

3.10 Special Status Aquatic Species

3.10.1 Regulatory Background

Background information on regulatory protection for special status species is provided in Section 3.6, Special Status Plant Species. Regulations that directly influence special status aquatic species management decisions within the analysis area are primarily implemented by the BLM, USFWS, USFS, and state wildlife agencies, which consist of the WGFD, CPW, UDWR, and NDOW. Specific special status species regulations relevant to the proposed project are presented in **Table 3.10-1**.

Table 3.10-1 Relevant Regulations for Special Status Aquatic Species

Topic	Regulation
Aquatic Species (Amphibians, Fish, and Aquatic Invertebrates)	<ul style="list-style-type: none"> • Endangered Species Act (ESA) of 1973; • BLM Special Status Species Management Policy 6840 (6840 Policy) (Rel. 6-125); • U.S. Forest Service Manual (FSM) 2670; • Colorado Revised Statutes 33-2-105; • Utah Rules R657-3, R657-19, and R657-48; and • Nevada Administrative Code 501.100-503.104.

The analysis for special status aquatic species assumed the BLM and USFS would continue to manage special aquatic status species' habitats on their lands in coordination with the applicable state wildlife agencies (i.e., WGFD, CPW, UDWR, and NDOW). The USFWS would have jurisdiction over the management of ESA-listed species.

3.10.2 Data Sources

Information regarding special status aquatic species and their habitat within the analysis area was obtained from a review of existing published sources, BLM RMPs, USFS Forest Management Plans, BLM, USFS, WGFD, CPW, UDWR, NDOW, and USFWS file information, as well as WYNDD, CNHP, UNHP, and NNHP database information. In addition, information as a result of correspondence with agency fishery biologists was incorporated into this section as appropriate.

3.10.3 Study Area

The analysis area for special status aquatic species encompasses all alternative routes and locations of other project components including terminals and ground electrodes. The analysis area included perennial streams, reservoirs, lakes, and springs that would be crossed by the alternative 250-foot-wide transmission line ROWs and 2-mile-wide transmission line corridors. A downstream reach of approximately 2 miles also was considered as part of the analysis area. This analysis area considered all special status aquatic species and their habitats that may be present, based on available literature and data reviewed for the project. For federally listed fish in the Colorado River Basin, the downstream analysis area extended for at least 10 miles to include potential water depletions. The Platte River Basin also is included in the analysis area for consideration of potential water depletions. For context, impacts in the project analysis area are discussed in comparison to the watershed area.

3.10.4 Baseline Description

In total, 55 special status aquatic species were evaluated in terms of potential occurrence within the project analysis area. As documented in **Appendix G, Table G-3**, 27 species were eliminated from further consideration in this EIS because of a lack of habitat or documented occurrence within the project analysis area. Species carried forward in this EIS include 20 fish, 5 amphibians, and 3 invertebrates (**Table 3.10-2**).

Table 3.10-2 Special Status Aquatic Species Analyzed for the TransWest Express Transmission Project

Common Name	Scientific Name	Status ¹
Arizona toad	<i>Bufo microscaphus</i>	BLM; UTSC; CAS
Boreal toad	<i>Bufo boreas boreas</i>	FS; CO-E; CAS
Columbia spotted frog	<i>Rana luteiventris</i>	FS; NV-P; UTSC
Great Basin spadefoot toad	<i>Spea intermontana</i>	BLM
Northern leopard frog	<i>Rana pipiens</i>	BLM; NV-P
Bluehead sucker	<i>Catostomus discobolus</i>	BLM; CAS
Bonneville cutthroat trout	<i>Oncorhynchus clarki utah</i>	BLM; FS; UTSC; CAS
Bonytail (CH) ³	<i>Gila elegans</i>	FE; BLM
Colorado pikeminnow (CH) ³	<i>Ptychocheilus lucius</i>	FE; BLM
Colorado River cutthroat trout	<i>Oncorhynchus clarki pleuriticus</i>	BLM; FS; CAS
Flannelmouth sucker	<i>Catostomus latipinnis</i>	BLM; CAS
Humpback chub (CH) ³	<i>Gila cypha</i>	FE, BLM
June sucker	<i>Chasmistes liorus</i>	FE; BLM; UTSC
Least chub	<i>Notichthys phlegethontis</i>	FC; BLM; UTSC; CAS
Meadow Valley Wash desert sucker	<i>Catostomus clarkii</i> spp.	BLM; NV-P
Meadow Valley Wash speckled dace	<i>Rhinichthys osculus</i> subspecies	BLM
Moapa speckled dace	<i>Rhinichthys osculus moapae</i>	NV
Moapa White River springfish	<i>Crenichthys baileyi moapae</i>	NV
Mountain sucker	<i>Catostomus platyrhynchus</i>	BLM
Pallid sturgeon ²	<i>Scaphirhynchus antillarum</i>	FE
Razorback sucker (CH) ³	<i>Xyrauchen texanus</i>	FE; BLM
Roundtail chub	<i>Gila robusta robusta</i>	BLM
Southern leatherside chub	<i>Lepidomeda aliciae</i>	BLM; FS; CAS
Virgin River chub	<i>Gila robusta seminuda</i>	FE; BLM
Virgin River spinedace	<i>Lepidomeda mollispinis mollispinis</i>	BLM, NV; CAS
California floater	<i>Anodonta californiensis</i>	BLM
Moapa Warm Spring riffle beetle	<i>Stenelmis moapa</i>	BLM
Southern Bonneville pyrg	<i>Pyrgulopsis transversa</i>	UTSC

¹ Status: FE = Federally Endangered; FT = Federally Threatened; FP = Federally Petitioned; BLM = BLM Sensitive; FS = Forest Sensitive; CO-E = Colorado Endangered; NV-P = Nevada State Protected; UTSC = Utah Special Concern; CAS = Utah Conservation Agreement Species.

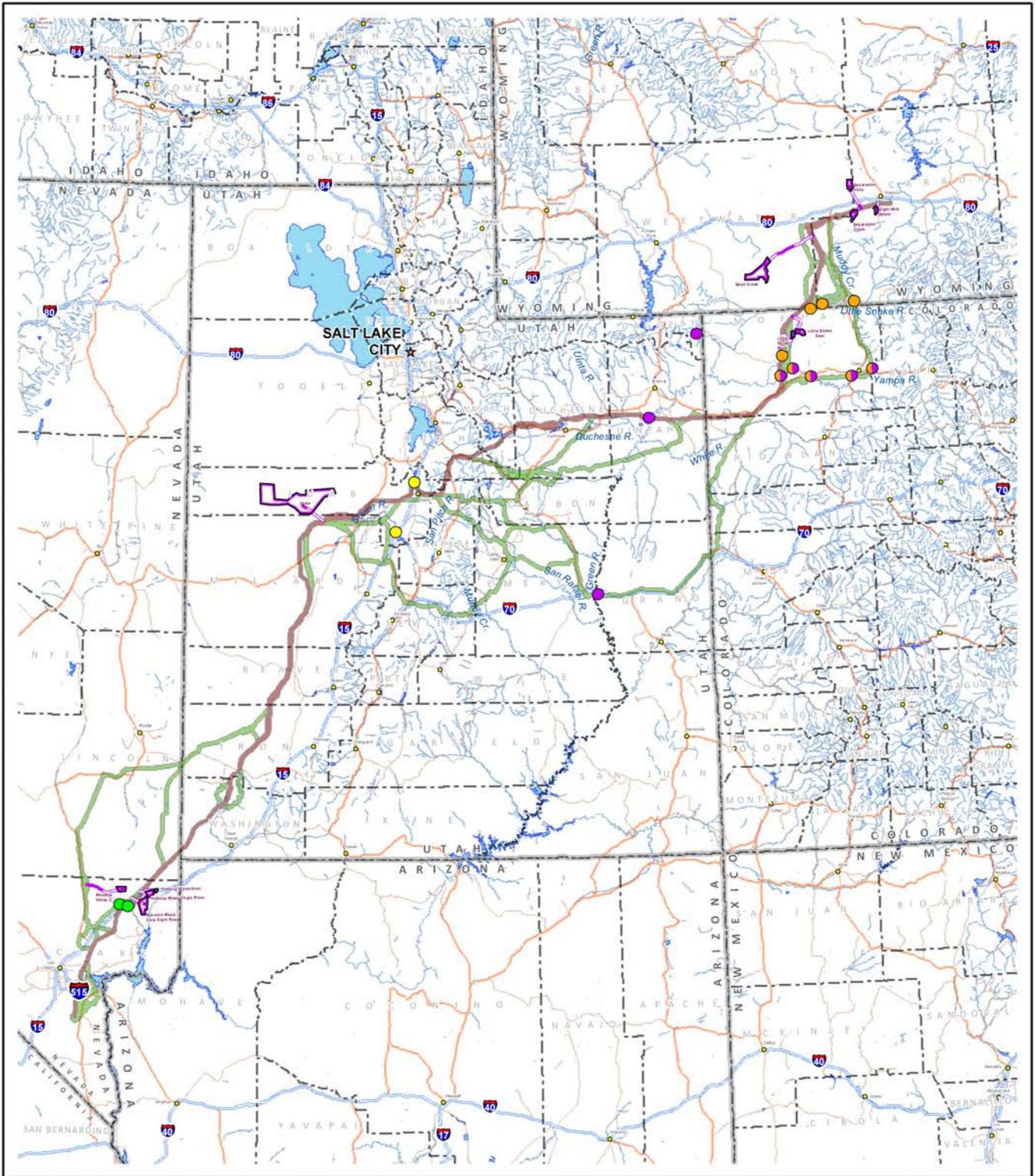
² Species is included because of the water depletion evaluation requirement in the Platte River Basin.

