLM White River Field Office leases adjacent to the area and a series of pipelines that form the southern boundary and influence wilderness characteristics in the unit. The introduction of the Project (all COUT BAX alternative routes) along the eastern edge of the Gilsonite Hills area would further influence and begin to affect the wilderness characteristics of the unit, while effects on the core of the unit would be limited due to the topographic screening offered by the highly dissected terrain. The proposed TransWest Express Transmission Project would not traverse this unit. Effects on the wilderness characteristics could be reduced if the Project was located east of Dragon Road rather than crossing the road twice and traversing the unit.

Wild Rose Unit

Wilderness characteristics for the Wild Rose unit have been minimally influenced by past and present development with a few roads and 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 affect the wilderness characteristics of this unit. The introduction of the Project (all COUT BAX alternative routes) and the proposed TransWest Express Transmission Project along the western edge of this unit would further influence and begin to affect the wilderness characteristics of the area.

Bluejay Creek Unit

Wilderness characteristics for this unit have been influenced by past and present development with oil and gas pads located at the end of cherry-stemmed roads and a series of pipelines that form the southern boundary of the unit. 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 unit. If developed, oil and gas activities could begin to affect the local area. The introduction of the Project (all COUT BAX alternative routes) and the proposed TransWest Express Transmission Project along the northwestern edge of this unit would further influence and begin to affect the wilderness characteristics of the unit.

Whiskey Creek Unit

Wilderness characteristics for this unit have been influenced by past and present development with a series of pipelines that form the eastern boundary of the unit and encroach on the boundary of the unit. The BLM White River Field Office has leased areas for oil and gas development adjacent to the northern and western edges of this unit. If developed, oil and gas activities could influence the wilderness characteristics of the unit. The introduction of the Project (all COUT BAX alternative routes) along the western edge of this unit would further influence and begin to affect the wilderness characteristics of the area. The proposed TransWest Express Transmission Project would not traverse Whiskey Creek.

Lower Wolf Creek Unit

Wilderness characteristics for this portion of the unit (refer to Section 3.2.16) have been minimally influenced by past and present development with a road that would cross into the eastern portion of the unit and a 10-inch diameter pipeline owned by Plains All American GP, LLC that crosses the northwestern portion of the unit. The introduction of the Project (All COUT BAX alternative routes) and the proposed TransWest Express Transmission Project would not affect the wilderness characteristics along the northwestern edge of Lower Wolf Creek remaining portion of the unit since the majority of the unit would remain intact. Opportunities for solitude and apparent naturalness would be influenced further in the unit by these projects due to the vertical prominence of the transmission line towers.

Lands with Wilderness Characteristics in the BLM Grand Junction Field Office

Spring Canyon Unit

Wilderness characteristics for this unit (refer to Section 3.2.16) have been influenced by past and present development with a series of pipelines that form the western boundary of this unit and a number of cherry-stemmed roads that influence opportunities for solitude and primitive recreation even though the roads are not in the boundary of the unit. 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 unit. The introduction of the Project (all COUT BAX alternative routes) and the proposed TransWest Express Transmission Project along the western edge of this unit would further influence and begin to affect wilderness characteristics of the unit.

Lands with Wilderness Characteristics in BLM Moab Field Office

Harley Dome Unit

Wilderness characteristics for the Harley Dome unit (refer to Section 3.2.16) have been minimally influenced by past and present development with I-70 adjacent to the southeastern boundary of the unit and potential oil and gas development on SITLA leases along the northern boundary of the unit. The introduction of the Project (all COUT BAX alternative routes) and the proposed TransWest Express Transmission Project along the southeastern boundary of the unit would further influence and begin to affect the wilderness characteristics of the unit. Due to limited screening opportunities, the influence of these projects would extend further into the core of the unit.

Floy Canyon Unit

Wilderness characteristics for this unit have been minimally influenced by past and present development with I-70, the D&RGW Railroad, and an existing power line adjacent to the southern boundary of the unit. The BLM Moab Field Office has leased this entire area for oil and gas development. If developed, oil and gas activities could affect the wilderness characteristics of this area. The introduction of the Project (all COUT BAX alternative routes) and the proposed TransWest Express Transmission Project in the area south of Hatch Mesa would further influence wilderness characteristics, where wilderness characteristics are not as intact as the area north of Hatch Mesa.

Lands with Wilderness Characteristics in BLM Price Field Office

Desolation Canyon Unit

Wilderness characteristics for this unit (refer to Section 3.2.16) have been minimally influenced by past and present development along the periphery, with U.S. Highway 6, the D&RGW Railroad, and an existing 138kV transmission line adjacent to the western boundary of the unit. Additionally, potential oil and gas development on SITLA leases adjacent to the southeast and northwest portions of this unit and

the Horse Canyon Coal Mine – Lila Canyon Tract (which is most of the northern portion of the unit) could influence wilderness characteristics in the unit. Due to limited screening opportunities, the introduction of the Project (Alternatives COUT BAX-C, and COUT BAX-E) along the western portion of this unit would further influence and begin to affect the area that would extend the influence of the Project further into the core of the unit. The proposed TransWest Express Transmission Project would not traverse this unit.

Never Sweat Wash Unit

Wilderness characteristics for this unit have been minimally influenced by past and present development with the Green River Cutoff Road that separates Never Sweat Wash from the Lost Spring Wash unit, and potential oil and gas development on SITLA leases on lands in the unit's boundary. The introduction of the Project (Alternative COUT BAX-C), the proposed TransWest Express Transmission Project, and the Woodside potential geothermal development site would affect 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 in the core of the unit.

Lost Spring Wash Unit

Wilderness characteristics for this unit have been minimally influenced by past and present development with the Green River Cutoff Road that separates Lost Spring Wash from the Never Sweat Wash unit, oil and gas development on SITLA leases on lands in the unit, and an existing 345kV transmission line adjacent to the southwest edge of the unit. The introduction of the Project (all COUT BAX alternative routes), the proposed TransWest Express Transmission Project, and the Woodside potential geothermal development site would affect the wilderness characteristics adjacent to the Green River Cutoff Road (Alternatives COUT BAX-C and COUT BAX-E), 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.

Price River Unit

Wilderness characteristics for this unit have been minimally influenced by past and present development with potential oil and gas development on SITLA leases. The introduction of the Project (Alternative COUT BAX-E) and the proposed TransWest Express Transmission Project would influence wilderness characteristics along the northern edge of this unit, but there would be limited effects on these wilderness characteristics in the core of this unit due to topographical screening offered by the canyon walls adjacent to the Price River.