³ Critical habitat is located within and/or downstream of the analysis area.

In total, seven federally listed fish species were analyzed. Except for pallid sturgeon, their occurrence within the analysis area is shown in **Figure 3.10-1**. A summary of the listing status, habitat, and general distribution for the federally listed and candidate aquatic species are provided below.

Aquatic habitat in the analysis area used by special status aquatic species includes streams, springs, and wetlands. No lakes or reservoirs are inhabited by special status aquatic species. Stream habitats range from small channels with widths less than 10 feet to large rivers such as the Green, White, and Yampa. Habitat conditions vary depending on flow, gradient, channel configuration, water depth, substrate composition,

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- Project Corridors**
- █ Applicant Proposed
 - █ Alternative
 - █ Potential Ground Electrode Siting Area
 - █ Potential Ground Electrode Site
 - █ Potential Ground Electrode Overhead Electrical Line

- Listed Aquatic Species**
- Least chub
 - Colorado pikeminnow
 - Razorback sucker
 - Colorado pikeminnow and razorback sucker
 - Virgin River chub

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 3.10-1
Occurrence of Federally Listed Fish Species Within or Near Project Corridors

0 20 40 80 Miles

0 20 40 80 km

1:4,750,000

presence of pools, runs, and riffles, types of instream cover, and extent of riparian vegetation. Specific habitat conditions for waterbodies with special status aquatic species that are located within the analysis area are not described in this section, since information is lacking for most of the proposed waterbody crossings. Instead, reference is made to habitat preferences for federally listed and candidate species and species with conservation agreements, which are identified in Section 3.10.4.1. Habitat information also is provided for all special status aquatic species in **Appendix G, Table G-3**.

3.10.4.1 Federally Listed and Candidate Aquatic Species

Bonytail (Federally Endangered)

The USFWS determined the species to be endangered in 1980 (45 FR 27710). In 1994 the USFWS designated seven reaches of the Colorado River system, including portions of the Colorado, Green, and Yampa rivers in the Upper Basin and the Colorado River in the Lower Basin, totaling 312 miles of critical habitat for the species (59 FR 13374). A recovery plan was published for bonytail in 2002 (USFWS 2002a). The upper basin recovery subunit is composed of the Green River and upper Colorado basin and the lower basin recovery subunit includes the mainstem and tributaries of the Colorado River from Lake Mead downstream to the southerly International Boundary with Mexico. The general types of habitat used by bonytail include mainstem riverine areas and impoundments in the Colorado River system. Deep pools and eddies with slow to fast currents are characteristic of the riverine habitat (Kaeding et al. 1986). It is assumed that spawning occurs in June or July (Maddux et al. 1993).

Known occurrence includes the Yampa River in Dinosaur National Monument, the Green River in Gray and Desolation canyons, the Colorado River near Black Rocks (Kaeding et al. 1986) and Cataract Canyon (59 FR 13374), Lake Mohave near the Arizona-Nevada border, and Lake Havasu in Arizona and California (USFWS 2002a). No occupied or critical habitat would be crossed by project 250-foot-wide transmission line ROWs or 2-mile transmission line corridors. The closest known population is the Desolation and Gray Canyon areas in the Green River in Utah, which are approximately 55 and 120 miles, respectively, downstream and approximately 15 miles upstream of the closest alternative transmission line corridors.

Colorado Pikeminnow (Federally Endangered)

This species (originally named Colorado squawfish) was listed as endangered under the Endangered Species Act (ESA) on March 11, 1967 (32 FR 4001). With the 1973 passage of the ESA, the fish retained its endangered status. On March 21, 1994 the USFWS designated six reaches of the Colorado River system, including portions of the Colorado, Green, Yampa, White, and San Juan rivers, totaling 1,148 miles of critical habitat for the species (59 FR 13374). Two reintroduced Colorado pikeminnow populations have been designated as Nonessential Experimental under Section 10(j) of the ESA (50 FR 30188). A recovery plan for this species was published in 2002 (USFWS 2002b). The entire population of the Colorado pikeminnow has been reduced to three recovery subunits in the upper Colorado River Basin: the Green River, the upper Colorado River, and the San Juan River subbasins. Habitat requirements of Colorado pikeminnow vary depending on the life stage and time of year. Young-of-the-year (YOY) and juveniles prefer shallow backwaters, while adults use pools, eddies, and deep runs (Miller et al. 1982). During peak runoff in the spring and early summer, fish usually move into backwater areas of flooded riparian zones to avoid swift velocities, feed, and prepare for the upcoming spawning period. Adults are highly mobile during the spawning period, which occurs after peak runoff in mid-June to mid-August.

Colorado pikeminnow occurs within three subbasins and includes the following rivers: Green River subbasin (Green, Yampa, Little Snake, White, Price, and Duchesne), Upper Colorado subbasin (Upper Colorado, Gunnison, and Dolores), and San Juan (San Juan River). The 250-foot-wide transmission line ROWs and 2-mile transmission line corridors would cross occupied habitat in the Yampa and Little Snake rivers. Critical habitat would be crossed by project 250-foot-wide transmission line ROWs in the Green, White, and Yampa rivers. Occupied habitat also is located downstream of 250-foot-wide transmission line ROWs and corridors in the Colorado River and tributaries near the confluence with the Colorado River and the Price and White

ivers. The only two known spawning sites of the species are located downstream of project 250-foot-wide transmission line ROWs and 2-mile transmission line corridors at Three Fords Canyon in the Gray Canyon area of the Green River (Carbon and Uintah counties, Utah) and the lower 20 miles of the Yampa River (Moffat County, Colorado).

Humpback Chub (Federally Endangered)

The dates for listing humpback chub are the same as discussed for Colorado pikeminnow. On March 21, 1994, the USFWS designated seven reaches of the Colorado River system including portions of the Colorado, Green, and Yampa Rivers in the Upper Basin and portions of the Colorado and Little Colorado Rivers in the Lower Basin, totaling 379 miles of critical habitat for the species (59 FR 13374). The current recovery plan for the humpback chub was published in 1990 and amended in 2002 (USFWS 2002c). Humpback chub mainly occur in river canyons where they utilize a variety of habitats including deep pools, eddies, upwells near boulders, and areas near steep cliff faces. Young and spawning adults are generally found in sandy runs and backwaters (USFWS 1990). Spawning occurs in May through July after peak spring flows.

Currently, there are six known self-sustaining populations. Five occur in the Upper and one on the Lower Basin Recovery Units. The Upper Recovery Unit consists of populations on the Colorado River (Black Rocks and Westwater Canyon in Utah and Cataract Canyon in Colorado), one population on the Yampa River (Yampa Canyon in Colorado), and on the Green River (Desolation/Gray Canyons in Utah). The only population in the Lower Basin Recovery Unit occurs on the mainstem Colorado River in Marble and Grand Canyons and the Little Colorado River. No occupied or critical habitat would be crossed by the alternative 250-foot-wide transmission line ROWs or 2-mile transmission line corridors. Occupied and critical habitat exists downstream of the project 250-foot-wide transmission line ROWs and 2-mile transmission line corridors in the Colorado, Yampa, and Green rivers.

June Sucker (Federally Endangered)

The June sucker was federally listed in 1986 (USFWS 1986). This species is endemic to Utah Lake in Utah and uses the lower portion of the Provo River for spawning and early life stage development. A recovery plan was finalized for this species in 1999, with actions being implemented from 1995 through 2007 (USFWS 1999, 2012a). The lake and lower portion of the Provo River were designated as critical habitat for the June sucker. Utah Lake is a relatively large and shallow lake with slightly saline, turbid, and eutrophic conditions. June sucker adults leave Utah Lake and swim up the Provo River in June of each year (UDWR 2012a). Spawning occurs in shallow riffles over gravel or rock substrate. No occupied or critical habitat would be crossed by project 250-foot-wide transmission line ROWs or 2-mile transmission line corridors.

Least Chub (Federal Candidate)

The least chub was petitioned for listing under the ESA in 2007. The USFWS conducted a 12-month status review and released their finding in June 2010 (USFWS 2010). The USFWS determined that the status was “warranted but precluded” and it was identified as a candidate species. The species is endemic to the Bonneville Basin of Utah where it was once widely distributed and occupied a variety of habitats including rivers, streams, springs, ponds, marshes, and swamps (Sigler and Sigler 1996). Currently, there are five known wild, extant populations of least chub. Three populations are in the Snake Valley in Utah’s West Desert and two are located on the eastern border of the native range near the Wasatch Range in the Sevier River drainage (Mills Valley and Clear Lake). An extirpated site exists at the Mona Springs in the Utah Lake drainage (USFWS 2012b). Since the initial Least Chub Conservation Agreement Strategy in 1998, the UDWR has had an ongoing monitoring program for least chub populations in Utah. The least chub is a schooling species that prefers areas of dense vegetation in slow-moving waters (UDWR 2012b). Spawning occurs in the spring or summer. Occupied habitat is located approximately 1.5 from a 2-mile transmission line corridor in Region II (Utah).

Pallid Sturgeon (Federally Endangered)

Pallid sturgeon was listed as endangered in 1990 (55 FR 36641) and a recovery plan was published in 1993 (USFWS 1993). This species is included in the analysis due to the consideration of water depletions in the Platte River drainage in Wyoming. Project 250-foot-wide transmission line ROWs and 2-mile transmission line corridors would not cross habitat for this species. This species occurs in the Lower Platte River defined as downstream of the mouth of the Elkhorn River. No critical habitat has been designated for this species. Pallid sturgeon is a bottom-dweller that prefers areas with strong current and firm sandy bottoms in the main channel of large turbid rivers (National Research Council 2004).

Razorback Sucker (Federally Endangered)

The razorback sucker was first proposed for listing as a threatened species under the ESA in 1978 (43 FR 17375). In 1980, the USFWS withdrew the proposal because it was not finalized within the 2-year time limit from the initial publication in the Federal Register (45 FR 35410). In 1989, the USFWS received a petition requesting that the razorback sucker be added to the list of endangered species. A positive finding was made and subsequently published by the USFWS in 1991 (56 FR 54957). In 1994, the USFWS designated 15 reaches of the Colorado River system, including portions of the Green, Yampa, Duchesne, Colorado, White, Gunnison, and San Juan rivers in the Upper Basin and portions of the Colorado, Gila, Salt, and Verde rivers in the Lower Basin, totaling 1,724 miles as critical habitat for the species (59 FR 13374). The current recovery plan for the razorback sucker was published in 1998 and amended in 2002 (USFWS 2002d). The upper basin recovery subunit is composed of the Green River, upper Colorado River, and San Juan River subbasins and the lower basin recovery subunit includes the mainstem and tributaries of the Colorado River from Lake Mead downstream to the southerly International Boundary with Mexico. Habitat requirements for this species reflect both riverine and reservoir environments. General habitats used by adults include eddies, pools, and backwaters during the non-breeding period (July through March) (Maddux et al. 1993). Seasonal habitat use includes pools and eddies from November through April, runs and pools from July through October, runs and backwaters in May, and backwaters and flooded gravel pits during June. Juveniles prefer shallow water with minimal flow in backwaters, tributary mouths, off-channel impoundments, and lateral canals (Maddux et al. 1993). Spawning usually occurs in April through mid-June. They migrate long distances and congregate in large numbers at spawning sites.

In the Upper Colorado River Basin, razorback suckers are considered extant in four locations: Westwater and Cataract Canyons and the Utah-Colorado state line on the Colorado River, Desolation/Gray Canyons of the Green River, and a population in northeastern Colorado on the Yampa River. The razorback sucker is more widely distributed in the Lower Basin. In Lake Mead, the population is estimated at about 400 individuals with an average age of 20 to 25 years, indicating recent recruitment. Approximately 1,000 individuals are believed to inhabit a 60-mile reach between Davis Dam and Lake Havasu, which have demonstrated reproduction (USFWS 2002d). Project 250-foot-wide transmission line ROWs and transmission line corridors would cross two rivers inhabited by this species, the Yampa and Green rivers. The 250-foot-wide transmission line ROW also would cross designated critical habitat for razorback sucker in the Green River. Occupied habitat also is located downstream of 250-foot-wide transmission line ROWs and corridors in the Little Snake River in Wyoming, the Colorado River and White rivers in Colorado, and Las Vegas Wash in Nevada.

Virgin River Chub (Federally Endangered)

The Virgin River chub was officially listed as endangered in 1989, but designation of critical habitat was postponed (54 FR 35305). In 2000, 87.5 miles of the Virgin River in Utah, Arizona, and Nevada including the mainstem and 100-year floodplain was designated as critical habitat (65 FR 4140). When the species was listed, the USFWS recognized that a closely related species was found in the Moapa (Muddy) River in Nevada, but it was not affected by the listing in 1989. A recovery plan for the Virgin River chub was published in 1995 (USFWS 1995). The Virgin River chub occurs within the Muddy River in Nevada and the mainstem portion of the Virgin River from Pah Tempe Hot Springs, Utah, downstream to the confluence with Lake Mead in Nevada (USFWS 1995). The Muddy River population is not considered to be part of the

federal listing at this time. However, a proposed rule change regarding federal listing is under review by the USFWS. The present distribution of this species in the Muddy River extends from the Warm Springs area downstream to the Wells Siding (approximately 8 miles below the Meadow Valley Wash confluence). The species is usually associated with deep runs or pool habitats that have slow to moderate velocities and an abundance of cover provided by boulders, undercut banks or woody debris (USFWS 1995). Spawning is suspected to occur in April through June.

A refugium population also is located at the Dexter National Fish Hatchery and Technology Center (USFWS 1995). Project 250-foot-wide transmission line ROWs and 2-mile transmission line corridors would cross one stream, the Muddy River, which is inhabited by this species. As previously mentioned, the Muddy River population is not federally listed at this time.