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

Potential cumulative effects from past and present actions and RFFAs in lands with wilderness characteristics units crossed by the COUT alternative routes are summarized below by unit.

Lands with Wilderness Characteristics in BLM Vernal Field Office

Desolation Canyon Unit

Wilderness characteristics for this inventoried area (refer to Section 3.2.16) have been influenced by past and present development with a pipelines located along the northern edge of the unit and extensive oil and gas development adjacent to and within the northern boundary of the unit. Cherry-stem roads cross through the entire unit. There are no other proposed projects in this unit. The introduction of the Project (COUT-C, COUT-H, and COUT-I alternative routes) in addition to the existing development in the unit would minimally affect the unit.

Desolation Canyon Addition Unit

Similar to the Desolation Canyon unit, wilderness characteristics for this unit (refer to Section 3.2.16) have been influenced by past and present development with a pipelines located along the northern edge of the unit and extensive oil and gas development adjacent to and within the unit. There are no other proposed projects in this unit. Due to the existing development, the introduction of the Project (COUT-C, COUT-H, and COUT-I alternative routes) would minimally increase the existing impacts within the unit.

Badlands Cliffs Unit

Wilderness characteristics for this unit (refer to Section 3.2.16) have been influenced by past and present development with an extensive oil and gas lease by Gasco Company that is adjacent to and covers the entire unit and pipelines located along the northern edge of the unit, with cherry-stem roads in the eastern portion of the unit. There are no other proposed projects in this unit. Due to the existing development, the Project (COUT-C, COUT-H, and COUT-I alternative routes) would minimally increase the existing impacts within the unit.

Currant Canyon Unit

Wilderness characteristics for this unit (refer to Section 3.2.16) have been influenced by past and present development with the eastern portion of the unit leased by the Gasco Company for oil and gas development and cherry-stem roads crossing into the southern portion of the unit. There are no other proposed projects in this unit. Due to the existing development, the introduction of the Project (COUT-C, COUT-H, and COUT-I alternative routes) would minimally increase the existing impacts within the unit.

Lands with Wilderness Characteristics in BLM White River Field Office

Coal Oil Gulch Unit

Wilderness characteristics for this unit (refer to Section 3.2.16) have been minimally influenced by past and present development with a historic fire, 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 (all COUT alternative routes) and the proposed TransWest Express Transmission Project along the northern portion of the unit would further influence wilderness characteristics. Since these projects are located in proximity to existing development, wilderness characteristics in the core of the unit would be minimally affected.

Lower Wolf Creek Unit

Wilderness characteristics for this portion of the unit (refer to Section 3.2.16) have been minimally influenced by past and present development with a road that would cross into the eastern portion of the unit and a 10-inch diameter pipeline owned by Plains All American GP, LLC that crosses the northwestern portion of the unit. The introduction of the Project (All COUT alternative routes) and the proposed TransWest Express Transmission Project would not affect the wilderness characteristics along the northwestern edge of Lower Wolf Creek remaining portion of the unit since the majority of the unit would remain intact. Opportunities for solitude and apparent naturalness would be influenced further in the unit by these projects due to the vertical prominence of the transmission line towers.

4.3.17 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 3.2.17) on IRAs and unroaded/undeveloped areas and considers these impacts in conjunction with the past and present actions and RFFAs listed in Tables 4-1 and 4-2.

4.3.17.1 Issues Identified for Analysis

4.3.17.1.1 Potential Impacts on Inventoried Roadless Areas and Unroaded/Undeveloped Areas

Potential impacts of the Project on IRAs and unroaded and undeveloped areas include 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.

4.3.17.2 Existing Condition

The existing conditions in each of these areas are discussed in Section 3.2.17. 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.

4.3.17.3 Results

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

There are no IRAs or unroaded/undeveloped areas crossed by the WYCO alternative routes.

4.3.17.3.2 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 the COUT BAX alternative routes are presented in Table 4-127. IRAs and/or unroaded/undeveloped areas are not analyzed for Colorado because none of these areas are crossed by alternative routes considered for the Project.

Effects

The following summarizes the effects of past and present actions and RFFAs for each IRA and unroaded/ undeveloped area crossed by the Project.

TABLE 4-127
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	10,250	0	0	10,250	18,053	36.2
Oak Creek Unroaded/ Undeveloped Area	COUT BAX-E	5,359	7	0	24	31	5,328	0.6
San Pitch Mountains Unroaded/Undeveloped Area	All COUT BAX	21,681	2	0	0	2	21,679	0.1

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 development, and RFFA columns.

Manti-La Sal National Forest

Inventoried Roadless Areas

No IRAs are 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 influenced by past and present development include:

- areas leased for oil and/or gas development in the BLM Richfield and Price Field Offices
- Ferron Natural Gas Project
- Deer Creek Coal Lease
- an existing 345kV transmission line that 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 affect 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 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 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.

San Pitch Mountains Unroaded/Undeveloped Area

Wilderness values for this area influenced by past and present development include an existing 138kV transmission line that crosses the northern boundary of the area

Wilderness values in this area have been minimally influenced by development except for the existing transmission line that crosses the northern boundary of the IRA for approximately 500 feet. Since there are no other planned future activities in this area, effects on these values resulting from the Project (Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E) would be the same as those described in Chapter 3.

4.3.17.3.3 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 the COUT alternative routes are presented in Table 4-128 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.

TABLE 4-128
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	21,635	1,075	262	0	1,337	20,298	6.2
0401011 Inventoried Roadless Area	COUT-B	30,039	1,227	0	0	1,227	28,812	4.1
Cottonwood Unroaded/ Undeveloped Area	COUT-B	25,989	925	0	0	925	25,064	3.6
Sowers Canyon Unroaded/ Undeveloped Area	COUT-B	17,028	862	239	0	1,101	15,927	6.5
Manti-La Sal National Forest								
Cedar Knoll Inventoried Roadless Area	COUT-A, COUT-B, and COUT-C	22,485	7	9	6	22	22,463	0.1
Cedar Knoll Unroaded/ Undeveloped Area	COUT-A, COUT-B	28,351	6	12	6	24	28,327	0.1
	COUT-C		6	12	6	24	28,327	0.1
East Mountain Unroaded/ Undeveloped Area	COUT-I	28,303	10,250	0	0	10,250	18,054	36.2
Oak Creek Unroaded/ Undeveloped Area	COUT-H	5,359	7	0	26	33	5,326	0.6

TABLE 4-128
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				
Uinta-Wasatch-Cache National Forest								
Chipman Creek (418008) Inventoried Roadless Area	COUT-A	9,360	91	138	0	229	9,131	2.4
Willow Creek (418009) Inventoried Roadless Area	COUT-A	18,049	176	1	0	177	17,872	1.0

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

Effects

The following summarizes the past and present actions and RFFAs for each IRA and unroaded/undeveloped area crossed by the COUT alternative routes.