3.10.4.2 BLM Sensitive, Forest Sensitive, and State Protected Aquatic Species

Fish

In total, 20 BLM sensitive, Forest sensitive or state-protected aquatic species potentially occur within the project analysis area (**Table 3.10-2**). This list includes 12 additional fish species. In general, most of these fish species are associated with stream habitat within the project analysis area. Some of the sensitive fish species such as Meadow Valley Wash desert sucker, Meadow Valley Wash speckled dace, Moapa speckled dace, and Moapa White River springfish are associated with stream or spring habitats. Occurrence and habitat information is summarized below for two fish species (Bonneville cutthroat trout and Colorado River cutthroat), which are BLM, Forest, and Utah sensitive species with conservation agreements. Descriptions of occurrence and habitat used by the other sensitive fish species are provided in **Appendix G, Table G-3**.

Bonneville Cutthroat Trout

The Bonneville cutthroat trout, a BLM and Forest sensitive species and Utah conservation agreement species, was petitioned for listing under the ESA, but the 12-month finding determined that the species was not warranted for listing. A conservation agreement was published in 2000 to assist in the management of this species in Utah (Lentsch et al. 2000). This cutthroat subspecies prefers small headwater streams with pool and riffle habitat and slow, deep water with vegetated streambanks (Sigler and Sigler 1996). Spawning usually occurs in May through June (Lentsch et al. 2000). Project 250-foot-wide transmission line ROWs and transmission line corridors would cross Bonneville cutthroat trout habitat in Utah counties including Duchesne, Sanpete, and Utah. These streams are part of the Bonneville Basin group.

Colorado River Cutthroat Trout

The Colorado River cutthroat trout is a BLM and Forest sensitive species and is considered a species of special concern in Wyoming and Colorado and a Tier 1 species in Utah (species with a conservation agreement). A conservation agreement was updated in 2006 to assure the long-term viability of this cutthroat subspecies throughout its historic range (CRCT Conservation Team 2006). This cutthroat subspecies typically is associated with isolated headwater streams with cool temperatures and clear conditions (Behnke 1981). Spawning typically occurs in April through early July depending on the water temperature. Colorado River cutthroat historically occupied portions of the Colorado River drainage in Wyoming, Colorado, Utah, Arizona, and New Mexico and probably included portions of larger streams such as the Green, Yampa, White, Colorado, and San Juan rivers (CRCT Conservation Team 2006). A recent assessment of Colorado River cutthroat trout distribution identified a total of 3,022 miles of occupied stream habitat, which represents approximately 14 percent of its historic range. Project 250-foot-wide transmission line ROWs and 2-mile transmission line corridors would cross Colorado River cutthroat trout habitat in Sweetwater County, Wyoming; Moffat County in Colorado; and Daggett, Uintah, Emery, Grand, Duchesne, and Wasatch counties in Utah.

Amphibians

Five additional special status amphibian species potentially occur within the project study area: Arizona toad, boreal toad, Columbia spotted frog, Great Basin spadefoot toad, and northern leopard frog. Descriptions of occurrence and habitat used by these amphibian species are provided in **Appendix G, Table G-3**. Additional information is provided below for the boreal toad, Columbia spotted frog, and northern leopard frog, which have conservation agreements.

Boreal Toad

The boreal toad is a subspecies of the western toad. The Southern Rocky Mountain population of boreal toad in Colorado, Wyoming, and New Mexico has been proposed for listing as endangered under the ESA. However, the subspecies was precluded from listing because the population is not recognized as a species. In Utah, it is considered a state sensitive species and it is a conservation agreement species (Hogrefe et al. 2005). In general, boreal toads are more independent of water compared to other amphibian species, although they must re-hydrate daily. Habitat used during the nonbreeding period (August through March) consists of forested areas and upland vegetation such as sagebrush and grassland. Boreal toads migrate from terrestrial habitats to aquatic habitats during the breeding period (April through July). Breeding habitats in Utah consist of low velocity, low gradient streams, off-channel marshes, beaver ponds, small lakes, reservoirs, stock ponds, wet meadows, seeps, and associated woodlands (Hogrefe et al. 2005). Burrows are used by boreal toads and other amphibians during the summer and winter to maintain stable body temperatures and prevent water loss. The alternative 250-foot-wide transmission line ROWs and 2-mile transmission line corridors would cross habitat in Juab (Birch Creek area), Wasatch (Willow Creek), and Duchesne (Sowers Creek) counties, Utah.

Columbia Spotted Frog

This species was placed on a candidate list in 1993. After the Candidate Notice of Review was completed in 1999, the West Desert population was taken off the candidate list (USFWS 1999). A conservation agreement was published in 2005 for Utah (Bailey et al. 2005). This species occurs in streams, wet meadows, springs, and springbrooks, marshes, lakes, and reservoirs (Orabona et al. 2009). It is highly aquatic, since it is rarely found far from permanent waterbodies. It may traverse upland areas during wet periods or movement to wintering sites. Stream and pond habitat is located within project transmission line corridors in Juab, Sanpete, and Wasatch counties in Utah.

Northern Leopard Frog

This species was petitioned for listing under the ESA. A 90-day finding was issued and a 12-month status review was conducted to determine if listing the species in the western part of its range is warranted (USFWS 2009). The status review and 12-month finding concluded that listing the western population or the entire species is not warranted at this time (USFWS 2011). The distribution of northern leopard frog includes portions of Wyoming, Colorado, Utah, and Wyoming (Orabona et al. 2009; Smith and Keinath 2007). Habitat consists of marshes, beaver ponds, streams, rivers, lakes, and wet meadows at elevations up to approximately 9,000 feet above mean sea level (amsl) (Smith and Keinath 2007). Northern leopard frog uses underwater areas as overwinter habitat. Project 250-foot-wide transmission line ROWs and transmission line corridors would cross habitat for northern leopard frog in Red Wash and Antelope and Muddy creeks and the Little Snake River in Wyoming; Douglas Creek and the Yampa and White rivers in Colorado; and Soldier and Currant creeks in Utah. Northern leopard frog also occurs in wetlands and springs in the Pahranaagat National Wildlife Refuge in Region III.

Invertebrates

Three special status invertebrate species, Moapa Warm Spring riffle beetle, California floater, and southern Bonneville pyrg (springsnail) potentially occur within the project analysis area. Descriptions of occurrence and habitat used by these invertebrate species are provided in **Appendix G, Table G-3**, and summarized below.

- California Floater – This mollusk species occurs in stream (Currant Creek) and spring (Mona) habitats in Juab County, Utah within the Region II portion of the analysis area. This species has been collected at depths ranging from approximately 0.5 to 1.5 feet over mud, sand, or gravel bottoms (Oliver and Bosworth 1999). The abundance is not reported at most Utah locations.
- Moapa Warm Spring Riffle Beetle – This beetle species occurs in the Muddy River drainage in Nevada just north of a portion of the Region IV analysis area. Habitat consists of outflow streams immediately downstream of spring sources in relatively swift, shallow water.
- Southern Bonneville Pyrg – This springsnail species in a spring near Thistle Creek in Utah County, Utah, which is within the Region II analysis area. Habitat consists of small mineralized springs at elevations between approximately 5,830 and 6,740 feet amsl (Oliver and Bosworth 1999).

3.10.5 Regional Summary of Special Status Aquatic Species

A summary of the number of special status aquatic species by Project regions is provided in **Table 3.10-3**. Region II contained the highest number of species (19) followed by 12 species in Regions I and III. One species occurs within the Region IV analysis area.

Table 3.10-3 Summary of Special Status Aquatic Groups by Region

Species	Total within the Analysis Area (All Regions)	Region I	Region II	Region III	Region IV
Amphibians	5	2	4	2	0
Fish ¹	20	10	13	9	1
Aquatic Invertebrates	3	0	2	1	0
Total	28	12	19	12	1

¹ Number includes pallid sturgeon. This species has no potential for occurrence in the analysis area, but it is analyzed to determine if water use could affect habitat in the North Platte sub-basin.

3.10.5.1 Region I

Region I extends from the Terminal Siting Area southeast of Rawlins, Wyoming, southwest through northeastern Utah and northwestern Colorado. Habitat for aquatic species in Region I includes waterbodies in the North Platte, Great Divide, Upper Green, and White-Divide basins. Watersheds in these basins are listed in the Regional Summary of Water Resources, **Table 3.4-2**. Special status aquatic species that occur in Region I are listed in **Table 3.10-4**.

Table 3.10-4 Special Status Species Potentially Occurring in Region I

Amphibians		
Great Basin spadefoot toad	Northern leopard frog	
Fish		
Bluehead sucker	Bonytail ²	Colorado pikeminnow
Colorado River cutthroat trout	Flannelmouth sucker	Humpback chub ²
Mountain sucker	Razorback sucker	Roundtail chub
Pallid sturgeon ¹		
Aquatic Invertebrates - None		

¹ Pallid sturgeon has no potential for occurrence in the study area, but it is analyzed to determine if water use could affect habitat in the North Platte sub-basin.

² Bonytail and humpback chub do not occur within the project analysis area, but they are included in the analysis to determine if water use could affect their habitat in the Colorado River basin.

3.10.5.2 Region II

Region II extends from northeastern Utah and northwestern Colorado to the IPP in western Utah. Habitat for aquatic species in Region II includes waterbodies in the White-Yampa, Colorado Headwaters, Lower Green, Jordan, Upper Colorado – Dirty Devil, Devil, and the Escalante Desert-Sevier Lake basins. Watersheds in these basins are listed in the Regional Summary of Water Resources, **Table 3.4-2**. Special status aquatic species that occur in Region II are presented in **Table 3.10-5**.

Table 3.10-5 Special Status Species Potentially Occurring in Region II

Amphibians		
Boreal toad	Columbia spotted frog	Great Basin spadefoot toad
Northern leopard frog		
Fish		
Bluehead sucker	Bonneville cutthroat trout	Bonytail ¹
Colorado pikeminnow	Colorado River cutthroat trout	Flannelmouth sucker
Humpback chub ¹	June sucker ²	Least chub
Mountain sucker	Razorback sucker	Roundtail chub
Southern leatherside chub		
Aquatic Invertebrates		
California floater	Southern Bonneville pyrg	

¹ Bonytail and humpback chub do not occur within the project study area, but they are included in the analysis to determine if water use could affect their habitat in the Colorado River basin.

² June sucker does not occur within the project study area, but it is included in the analysis to determine if water use could affect habitat in the Utah Lake and Provo River areas.

3.10.5.3 Region III

Region III extends from the IPP in western Utah to north Las Vegas, Nevada. Habitat for aquatic species in Region III includes waterbodies in the Escalante Desert-Sevier Lake and Lower Colorado-Lake Mead basins. Watersheds in these basins are listed in the Regional Summary of Water Resources, **Table 3.4-2**. Special status aquatic species that occur in Region III are presented in **Table 3.10-6**.

Table 3.10-6 Special Status Species Potentially Occurring in Region III

Amphibians		
Arizona toad	Northern leopard frog ¹	
Fish		
Bluehead sucker	Meadow Valley Wash desert sucker	Meadow Valley Wash speckled dace
Moapa speckled dace	Moapa White river springfish	Razorback sucker
Roundtail chub	Virgin River chub	Virgin River spinedace
Aquatic Invertebrates		
Moapa Warm Spring riffle beetle		

¹ Northern leopard frog is included in the analysis since it occurs in a spring located approximately 600 feet west of the 2-mile transmission line corridor.

3.10.5.4 Region IV

Region IV extends from north Las Vegas, Nevada to Marketplace. Habitat for aquatic species in Region IV is located in the Lower Colorado-Lake Mead Basin and Las Vegas Wash Watershed. Special status species that may occur in Region IV are presented in **Table 3.10-7**.

Table 3.10-7 Special Status Species Potentially Occurring in Region IV

Amphibians - None
Fish
Razorback sucker
Aquatic Invertebrates - None

3.10.6 Impacts to Special Status Aquatic Species

Potential impacts to special status aquatic species were identified based on feedback from federal and state agency biologists, public scoping, and literature related to surface disturbance effects on aquatic habitat and species. Potential effects from surface disturbance activities would include direct alteration of habitat or loss of individuals from equipment and vehicles. Habitat also could be affected by changes in water quality from increased sedimentation and potential fuel spills. The use of surface water for dust control and concrete foundations also was evaluated in terms of effects on aquatic habitat.

The methodology for evaluating impacts on special status aquatic species involved comparisons of project activities within the analysis area to habitat that supports aquatic species. The impact analysis area for special status aquatic species included perennial streams, reservoirs, lakes, ponds, and springs that would be crossed by the alternative 250-foot-wide transmission line ROWs and contain sensitive species. A downstream reach of approximately 2 miles also was considered part of the analysis area for direct disturbance. The study area for water use and potential surface water depletions extended at least 10 miles downstream of diversion points. The analysis area for roads focused on perennial streams and waterbodies with special status aquatic species that would be crossed by the 2-mile transmission line corridor. The larger study area for access roads was required because their locations have not been defined at this time. A road density analysis also was used to assess road effects on species. GIS analyses were conducted to identify perennial waterbodies and special status aquatic species occurrence within the proposed disturbance areas (i.e., ROWs and 2-mile transmission line corridors, terminals, and electrode bed areas).

Special status aquatic species included 5 amphibians, 20 fish, and 3 invertebrate species (**Table 3.10-2**). In total, seven federally listed fish species and one candidate were evaluated. The analysis also included 22 BLM sensitive species, 5 Forest sensitive species, and 16 species with state protection.

Impact parameters were used in combination with effects information for the purpose of quantifying impacts. The impact parameters also allow comparisons among the applicant-proposed routes, alternatives, and alternative variations. Impact issues and the analysis considerations for special status aquatic species are listed in **Table 3.10-8**.

Table 3.10-8 Relevant Analysis Considerations for Special Status Aquatic Species

Resource Topic	Analysis Considerations and Relevant Assumptions
Potential loss and effects from construction activities and roads on special status aquatic species or habitat from construction equipment and access roads.	The analysis includes direct disturbance effects and potential water quality changes from sediment delivery and fuel spills.
Potential effects of construction water use on aquatic habitat and species.	The analysis uses the results of the water resources analysis, which determined if water sources are linked to surface flows of streams that would be crossed by the project 250-foot-wide transmission line ROWs. Flow changes could detrimentally affect habitat for aquatic species.
Potential for increased fishing pressure on streams from construction crews and the public from the construction area and access roads.	This analysis for game fish species, some of which are special status species, is included in Section 3.9.6.

Table 3.10-8 Relevant Analysis Considerations for Special Status Aquatic Species

Resource Topic	Analysis Considerations and Relevant Assumptions
Potential mortalities to special status amphibians during movement periods from vehicle traffic.	The analysis evaluates vehicle traffic within the ROW and access roads on amphibians.

Impact parameters included the following:

- Number of perennial streams with special status aquatic species that would be crossed by alternative 250-foot-wide transmission line ROWs and 2-mile transmission line corridors.
- Number of perennial streams with federally-listed species that would be crossed by alternative 250-foot-wide transmission line ROWs and 2-mile transmission line corridors.
- Acres of critical habitat for federally listed species that would be crossed by alternative 250-foot-wide transmission line ROWs and 2-mile transmission line corridors.
- Potential loss of habitat (ft² and acres) due to construction of culverts or low-water crossings.
- Acres of road disturbance on riparian habitat for special status aquatic species.
- Road density effects (linear miles/mile²) on special status species.

Potential direct and indirect effects of construction, operation, and decommissioning on special status aquatic species and their associated habitats are discussed below. After impacts are identified, relevant agency BMPs and design features are discussed in terms of reducing impacts. If impacts of concern remain after application of BMPs and design features, additional mitigation is recommended to reduce impacts to levels acceptable to the BLM and cooperating agencies.

The impacts analysis for special status species assumes that the BLM and USFS will continue to manage special status species habitats in coordination with CPW, NDOW, UDWR, and WGFD. It also assumes that the USFWS will continue to have jurisdiction over the management of federally endangered, threatened, proposed, and candidate species populations, the BLM will continue to manage BLM sensitive species in accordance with BLM Manual 6840, and the USFS will continue to manage Forest sensitive species in accordance with U.S. Forest Service Manual 2670. Further assumptions are that the design features committed to by TWE and the BMPs (**Appendix C**) would be implemented under all alternatives.