Ashley National Forest

Inventoried Roadless Area

IRA 0401010

Wilderness and roadless values for this area influenced by past and present development include:

- Berry Petroleum South Unit oil and/or gas project
- oil and/or gas leases administered by the BLM Vernal Field Office
- 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 affect 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.

IRA 0401011

Wilderness and roadless values for this area influenced by past and present development include:

- Berry Petroleum South Unit oil and/or gas project
- oil and/or gas leases administered by the BLM Vernal Field Office
- 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.

Unroaded/Undeveloped Areas

Cottonwood Unroaded/Undeveloped Area

Wilderness values for this area influenced by past and present development include:

- Berry Petroleum South Unit oil and/or gas project
- oil and/or gas leases administered by the BLM Vernal Field Office
- 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 affect 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 southeastern boundary of the area adjacent to Sowers Canyon Road.

Sowers Canyon East Unroaded/Undeveloped Area

Wilderness values for this area influenced by past and present development include:

- the Berry Petroleum South Unit oil and/or gas project
- oil and/or gas leases administered by the BLM Vernal Field Office
- existing 138kV transmission line paralleling the southeast boundary of the area

Similar to the discussion for the Cottonwood 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 western boundary of the area.

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, which both cross the boundary of this area, would affect roadless and wilderness values along the western ridge of the IRA 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.

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 influenced by past and present development include:

- areas leased for oil and gas development in the BLM Richfield and BLM Price Field Offices
- Ferron Natural Gas Project
- Deer Creek Coal Lease
- existing 345kV transmission line that 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 affect 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.

San Pitch Mountains Unroaded/Undeveloped Area

Wilderness values for this area influenced by past and present development include an existing 138kV transmission line that crosses the northern boundary of the area

Wilderness values in this area have been minimally influenced by development except for the existing transmission line that crosses the northern boundary of the IRA for approximately 500 feet. Since there are no other planned future activities in this area, effects on these values resulting from the Project (Alternatives COUT-A, COUT-B, COUT-C, COUT-H, and COUT-I) would be the same as those described in Chapter 3.

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 that forms the southern boundary of the area and influences opportunities for solitude and primitive recreation along the southern edge of the IRA. The introduction of the Project (Alternative COUT-A) and the TransWest Express Project would increase modifications adjacent to the IRA; but through micro-siting of towers, the IRA could be spanned to minimize effects on these values.

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.

Unroaded/Undeveloped Areas

There are no unroaded/undeveloped areas crossed by the COUT alternative routes in the Uinta-Wasatch-Cache National Forest.

4.3.18 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 and present actions 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 3.2.18) in relation to the past and present actions 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 additive 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., SQRUs) would be further divided and the cumulative effect becomes strongly synergistic. 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 cohesive relationship of the Project's features.

4.3.18.1 Issues Identified for Analysis

4.3.18.1.1 Scenery

As described in Section 3.2.18, 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 the 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; thus, the industrial nature of transmission line projects would have a stronger effect on landscape character.

4.3.18.1.2 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.

4.3.18.2 Existing Condition

Residential and industrial development in general has altered the existing landscape character associated with scenic quality rating units (refer to Maps 3-9a and 3-9b 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 codominant 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 codominant 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 the Project alternative routes, including the Bonanza, Huntington, and Carbon power plants that 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.

4.3.18.3 Results

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

Scenery

Table 4-129 lists the cumulative effects for the WYCO alternative routes.

TABLE 4-129
SCENERY CUMULATIVE EFFECTS SUMMARY FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES

Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource[1]	Percent of Scenery Units not Influenced by Development
		Past and Present Development	Reasonably Foreseeable Future Actions				
WYCO-B (Agency and Applicant Preferred Alternative)	4,929,600	3,315,000	486,800	3,200	3,805,000	1,124,600	23
WYCO-C	4,929,900	3,316,400	487,600	3,500	3,807,400	1,122,400	23
WYCO-D	5,038,100	3,641,400	331,100	14,700	3,987,200	1,050,900	21
WYCO-F	4,850,400	3,377,200	459,400	3,300	3,840,000	1,010,400	21

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 Great Divide, Juniper Mountain, and Routt SQRUs were identified as landscapes where the Project's influence 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 BLM 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 primarily would modify 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, 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 would influence approximately an additional 10,000 acres when compared to other WYCO alternative routes. This distinction is primarily a result of the TransWest Express Transmission Project alternative route 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 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 that 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 that 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 that 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 colocation 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 that 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 cross 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 Alternatives WYCO-B, WYCO-C, and WYCO-F would be located approximately 2.5 miles away and the Project would have minimal additional influence on this landscape.

Great Divide

The landscape known as the Great Divide, between Sevenmile Ridge and the Elkhead Mountains, has been influenced visually by existing oil and gas development located in the northern and southern portions of the landscape, a network of pipelines in the central and eastern portion of the landscape, and transmission lines along the southern edge. The remaining portions of the landscape have minimal influence from development and have a more intact landscape character. Through the development of RFFAs, including the TransWest Express Project, this landscape would begin locally to become industrialized in nature. The Project would have varying levels of influence on the industrialization of this landscape based on the alternative route selected. Alternatives WYCO-B, WYCO-C, and WYCO-F would have limited additional influence on the Great Divide due to colocation with the TransWest Express Project. Alternative WYCO-D would increase industrialized of this landscape adjacent to the Wyoming-Colorado border where the TransWest Express Project follows a different alignment, expanding the area viewed as modified from the presence of transmission line structures, right-of-way vegetation clearing, and the construction of access roads.

Juniper Mountain

The Juniper Mountain SQRU, located southeast of Maybell, Colorado, has been visually influenced by a series of pipelines along the western edge of this landscape as well as rural development and existing transmission lines adjacent the Yampa River at the landscape's northern edge. Through the development of RFFAs, including the TransWest Express Project, the area viewed as modified by transmission lines would be expanded further to the south due to separation between this proposed project and the existing transmission lines. The addition of the Project (Alternative WYCO-D), located south of the existing transmission lines and the TransWest Express Project, would continue the increasing modification of this landscape through expanding utility development adjacent to U.S. Highway 40.