3.10.6.1 Impacts from Terminal Construction, Operation, and Decommissioning

The northern and southern terminals would be constructed regardless of which alternative route or design option is approved.

Northern Terminal

Construction of the Northern Terminal would not result in direct disturbance effects, since waterbodies (i.e., Eightmile Lake and Separation Creek) located within the proposed general siting area do not contain special status aquatic species. In addition, road access would not adversely affect special status aquatic species because existing or new roads would not cross waterbodies inhabited by any species. In summary, surface disturbance and use of access roads would not adversely affect special status aquatic species, since habitat is not located within the proposed disturbance area for the Northern Terminal.

Water use for substation/converter station construction would require approximately 1.8 acre-feet for dust control. Water would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners or irrigation companies holding existing water rights. The effect determination of new and existing water depletions in Wyoming would be made by the Wyoming State Engineer.

Consultation with the USFWS would be completed to determine if construction water use could affect surface flows for species using the Platte River system such as pallid sturgeon.

Southern Terminal

Construction of the Southern Terminal would disturb upland areas in the Eldorado Valley watershed near Boulder, Nevada. Waterbodies located adjacent to the area include playa lakes. No perennial waterbodies are located in this area. No special status aquatic species habitat is located within the playa lakes. Surface disturbance and use of access roads would not adversely affect special status aquatic species, since habitat is not located within the proposed disturbance area for the Southern Terminal.

Water required for the construction of the Southern Terminal is estimated to be 1.2 acre-feet. The source of the water would be existing rights. The effect determination of new and existing water depletions would be made after the water sources are identified and an evaluation of their potential connection to surface flows is completed. Consultation with the USFWS would be completed to determine if construction water use could affect federally listed fish species (razorback sucker) in the Lower Colorado River Basin.

Design Option 2 – DC from Wyoming to IPP; AC from IPP to Marketplace Hub

The impacts of constructing and operating Design Option 2 would be similar to those discussed under the alternative routes because the implementation of this design would utilize the same alternative routes and construction techniques. Differences between this design option and the Proposed Project include the locations of the southern converter station and ground electrode system, as well as the addition of a series compensation station midway between the IPP and Marketplace. The southern converter station would be located near the IPP in Utah instead of at the Marketplace in Nevada and the ground electrode system would be within 50 miles of the IPP. Construction and operation of a converter station near IPP, ground electrode system, and a series compensation station would not be expected to impact special status aquatic resources.

Design Option 3 – Phased Build Out

Impacts from construction and operation of Design Option 3 would be the same as discussed for the Applicant Proposed Alternative, since the same alternative routes, facilities, and construction would be used.

3.10.6.2 Impacts Common to All Alternative Routes and Associated Components

Construction Impacts

The types of direct and indirect effects of construction activities are generally the same as those discussed for aquatic biological resources in Section 3.9.6.2. Direct disturbance to aquatic habitat due to vehicle crossings and culvert installation for some of the access roads could detrimentally affect habitat in streams that contain special status aquatic species. Removal of riparian vegetation also would alter habitat and indirectly affect ecological functions provided by this type of vegetation. Vehicle traffic near waterbodies also could result in sedimentation and fuel spill risks. BMPs such as ECO-3 (minimize stream crossings by roads) and WAT-11 (avoid alteration of existing drainages) would be implemented to reduce these types of impacts. Design features (TWE-8 and TWE-12) also would minimize disturbance to stream channels and riparian vegetation. Other BMPs such as ECO-1, ECO-2, and ECO-4 require that project activities should avoid or minimize effects on sensitive species and their habitat. Design features TWE-2 (ESA Compliance), TWE-29 (Biological Protection Plan), TWE-31 (Development of Mitigation Measures), TWE-32 (Seasonal Restrictions), TWE-33 (Worker Training), and TWE-34 (Identification of New Locations for Protected Species) would provide additional protection for special status species. Species impacts by region and alternative are provided separately in Sections 3.10.6.3 through 3.10.6.6.

The estimated quantities of water needed per mile for construction would include approximately 3,400 gallons for foundation concrete and 240,000 gallons for dust control, totaling approximately 243,000

gallons or 0.75 acre-feet per mile. Water would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An effect determination of new and existing water depletions would be completed after identifying the water sources for construction and whether there is any connection between these water sources and surface flows in the Colorado Basin, Utah Lake/Provo River drainage, and the Platte sub-basin. Additional discussion for water use effects on federally listed species is provided in each of the Region impact sections.

The following mitigation measure is recommended to protect habitat for conservation agreement trout species, Colorado River cutthroat trout, and Bonneville cutthroat trout. Potential water depletion effects on federally listed fish species in the Upper Colorado River Basin are mitigated by the Recovery Implementation Program for Endangered Fish in the Upper Colorado River (Recovery Plan), as discussed in Section 3.10.6.3, Region I, and Section 3.10.6.4, Region II.

SSS-1 (Water Use): *No new surface water or groundwater withdrawals that are hydrologically connected to streams containing Colorado River cutthroat trout and Bonneville cutthroat trout would be allowed. Any water necessary for construction, operation, or maintenance (including dust abatement) would not be acquired from existing water sources.*

Operation Impacts

The direct and indirect effects of operation of the Project would involve use of access roads and the ROW for repair and maintenance activities and vegetation management. Impacts associated with operation activities would involve several of the same types of effects discussed for construction activities. These impacts would include potential direct disturbance to aquatic habitat for special status aquatic species due to vehicle crossings of small to mid-size streams without access roads and removal of vegetation as part of maintenance activities. Indirect effects on water quality would adversely affect habitat for special status aquatic species from soil disturbance within or near waterbodies by vehicles or equipment. Potential fuel spills could affect species and habitat if fuel entered waterbodies. The same BMPs and design features described under Construction Impacts, would be applied to minimize these types of impacts on special status aquatic species resulting from operations. Herbicides may be used to control vegetation as part of maintenance activities in the ROW. VEG-3 requires that herbicide use should be limited to non-persistent, immobile formulations to avoid effects on aquatic habitats and species. In addition, design features involving erosion control and use of a spill containment and control plan would be implemented. In addition to the BMPs, the following mitigation measure is recommended to avoid potential herbicide effects on biological resources.

AB-4 (Herbicide Use Plan) – *As part of vegetation management, the applicant would prepare an Herbicide Use Plan. The Plan would identify a list of approved herbicides that may be used as well as locations of areas that may be treated. Licensed herbicide applicators would be used in the treatment process. The Plan also would discuss compliance with applicable federal, state, and local agencies.*

Effectiveness: This measure would be highly effective in avoiding toxic effects of herbicide use on special status aquatic species.

Decommissioning Impacts

Removal of project structures during decommissioning would result in the same types of impacts as those discussed for construction activities. Direct disturbance to special status aquatic species habitats would occur as a result of vehicle traffic across streams. The Applicant would be responsible for reclamation of access roads following abandonment in accordance with landowner's or land agency's direction. Water quality changes involving increased sediment and fuel spill risks would occur as a result of vehicle traffic within or near waterbodies. The same BMPs and design features that are described above for construction impacts would be applied to reduce impacts during decommissioning activities. Removal of riparian vegetation would not be required as part of decommissioning.

Impact discussions and conclusions for special status aquatic species are provided for the four Project regions. This organization was used because species occurrence varies by region and few species are present in all regions.

3.10.6.3 Region I

Table 3.10-9 provides a comparison of impact parameters with the alternative routes in Region I. Based on species occurrence information and habitat associations, special status aquatic species that may be impacted by the Region I alternatives include 2 amphibians and 10 fish species (**Table 3.10-4**). Species occurrence in Region I streams is provided in **Appendix G, Table G-4**. Project Segment ID numbers referenced in this section are listed in **Table G-4** and depicted in **Figure 2-21**. Parameter information in **Table 3.10-9** is discussed separately for each of the Region I alternatives.