Routt

The Routt SQRU, primarily associated with lands east of Colorado State Highway 13 in the Medicine Bow-Routt National Forest, has been visually influenced by scattered oil and gas development, residential development (Wilderness Ranch) in the northern portion of the landscape, and development along the Colorado State Highway 13 corridor including a series of pipelines and dispersed residences. The limited nature of the activities leaves the majority of the landscape with an intact landscape character. Through the development of RFFAs, including the TransWest Express Project, this landscape would begin locally to appear industrialized adjacent to Colorado State Highway 13. The addition of the Project (Alternative WYCO-D) would increase the industrialization of this area in particular where the Project and TransWest Express Project would not be colocated, resulting in an expansion of the area viewed as modified through the presence of transmission line structures, right-of-way vegetation clearing, and the construction of access roads.

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, the analysis focuses on the seven simulation locations identified in Table 4-130 along the WYCO alternative routes.

TABLE 4-130
CUMULATIVE EFFECTS SIMULATION LOCATIONS FOR THE WYOMING TO COLORADO – AEOLUS TO U.S. HIGHWAY 40 (WYCO) ALTERNATIVE ROUTES

Simulation Location (Key Observation Point) Number	Simulation Location (Key Observation Point) Name	Alternative Route
52[1]	Dispersed residences southwest of Craig	WYCO-D
66[1]	Dispersed residence along Colorado State Highway 13	WYCO-D
150	Dinosaur National Monument (Deerlodge Road)	All WYCO
197[1]	Hanna residential	WYCO-D
220	North Platte River Special Recreation Management Area	All WYCO
225	Outlaw Trail Loop Scenic Drive (Wyoming Highway 789 north of Baggs)	WYCO-D
299	East Cross Mountain River Access	All WYCO

NOTES:
[1]Cumulative effects 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 effects simulation
Cumulative simulations are located in Appendix M.

Key Observation Point Number 52 – Dispersed residences southwest of Craig (simulation)

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 farther 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), which has similar design characteristics to the existing transmission lines, as well as the TransWest Express Transmission Project, these views would be completely dominated by industrial development which due to the separation between these two transmission line projects in this area, 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 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 that 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 150 – Dinosaur National Monument (Deerlodge Road)

Views from the recreation kiosk on Deerlodge Road, in Dinosaur National Monument, have been influenced by existing transmission lines and U.S. Highway 40, located southeast of the kiosk. Existing development begins to dominate views from this location, in particular U.S. Highway 40, which is located adjacent to this viewpoint. Through the introduction of the Project (all WYCO alternative routes) as well as the TransWest Express Project (southern option), the area viewed as influenced by development would be similar to the existing condition with more intense levels of modification due to the presence of two new transmission line projects. The introduction of other TransWest Express Project alternative routes would expand this area of modification farther to the north where views from Deerlodge Road would become locally dominated by industrial development. Cumulative effects associated with other Project route variations are discussed in Appendix F.

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), 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 colocated 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 are more dominant 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 WYCO alternative routes) as well as the Gateway West 500kV Transmission Project, views would become dominated by transmission lines, which may include transmission structures skylined on ridges that would further dominate views as shown in the cumulative effects simulation. To reduce the cumulative effect of these projects on views from the North Platte River SRMA, these two projects should be colocated 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 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, and would further increase their dominance on these views as shown in the cumulative effects 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 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 WYCO alternative routes cross the scenic drive farther 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 as well as one alternative route 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 effects simulation.

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

Scenery

Table 4-131 lists the cumulative effects for the COUT BAX alternative routes.

TABLE 4-131
SCENERY 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[1]	Percent of Scenery Units not Influenced by Development
		Past and Present Development	Reasonably Foreseeable Future Actions				
COUT BAX-B	4,909,100	3,299,800	386,900	8,500	3,695,200	1,213,800	25
COUT BAX-C	4,924,000	3,287,700	41,000	8,400	3,715,100	1,209,000	25
COUT BAX-E	5,103,500	3,418,400	426,000	9,000	3,853,300	1,250,200	24

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):

- 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, Coal Ridge, and Douglas Pass SQRUs were identified as landscapes where the Project's 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 future projects. As analyzed, these landscapes (SQRUs) include Cedar Mountain, Education Creek, Hadden Hills/Oil Well Dome, and Prickly Pear Flat. In particular, Education Creek has been influenced by multiple pipelines that traverse this narrow landscape. The other three 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 2.5 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 Cliffs 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 Cliffs Bench and Green River/Book Cliffs 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.

Coal Ridge

The landscape associated with Coal Ridge has been influenced visually by existing transmission lines along the northern boundary and development adjacent to the White River south of the landscape. The remaining portion of this landscape has been minimally altered by development and has a more intact landscape character. Through the development of RFFAs, including the TransWest Express Project, this landscape would be crossed and more directly influenced by development leading to the industrialization

of the area adjacent to this proposed transmission line project. Introduction of the Project (all COUT BAX alternative routes) and the separation between these transmission line projects would lead to an intensification of the industrialization of the western portion of Coal Ridge due to the presence of transmission line structures, right-of-way vegetation clearing, and the construction of access roads.

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 discussion, 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 that 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 visually influence a small area that has not already been 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 the TransWest Express Transmission Project 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 that 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 4-132 along the COUT BAX alternative routes.

TABLE 4-132
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 Route
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)	All COUT BAX
193	I-70 Crescent Junction Rest Stop (Dinosaur Diamond Scenic Byway)	All COUT BAX
195	Indian Creek Campground	COUT BAX-B, COUT BAX-C

TABLE 4-132 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 Route**
217[1]	Skyline Drive Scenic Backway	COUT BAX-B, COUT BAX-C
241[1]	Dinosaur Diamond Scenic Byway in Canyon Pintado National Historic District (Colorado State Highway 139)	All COUT BAX
244	Garfield County Road 201 (south of Baxter Pass)	All COUT
260	Energy Loop Scenic Byway (Utah State Route 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)	All COUT BAX
279	Old Spanish National Historic Trail (near Thompson Springs, Utah)	All COUT BAX
282	I-70 Thompson Welcome Center (Dinosaur Diamond Scenic Byway)	All COUT BAX
284	Energy Loop Scenic Byway (Utah State Route 264)	COUT BAX-E
305	Wedge Overlook Scenic Backway	COUT BAX-B, COUT BAX-C
306	Upper Colorado River Scenic Byway	All COUT BAX
309[1]	Bear Creek Campground	COUT BAX-B, COUT BAX-C
310	Crook's Brand Rock Art Site	All COUT BAX
319	Green River	All COUT BAX
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 effects simulation not prepared since the TransWest Express Transmission Project would not be visible in the extent of the direct effects simulation
Cumulative simulations are located in Appendix M.

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 effects 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 farther 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 that 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 effects 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 COUT BAX alternative routes) 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 effects 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 COUT BAX alternative routes) and the TransWest Express Transmission Project would further industrialize this area through the construction of a series of transmission line structures that would begin to dominate views from this overlook as shown in the cumulative effects 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 effects 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.

Key Observation Point Number 217 – Skyline Drive Scenic Backway (simulation)

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.

Key Observation Point Number 241 – Dinosaur Diamond Scenic Byway in Canyon Pintado National Historic District (CO SH 139)

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 COUT BAX alternative routes) and the TransWest Express Transmission Project would dominate views from this location due to their proximity and visibility, in particular the Project would be skylined on the ridge east of the scenic road as shown in the cumulative effects simulation. To reduce cumulative effects on the scenic road, as well as views from the Canyon Pintado National Historic District, 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 as currently designed into the updated alignment for the TransWest Express Transmission Project.

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 WSAs, have been modified by the presence of existing pipelines that have produced areas of geometric right-of-way vegetation clearing adjacent to the road. Through the addition of the Project (all COUT BAX alternative routes) 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 effects 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 the 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 (Utah State Road 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 effects 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 effects 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 (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 that would locate many residences between each subsequent transmission line as shown in the cumulative effects 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 COUT BAX alternative routes) 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 that further dominate views due to their visibility on ridges as shown in the cumulative effects 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 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 COUT BAX alternative routes) 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 effects 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 colocated 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 effects 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 (Utah State Route 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 effects simulation. To minimize the cumulative effect on these views of two geometric-cleared rights-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 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 effects simulation. To reduce cumulative effects on views from this scenic backway, potential mitigation would include colocation of 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 COUT BAX alternative routes) 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 effects simulation. To minimize cumulative effects on these views, the two transmission projects could be colocated farther 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. The TransWest Express Project would be located adjacent to the existing transmission lines and would be mostly screened from this KOP location. Through the introduction of the Project (Alternatives COUT BAX-B and COUT BAX-C), views would be affected minimally where the existing industrial modifications are visible but where enclosed views in the campground would only view the project 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.

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 that 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 COUT BAX alternative routes) 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 that would rise above the pinyon-juniper vegetation present in this area as shown in the cumulative effects simulation. To minimize cumulative effects on views from this rock art site, the two projects should be colocated farther 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 COUT BAX alternative

routes) 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 effects simulation. To reduce the cumulative effect on these views, potential mitigation would be to colocate 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 the 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-effects 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 colocated 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 effects simulation. Due to the location of both of these transmission projects, located farther 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 that 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 effects 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 colocated 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 effects simulation. To minimize cumulative effects in this area, potential mitigation would be to colocate 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.

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

Scenery

Table 4-133 lists the cumulative effects for the COUT alternative routes.

TABLE 4-133
SCENERY CUMULATIVE EFFECTS SUMMARY FOR THE COLORADO TO UTAH – U.S. HIGHWAY 40 TO CENTRAL UTAH TO CLOVER (COUT) ALTERNATIVE

Alternative Route	Total Available Resource	No Action Alternative		Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource[1]	Percent of Scenery Units not Influenced by Development
		Past and Present Development	Reasonably Foreseeable Future Actions				
COUT-A	3,301,500	2,686,000	64,700	2,200	2,752,900	548,600	17
COUT-B	3,908,600	3,126,500	177,900	1,000	3,305,400	603,300	15
COUT-C (Agency and Applicant Preferred Alternative)	3,943,700	2,903,100	173,000	1,200	3,077,300	866,400	22
COUT-H	4,352,300	3,306,300	182,100	900	3,489,300	863,000	20
COUT-I	4,363,200	3,291,200	201,500	10,600	3,503,300	859,800	20

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):

- 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 Cliffs Bench, Emma Park/Kyune, and Windy Ridge were identified as SQRUs where the Project's 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 and present actions and RFFAs. As analyzed these landscapes (SQRUs) include Beaver Ridge, 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 areas leased for oil and gas development and existing transmission lines and pipelines.

The COUT alternative routes are similar in regard to overall cumulative effects except for Alternative COUT-I. As described previously, due to the colocation 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 that 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) and the TransWest Express Transmission Project, a major portion of this landscape unit may become visually modified. By colocating 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.

Book Cliffs 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 7 percent through the introduction of transmission line structures, access roads, and right-of-way vegetation clearing. Due to the colocation 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 Cliffs Bench SQRU.

Emma Park/Kyune

This landscape represents the area known as Emma Park 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 colocation of the Project with the TransWest Express Transmission Project in this area along Alternatives COUT-B, COUT-C, 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 route.

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 and COUT-B cross the Horseshoe Bend unit and Alternatives COUT-C, COUT-H, and COUT-I cross the South Green River unit. Both of these landscapes have been influenced visually by existing 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 projects should be colocated 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 that 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.

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 (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 visually influence a small area that has not already been influenced by past or present actions; whereas the other COUT alternative routes would visually influence approximately 400 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 Alternatives COUT-A, COUT-B, COUT-C, 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 landscapes 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) as well as the TransWest Express Transmission Project; the influence of development would be extended farther into this landscape. Due to the separation between the Project and the TransWest Express Transmission Project, the Project would influence an additional 2 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 21 simulation locations identified in Table 4-134 along the COUT alternative routes.

TABLE 4-134
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, COUT-H, COUT-I
109[1]	Dispersed residences south of Roosevelt	COUT-A, COUT-B
195	Indian Creek Campground	COUT-I
200[1]	Argyle Canyon Road	COUT-C, COUT-H, COUT-I
203	Fourmile Bottom	COUT-C, COUT-H, COUT-I
208	West Helper residential	COUT-H
211	Dinosaur Visitor Center	All COUT
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)	All COUT
266	U.S. Highway 6 (Spanish Fork Canyon)	COUT-A, COUT-B, COUT-C
269[1]	Fruitland residential	COUT-A
272	Sand Wash North Destination Route	COUT-C, 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

TABLE 4-134 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**
304	Sheep Creek Road (Forest Road 042)	COUT-A
309[1]	Bear Creek Campground	COUT-I
325[1]	Argyle Canyon residences	COUT-B

NOTES:
[1]Cumulative effects simulation not prepared since the TransWest Express Transmission Project would not be visible in the area of the direct effects simulation
Cumulative effects simulations are located in Appendix M.