Table 3.10-9 Summary of Region I Alternative Route Impacts for Special Status Aquatic Species

Parameter	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Number of streams with special status aquatic species that would be crossed by 250-foot-wide transmission line ROWs	2	2	7	2
Number of streams with special status aquatic species that would be crossed by 2-mile transmission line corridors or located within 2 miles downstream of corridor boundaries	3	4	10	2
Number of streams with federally listed aquatic species that would be crossed by 250-foot-wide transmission line ROWs	2	2	1	2
Acres of critical habitat for federally listed Colorado pikeminnow that would be crossed by 250-foot-wide transmission line ROWs	1	1	3	1
Potential Aquatic Habitat Alteration or Loss ¹ (ft ²) (acres shown in parentheses)				
Colorado River cutthroat trout	0	0	800 (0.02)	0
Bluehead sucker	0	0	1,600 (0.04)	0
Flannelmouth sucker	0	0	2,400 (0.06)	0
Mountain sucker	0	0	3,000 (0.05)	0
Roundtail chub	0	0	1,600 (0.04)	0

¹ Habitat loss represents area that could be permanently or temporarily removed due to the use of a culvert or low water crossing or temporarily disturbed from the instream use of equipment. The calculation excludes large rivers such as the Little Snake and Yampa.

Parameter information regarding riparian disturbance and road density is provided in **Tables 3.10-10** and **3.10-11**. The analyses focus on streams that contain special status aquatic species. A summary of these parameters is provided below.

Table 3.10-10 Ground Disturbance (Acres) for Buffer Distances from Riparian Habitat Associated with Special Status Species, Region I Corridor

	Alternatives							
	I-A		I-B		I-C		I-D	
	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet
Streams								
Construction	2	5	2	4	17	51	3	10
Operation	1	2	<1	1	5	13	1	2

Table 3.10-11 Open Road Density (Miles/Mile²) within 100 and 300 Feet of Stream Crossings Associated with Special Status Species in Region I Corridor

Watershed	I-A					Watershed	I-B				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Greasewood Gulch-Little Snake River	0.38	0.66	0.05	0.04	Little Snake River (1)	Greasewood Gulch-Little Snake River	0.38	0.66	0.04	0.03	Little Snake River (1)
Spring Creek-Yampa River	0.47	1.01	0.03	0.03	Yampa River (1)	Spring Creek-Yampa River	0.47	1.01	0.03	0.04	Yampa River (1)
Watershed	I-C					Watershed	I-D				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Deception Creek-Yampa River	0.65	1.56	0.09	0.09	Yampa River (2)	Greasewood Gulch-Little Snake River	0.38	0.66	0.04	0.03	Little Snake River (1)
Elkhead Creek	0.83	1.41	0.01	0.01	Elkhead Creek (2)	Spring Creek-Yampa River	0.47	1.01	0.03	0.04	Yampa River (1)
Fortification Creek	1.19	2.02	0.13	0.13	Fortification Creek (1)						
Fourmile Creek	0.59	1.04	0.09	0.40	Fourmile Creek (1)						
Little Snake River-Willow Creek	0.54	1.13	0.06	0.04	Willow Creek (2)						
Lower Muddy Creek	1.08	2.13	0.07	0.05	Muddy Creek (3)						
Upper Muddy Creek	1.02	1.92	0.06	0.05	Muddy Creek (1)						

- Riparian Disturbance – A comparison of the construction and operation effects to riparian vegetation near streams containing special status aquatic species indicates that Alternative I-C would have greatest potential disturbance. By following stipulations for BLM FOs involving no disturbance or a buffer protection of 300 to 500 feet, the disturbance to riparian vegetation would be avoided on BLM lands.
- Road Density – The number of watersheds that would be crossed by the Region I alternative 250-foot-wide transmission line ROWs would range from 2 (I-A, I-B, and I-D) to 7 (I-C). The road density units are highest for Alternative I-C. The increase in new road density would range from <math><0.1</math> to 0.4 miles/mile², with the highest increase in the Fourmile Creek watershed (Alternative I-C). BMPs and design features would be implemented to reduce sediment input to streams including those that support special status aquatic species.

Alternative I-A (Applicant Proposed)

Two streams (Little Snake and Yampa rivers) that contain special status aquatic species are located within the transmission line corridor. Both of these streams would be crossed by the 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative I-A.

Colorado Pikeminnow and Razorback Sucker (Federally Endangered and BLM Sensitive)

The 250-foot-wide transmission line ROW for Alternative I-A would cross occupied and critical habitat for Colorado pikeminnow in the Yampa River. Critical habitat for Colorado pikeminnow consists of the 100-year floodplain in the Yampa River. The 250-foot-wide transmission line ROW also would cross one other stream that contains Colorado pikeminnow: Little Snake River (noncritical habitat). The pikeminnow occurrence in the Little Snake River is located in the lower 1-mile section near the confluence with the Yampa River. In total, 0.9 acre of Colorado pikeminnow critical habitat would be crossed. Occupied and critical habitat for razorback sucker is located approximately 7 miles downstream of the Alternative I-A 250-foot-wide transmission line ROW crossing at a point where the Yampa River enters the Green River. Potential effects on Colorado pikeminnow could include surface disturbance to critical habitat located within the 100-year floodplain. Indirect effects on both species could include sedimentation, riparian removal, and potential fuel spill risks. These effects could occur within the 250-foot-wide transmission line ROW and use of new or upgraded access roads. BMPs such as ECO-1 and ECO-4 require the consideration of sensitive or unique habitats and the avoidance, minimization, or mitigation for impacts to sensitive species and their habitat through project design. Two BMPs require that no instream disturbance should occur between July 1 and September 30 to avoid impacts to the four federally endangered fish species in the Upper Colorado River Basin (WWEC) and construction activities should avoid modification of critical habitat for any species (BLM Vernal RMP). Design features such as TWE-2 (ESA Compliance), TWE-29 (Biological Protection Plan), and TWE-31 (Development of Section 7 Mitigation Measures) would be used to reduce impacts to important, sensitive, or unique habitats and develop appropriate mitigation measures. The following mitigation measure is recommended to further protect critical habitat for Colorado pikeminnow.

SSS-2 (*No Permanent Structures or New Roads in Critical Habitat for Federally Listed Fish Species*): No permanent structures or new roads would be constructed in critical habitat for federally endangered fish species. Any temporary disturbance to soils in the 100-year floodplain within critical habitat would be minimized to the extent possible and restoration would be completed to maintain existing conditions.

Effectiveness: This measure would be highly effective in avoiding direct disturbance to critical habitat for Colorado pikeminnow.

Alternative I-A would cross 1 acre of critical habitat for Colorado pikeminnow. Surface disturbance activities near the Yampa River pose a risk for sediment and fuel spills. A combination of BMPs, design features, and additional mitigation measure **SSS-2** would be implemented to avoid impacts to critical and occupied habitat

for Colorado pikeminnow and downstream reaches occupied by Colorado pikeminnow and razorback sucker.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered) Water Depletions

As part of flow requirements for the four endangered fish species in the Upper Colorado River Basin (Colorado pikeminnow, humpback chub, bonytail, and razorback sucker), water use for projects must comply with the *Recovery Implementation Program for Endangered Fish Species in the Upper Colorado Basin* (Recovery Plan) (USFWS 2013). To ensure the survival and recovery of the four endangered fish species in the Upper Colorado River, water users with depletions are required to make a one-time payment to the Recovery Plan. In 1995, an intra-USFWS Opinion determined that the fee for depletions of less than 100 acre-feet (annual average) would no longer be required. Water use for this project (i.e., approximately 2 acre-feet for foundation concrete and 114 acre-feet for dust control) would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 106 acre-feet of the water use would be within the Colorado River Basin. In Wyoming, the effect determination for new and existing depletions would be completed by the Wyoming State Engineer. The evaluation would determine if specific construction water sources have any contributions to surface flows in the Upper Colorado Basin. If water sources are not connected to surface flows, no fee payment would be required.