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, 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 effects simulation. To reduce cumulative effects on views from this recreation area, potential mitigation would include colocation of the two projects and 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 adjacent to the river.

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) 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, colocation 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 effects 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 200 – Argyle Canyon Road (simulation)

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-H and COUT-I) and the TransWest Express Transmission Project 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. Alternative COUT-C, and adjacent the TransWest Express Project route, would produce less modified views since the projects would be colocated 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 on 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, 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 effects 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 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 that 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 effects 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. 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 COUT alternative routes) 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 effects simulation. Alternatives COUT-C, 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 (simulation)

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 line projects from this scenic road.

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 effects simulation. Since the TransWest Express Transmission Project parallels the scenic byway for approximately 2.5 miles and 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 effects 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 that would locate many residences between each subsequent transmission line as shown in the cumulative effects 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 COUT alternative routes) 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 that further dominate views due to their visibility on ridges as shown in the cumulative effects 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) and the TransWest Express Transmission Project would, in addition to the existing transmission lines that have similar design characteristics as the Project, dominate views along this portion of U.S. Highway 6 as shown in the cumulative effects 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 colocation 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 farther 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 also may become influenced by oil and gas development, including structures and associated access

roads. The addition of the Project (Alternative COUT-A) 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, 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 effects simulation. To reduce cumulative effects on these views, potential mitigation would be to colocate 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 effects 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 (Utah State Route 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 effects 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 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 effects simulation. To minimize these cumulative effects on views, potential mitigation would be to colocate the 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 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 rights-of-way as shown in the cumulative effects simulation. 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. The TransWest Express Project would be located adjacent to the existing transmission lines and would be mostly screened from this KOP location. Through the introduction of the Project (Alternative COUT-I), views would be affected minimally where the existing industrial modifications are visible but where enclosed views in the campground would only view the project 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.

Key Observation Point Number 325 – Argyle Canyon Residences (simulation)

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 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.

Key Observation Point Number 328 – 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 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 micro-siting.

4.3.19 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 the 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 and present actions 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 duration 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 3.2.19) and considers them in context with the past and present actions and RFFAs listed in Tables 4-1 and 4-2.

4.3.19.1 Issues Identified for Analysis

4.3.19.1.1 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 and present actions 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, including 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

4.3.19.2 Existing Condition

4.3.19.2.1 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 farther 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.

4.3.19.2.2 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 BLM Moab Field Office, and intermittent industrial development. Farther 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.

4.3.19.2.3 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 LaClede. 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.

4.3.19.2.4 Cherokee Historic Trail

Similar to the Overland Historic Trail, two alignments are under feasibility study by the NPS: (1) the 1849 route that parallels Wyoming Highway 71 toward Rawlins and (2) the 1850 route that 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 that on the construction and operation of the Sierra Madre-Chokecherry Wind Farm would further modify the trail's setting. 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.

4.3.19.3 Results

4.3.19.3.1 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 BLM 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 and the construction of the Gateway West Transmission Project. Future development, including all WYCO alternative routes for the Project, in addition to the TransWest Express Transmission Project, 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 affect 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 structures) 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 that 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 (Whirlwind I) Wind Energy Project and other future actions, including all WYCO alternative routes, this area would be increasingly influenced by energy infrastructure that 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 WYCO alternative routes 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, Barrel Springs, Red 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 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 Alternative WYCO-D 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 structures), 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 along Wyoming Highway 789, and the first trail crossing on Alternative WYCO-F 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 alternative 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 Alternative WYCO-C crosses 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. Alternative WYCO-B 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. After paralleling the historic trail, Alternative WYCO-B would cross the trail in an area with a limited extent of existing development.

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 farther 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 structures), and matched spans between towers, 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 that may result in the loss of cultural artifacts, features, or sites that could yield important information about the trail.

4.3.19.3.2 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 COUT BAX alternative routes 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 that 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 BLM 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 that 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 the 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 and 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 farther 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 structures), and matched spans between towers, cumulative effects could be reduced further.

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

Since no designated NHT, NST, or trails undergoing a feasibility study for inclusion with the National Trails System are adjacent to the COUT alternative routes, this section is not pertinent for analysis of the Project.

4.3.20 Cultural Resources

Over time, cultural resources are subject to attrition as cultures change and sites weather and erode. In addition, prior development in the region has either degraded or resulted in the loss or discovery of some cultural resources. The addition of the Project to past and present actions 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 study corridor centered on the reference centerlines (similar to the methodology identified in Section 3.2.20). 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 assessment of direct and indirect impacts from the Project (refer to Section 3.2.20) and considers them in conjunction with the past and present actions and RFFAs listed in Tables 4-1 and 4-2.

4.3.20.1 Issues Identified for Analysis

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.

Other present and reasonably foreseeable future projects that could have cumulative effects on cultural resources along the proposed alternative routes (Tables 4-1 and 4-2) include, but are not limited to:

- PacifiCorp Seven Mile Hill Wind-Energy Facility (Wyoming)
- Continental Divide-Creston Natural Gas Project (Wyoming)
- Blue Mountain Energy Deserado Mine Project (Colorado)
- Uinta Natural Gas Development Project (Utah)
- TransWest Express Transmission Project (multi-state)
- Hiawatha Regional Energy Development Project (multi-state)
- Newfield Exploration Company Monument Butte Area Oil and Gas Development Project (Utah)
- the Victory Pipeline Project (Utah)
- Bill Barrett Corporation Blacktail Ridge Project (Utah)

4.3.20.2 Results

4.3.20.2.1 Cumulative Impacts on Cultural Resources Common to all Alternative Routes

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 introduced visual, atmospheric, and audible elements that could detract from the cultural significance of potential TCPs or other significant cultural resources. These indirect impacts also could adversely affect cultural resource sites that are eligible, or have the potential to be listed on the NRHP. The introduction of additional development could alter the setting and feeling of historic properties (e.g., habitation structures, open architectural sites, waterworks, and rock art).

As a result of the presence of existing development projects and proposed future actions, including, but not limited to the TransWest Express Transmission Project, cultural resources and potentially significant cultural resources that may be encountered could be affected negatively throughout the study corridor. 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 present actions and RFFAs would result in a greater potential for cumulative effects on historic properties and other potentially significant cultural resources. Some of these are:

- Prehistoric habitation and rock art sites, the Cherokee and Overland historic trails, the Rawlins to Baggs Stage Road, the Lincoln Highway, and 3 NRHP-listed properties (Fort Fred Steele Historic Site, Red Rock Site, and Hanna Community Hall) along the WYCO alternative routes
- Old Victory Highway along the WYCO and COUT alternative routes
- Prehistoric habitation and rock art sites, the Old Spanish NHT, the Dragon to Rangely Stage/Freight Road, the Dragon Douglas trail, the Uintah Railway, 27 NRHP-listed properties (including the Canyon Pintado National Historic District, Carrot Men Pictograph Site, and the Buckhorn Wash Rock Art), and 5 ACECs (Big Hole, Cottonwood Canyon, Grassy Trail, Smith Cabin, and Tidwell Draw) along the COUT BAX alternative routes
- CCC structure/features, the U.S. Highway 6, the Buckhorn Flat Railroad, and the D&RGW Railway along the COUT BAX and COUT alternative routes

- Prehistoric habitation and rock art sites, 23 NRHP-listed historic properties, a TCP (Ute vision quest site), Argyle Canyon Rock Art, and Nine Mile Canyon ACEC along the COUT alternative routes.

For the Little Denmark Heritage District (MPNHA) and areas adjacent to the Book Cliffs and Nine Mile Canyon and its tributary canyon branches in Utah, there is a high potential for encountering numerous unrecorded archaeological (prehistoric and historic) and historic sites.

The extent of cumulative effects on cultural resources could be reduced significantly through avoidance and implementation of selective mitigation measures. Potential impacts on cultural resources in the area would be incremental and the potential to mitigate impacts on cultural resources is good. The indirect cumulative effects on cultural resources, as a result of increased public access, would be expected to be low.

4.3.21 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 3.2.21.5) and considers them in conjunction with the past and present actions and 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 and present actions 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.

4.3.21.1 Issues Identified for Analysis

4.3.21.1.1 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 and present actions and RFFAs 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.

4.3.21.1.2 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 wildand-urban interface and increase values to be protected during wildland fires.

4.3.21.2 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.

4.3.21.3 Results

4.3.21.3.1 Cumulative Effects on Fire Ecology and Ignition Risk

As discussed in Section 3.2.21, 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 and present actions 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.

4.3.21.3.2 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 allocating response 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 3.2.21, 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.

4.3.22 Social and Economic Conditions

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 3.2.22) and considers them in conjunction with the past and present actions and RFFAs listed in Tables 4-1 and 4-2.

4.3.22.1 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.

4.3.22.1.1 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.

4.3.22.1.2 Availability of Employment and Housing 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 live temporarily in nearby communities during construction. The potential for cumulative socioeconomic impacts on population, employment, and housing 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.

4.3.22.1.3 Potential Impacts on Environmental Justice Populations of Concern

Potential environmental justice populations of concern residing in proximity to the transmission line routes could be affected cumulatively and adversely by the construction and/or development of other nearby projects with disproportionate impacts such as traffic, air quality, visual resources, cultural resources, property values, and agricultural land uses.

4.3.22.1.4 Potential Impacts on Private Property Values

Nearby residences to the transmission line may incur adverse effects on their property values. Additional nearby industrial construction and operations, such as other transmission lines, pipelines, oil and gas development, etc., may cumulatively affect these residential property values.

4.3.22.1.5 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, also could 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.

4.3.22.2 Existing Condition

The existing social and economic conditions are discussed in detail in Section 3.2.22.3.

4.3.22.3 Results

There are two types of effects that could have implications for cumulative effects on socioeconomic resources. Construction activity has the potential to affect temporarily 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. Therefore, the Project is not anticipated to cumulatively affect these populations.

4.3.22.3.1 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 nearby 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 nearby 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 nearby 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 affect temporarily properties, recreational and scenic values, and bring a 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 a considerable supply of construction workers. The cumulative demand for laborers in construction would likely require additional workers to relocate temporarily 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 considerable temporary workers residing in overlapping areas. 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 from numerous present and future projects, even if it is temporary in nature. Additionally, average earnings also may 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. The current rental housing market is close to capacity, and the cities and towns in southwestern Wyoming have very low rental vacancy rates. In addition, hotel, motel, and other lodging accommodations have high occupancy rates in the spring, summer, and fall, ranging from 72 to 90 percent (Rock Spring Chamber of Commerce 2015). 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 at or very near maximum housing and accommodations capacity.

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. In southwestern Wyoming, the cumulative effects could be considerable on housing and possibly public services, especially if the present and future cumulative construction schedules coincide with the construction schedule of the Project. During the construction period, the cumulative impacts associated with the proposed Project on housing and public services are expected to be short-term and adverse and could range from moderate to major depending on the availability and capacity of housing and accommodations. In addition, construction workers could also displace tourism visitors in small towns who rely on visitor spending to sustain their small economies during peak summer months.

However, construction workers staying in local communities do bring spending and revenues to local businesses, and perhaps this is more noticeable in places where tourism visitation is not prevalent. 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 considerable, 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 economy in southwestern Wyoming 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 residential properties are located in proximity to Alternatives WYCO-B, WYCO-C, and WYCO-F (1 residences within 0.1 of a mile and 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 53 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 the Alternative WYCO-D nearby properties near Craig, Colorado, the siting of the TransWest Express Transmission Project along this alternative route and corridor may cumulatively adversely affect the nearby property values. Other wind power and 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 Alternative WYCO-D, when combined with the Project, would moderately and adversely affect these property values around Craig, Colorado, potentially affecting 53 residences within 0.25 mile. The remainder of the WYCO alternative routes would have minimal adverse impacts on residential property values.

With the bulk of Alternative WYCO-D nearby properties near Craig, Colorado, the siting of the TransWest Express Transmission Project along this alternative route and corridor may cumulatively adversely affect the nearby property values. Other wind power and 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 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 also could affect temporarily and adversely 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 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 relatively longer periods 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.

4.3.22.3.2 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 nearby 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 nearby 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 where there is a supply of available construction workers, but most of the workforce would likely be coming from outside the region. The cumulative demand for laborers in construction would require workers to relocate temporarily 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 Grand Junction 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 resources. The construction workers needed for all of these cumulative projects, along with those required for the Project, would add to stresses on housing, services, and infrastructure if construction schedules coincide, requiring an influx of temporary workers. Many of the communities in eastern and central Utah 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 temporary residents would be housed is not known for this project nor is it known for future development activities. To the extent that housing and lodging in Grand Junction (Salt Lake City is likely too far away for the projects in these locations) 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. Other towns in this region have limited housing resources and accommodations availability.

The cumulative impacts associated with the proposed Project in addition to present and future actions and projects on housing availability are similar to those described for the WYCO alternative routes, with short-term and adverse impacts for housing and possibility public services, ranging from minor to major, depending on the current and future constraints of housing and accommodations and the timing and location of construction and project schedules in the towns along the alternative routes. In addition, construction workers could also displace tourism visitors in small towns who rely on visitor spending to sustain their small economies during peak summer months.

However, construction workers staying in local communities do bring spending and revenues to local businesses, and perhaps this is more noticeable in places where tourism visitation is not prevalent. The cumulative beneficial impact of the Project on the social and economic conditions in the Project area could be considerable, 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 between 100 and 107 residences within 0.25 mile. Alternatives COUT BAX-B, COUT BAX-C, and COUT BAX-E have 11, 11, and 14 residences within 0.1 of a mile, respectively.

Seventy-seven nearby residences (within 0.25 mile) are located very near Nephi, Utah. All COUT BAX 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 11 residences close to Mount Pleasant, Utah. This is also a corridor through which the TransWest Express Transmission Project also could be located.

Alternative COUT BAX-E is located in proximity to 10 residences near Fairview, Utah, which 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 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 noticeable 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.

4.3.22.3.3 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 nearby 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 nearby 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 Wasatch Front and the Salt Lake City suburbs where there is a supply of construction workers. The Project and cumulative demand for laborers in construction would likely require workers to relocate from the Denver and Salt Lake City regions to reside temporarily in the smaller towns along the routes in central and eastern Utah. This especially would be the case in the communities farther from the Salt Lake City urban area where construction workers would need to reside temporarily to support construction activities.

The construction workers needed for all of these cumulative projects, along with those required for the Project, would 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 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 temporary residents would be housed is not known for this Project nor is it known for future development activities. Vernal, Roosevelt, and Price, Utah are relatively larger communities along the COUT alternative routes. However, these communities have limited housing resources and lodging availability.

The construction of the Project would have temporary adverse effects on housing across the region. Impacts would range from minor to major depending on the availability of housing and lodging accommodations and constraints during the construction activity in the small and larger cities and towns near the alternative routes. When considering present and future cumulative actions and projects, the cumulative impacts on housing and possibly public services is expected to be short-term and adverse and range from minor to major, with more adverse effects when the construction schedules coincide temporally and geographically. In addition, construction workers could also displace tourism visitors in small towns who rely on visitor spending to sustain their small economies during peak summer months.

However, construction workers staying in local communities do bring spending and revenues to local businesses, and perhaps this is more noticeable in places where tourism visitation is not prevalent. The cumulative beneficial impact of the Project on the social and economic conditions in the Project area could be considerable, 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 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.

All COUT alternative routes have between 12 and 56 residences within 0.1 of a mile, and 100 to 239 residences within 0.25 mile. Alternative COUT-A has the greatest number of residencies located within 0.25 mile, located near Strawberry Reservoir, Fruitland, Duchesne, and Roosevelt, a total of 214 residences. Alternative COUT-B has 239 residences within 0.25 mile, the majority of which are located in Roosevelt and southwestern Duchesne County. Alternative COUT-C has nearby 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 in the TransWest Express alternative routes) with the potential to cumulatively affect these property values.

Alternative COUT-I has 101 nearby residences within 0.25 mile of the Project, some of which are located in southwestern Duchesne County. Alternative COUT-H has 141 nearby 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 alternative routes), 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.

4.3.23 Public Health and Safety

As a result of changes to the Project description for the Energy Gateway South Transmission Project, principally the structure types for the Project, public health and safety analyses previously prepared for the Draft EIS was revised for the Final EIS to accurately reflect the current Project description. These analyses will be provided to the Agency Interdisciplinary Team and cooperating agencies when completed and included in the Final EIS.

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 3.2.23.5) and considers them in conjunction with the past and present actions and RFFAs listed in Tables 4-1 and 4-2.

4.3.23.1 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]).

4.3.23.1.1 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.

4.3.23.1.2 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.

4.3.23.1.3 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.

4.3.23.2 Existing Condition

Thousands of miles of high-voltage AC and 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.

4.3.23.3 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.

4.3.23.3.1 Past and Present Activities

Section 3.2.23 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.

4.3.23.3.2 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 4-135). 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 O, Figures O-2 and O-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 ICNIRP and the ICES. 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.

TABLE 4-135 PUBLIC HEALTH AND SAFETY CUMULATIVE EFFECTS ANALYSIS			
Jurisdiction/Agency	**Applicant**	**Project Name**	**Significant Cumulative Effect (Yes/No)**
Multi-State Activities			
Past and Present Activities[1]			
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			

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 2011j). 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 aboveground required for the proposed 500kV transmission line to cross above an existing transmission line.

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 4-136.

TABLE 4-136
IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Resource	Type of Commitment	Reason for Commitment	Irreversible	Irretrievable
Air quality	▪ Degradation of air quality	▪ Construction activities	No	Construction phase
Soils	▪ Soil loss and erosion	▪ Construction activities	Yes	Yes
Water	▪ None (refer to construction materials section)	–	–	–
Biological	▪ Disturbance to and/or loss of vegetation, habitat, and wildlife species	▪ Construction and operation	Yes	Project life
Archaeological and historical sites	▪ Disturbance or removal of sites	▪ Construction, operation, and maintenance	Yes	Yes
Important cultural sites	▪ Disturbance or removal of sites, interference with visual setting	▪ Construction, operation, and maintenance	Yes	Project life
Traditional cultural properties	▪ Disturbance or removal of sites, interference with visual setting, aural disturbance	▪ Construction, operation, and maintenance	Yes	Project life Construction phase
Paleontological resources	▪ Disturbance or removal of fossils	▪ Construction activities	Yes	Yes
Visual resources	▪ Degradation of natural scenic quality, viewshed intrusion	▪ Construction and operation	Yes	Project life

TABLE 4-136 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES				
Resource	**Type of Commitment**	**Reason for Commitment**	**Irreversible**	**Irretrievable**
Land use and recreation resources	▪ 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	▪ Potential adverse electrical effects	▪ Operation	Unknown	Unknown
Noise	▪ Noise exceeding ambient levels	▪ Construction and operation	Yes No	Construction phase
Social and economic conditions	▪ Increased regional and local employment and revenues	▪ Construction and operation	Yes	Project life
Construction materials and fuels	▪ Use of: • Aggregate • Water • Steel • Aluminum • Concrete • Wood • Fossil fuels	–	Yes Yes Yes Yes Yes Yes Yes	Yes Yes No No Yes No Yes