In summary, the determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by federally endangered fish species in the Upper Colorado River Basin.

Pallid Sturgeon (Federally Endangered)

The pallid sturgeon is located in the lower Platte River downstream of the Elk River confluence in Nebraska. This area is located a considerable distance downstream of any construction or operation disturbance areas in Wyoming, and so these activities would not affect pallid sturgeon. Water depletion also must be evaluated for pallid sturgeon. The Platte River Recovery Implementation Program (PRRIP) was implemented in 2006 to assist in the conservation and recovery of the target species and their associated habitats along the central and lower Platte River in Nebraska. As mentioned above for the Colorado River Basin species, the effect determination for new and existing depletions would be completed by the Wyoming State Engineer. Approximately 0.9 acre-feet of the construction use would occur within the Platte River Basin. The evaluation would determine if specific construction water sources have any contributions to surface flows in the upper portion of the North Platte River and the downstream section of the Platte River Basin in Nebraska. This evaluation would be used to determine if a mitigation payment to the PRRIP would be required.

The determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by the pallid sturgeon in the Platte River system.

Northern Leopard Frog (BLM Sensitive and Nevada Protected)

One stream, the Little Snake River at Project Segment 180.2, contains potential habitat for northern leopard frog and would be crossed by Alternative I-A. The potential effects of construction activities on northern leopard frog would include potential direct disturbance to habitat (i.e., flooded areas, wetlands, streams, or ponds) from vehicle traffic and riparian vegetation. Vehicle traffic also could cause mortalities as frogs move to or from aquatic habitats during breeding periods in the spring and summer months. Indirect effects on frog habitat would consist of sedimentation from soil disturbance near aquatic habitats and potential fuel spills. BMPs and design features would minimize erosion effects on waterbodies and restrict refueling within 100 feet of wetlands and streams. BMPs and design features associated with WWEC would be applicable

to northern leopard frog habitat in Region I. In addition, Stipulation 310 would be applied to wetlands within the Rock Springs FO, which would require a buffer of 500 feet around wetlands, streams, springs, ponds, and lakes. This measure would minimize effects on amphibian habitat.

BMPs and design features would be implemented to minimize effects of construction activities on northern leopard frog aquatic habitat. Impacts from these activities during construction would be considered of a low magnitude. Vehicle traffic could cause northern leopard frog mortalities, if traffic movement coincides with frog movements during breeding periods. Mortalities are expected to be relatively low considering the traffic volume.

Great Basin Spadefoot Toad (BLM Sensitive)

The Great Basin spadefoot toad has potential to occur in sagebrush habitats below 6,000 feet amsl in Wyoming, Colorado, and Utah, although there are no specific records of occurrence within the Alternative I-A transmission line corridor. Spadefoot toads utilize burrows in terrestrial habitats during the nonbreeding period. This toad species requires water sources for breeding such as rain pools, roadside and irrigation ditches, flooded fields, intermittent and permanent desert streams, and pond and reservoir edges (Buseck et al. 2005). Surface disturbance activities could alter their terrestrial habitat during the nonbreeding period or their aquatic habitat during the breeding period. Vehicle traffic during construction could cause mortalities during movements to and from water sources used for breeding in the spring months.

In summary, surface disturbance activities could alter terrestrial habitat used by Great Basin spadefoot toad during the nonbreeding period or aquatic habitat in the breeding period in the spring months. Potential mortalities from vehicles could occur if construction occurs in the spring near breeding water sources.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Two streams (Yampa and Little Snake rivers) that contain Colorado River cutthroat trout would be crossed by the Alternative I-A 250-foot-wide transmission line ROW. Construction activities near these rivers could result in sediment and fuel spill risks. There would be no habitat loss from construction because culverts or low water construction techniques would not be required for large rivers. The same BMPs and design features for erosion control and spill prevention discussed for game fish streams would also apply to streams containing Colorado River cutthroat trout. Due to the large size of the Yampa and Little Snake rivers, new roads would not be constructed across these streams. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Colorado River cutthroat trout habitat in the Yampa and Little Snake rivers during construction would be of a low magnitude.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah CAS)

Two streams (Little Snake and Yampa rivers) that contain bluehead sucker, flannelmouth sucker, and roundtail chub would be crossed by the Alternative I-A 250-foot-wide transmission line ROW. Vehicles and equipment would not cross large rivers such as the Yampa and Little Snake. Indirect impacts would be the same as discussed for other fish species. The same BMPs and design features discussed for game fish streams would also apply to streams containing these BLM sensitive species. By implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in the Yampa River and Little Snake rivers during construction would be of a low magnitude.

Alternative I-B

In total, two streams (Little Snake and Yampa rivers) that contain special status aquatic species are located within the Alternative I-B transmission line corridor and would be crossed by its 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative I-B.

Colorado Pikeminnow and Razorback Sucker (Federally Endangered and BLM Sensitive)

Construction activities could result in direct disturbance to 1 acre of Colorado pikeminnow critical habitat in the Yampa River. Mitigation measure **SSS-2** would be implemented to avoid disturbance to critical habitat by restricting structures or new roads from being located within the critical habitat area. Potential impacts of sedimentation and fuel spills on Colorado pikeminnow habitat near the Yampa River crossing and downstream reaches occupied by razorback sucker would be minimized by BMPs and design features involving erosion control and spill prevention.

In summary, Alternative I-B would cross 1 acre of critical habitat for Colorado pikeminnow. Surface disturbance activities near the Yampa River pose a risk for sediment and fuel spills. A combination of BMPs, design features, and additional mitigation measure **SSS-2** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and downstream reaches occupied by Colorado pikeminnow and razorback sucker.

Colorado Pikeminnow, Humpback chub, Bonytail, and Razorback Sucker (Federally Endangered) Water Depletions

Approximately 2 acre-feet for foundation concrete and 117 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 109 acre-feet of the construction water use would occur within the Colorado River Basin. The determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by federally endangered fish species in the Upper Colorado River Basin.

Pallid Sturgeon (Federally Endangered)

Construction water use for Alternative I-B would be approximately 9 acre-feet from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights in the Platte River Basin. After specific water sources are identified, an evaluation would be completed to determine if the water sources could result in new depletions in the North Platte watershed in Wyoming or the downstream section of the Platte River Basin in Nebraska. The determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by the pallid sturgeon in the Platte River system.

Northern Leopard Frog (BLM Sensitive and Nevada Protected)

One stream, the Little Snake River at Project Segment 186, contains potential habitat for northern leopard frog and would be crossed by Alternative I-B. The potential effects of construction activities on northern leopard frog would be the same as discussed for Alternative I-A. BMPs and design features associated with WWEC would be applicable to northern leopard frog habitat in Region I. In addition, BMP-310 would be applied to wetlands within the Rock Springs FO, which would require a buffer of 500 feet around wetlands, streams, springs, ponds, and lakes. This measure would minimize effects on amphibian occurrence and mortalities during movements to these areas. Impacts from vehicle movement during construction would be considered of a low magnitude. Vehicle traffic could cause northern leopard frog mortalities, if traffic movement coincides with frog movements during breeding periods.

Great Basin Spadefoot Toad (BLM Sensitive)

The Great Basin spadefoot toad has potential to occur in sagebrush habitats below 6,000 feet amsl in Wyoming, Colorado, and Utah, although there are no specific records of occurrence within the Alternative I-B corridor. Surface disturbance activities could alter Great Basin spadefoot toad terrestrial habitat during the nonbreeding period or aquatic habitat during the breeding period. Potential impacts to habitat would be considered short-term in duration and low magnitude due to low traffic volume and one-time vehicle movement. Vehicle traffic during construction could cause mortalities during movements to

and from water sources used for breeding in the spring months. Mortalities are expected to be relatively low considering the traffic volume.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Two streams (Yampa and Little Snake rivers) that contain Colorado River cutthroat trout would be crossed by the Alternative I-B 250-foot-wide transmission line ROW. There would be no habitat loss from construction because culverts or low water construction techniques would not be required. Construction and operation maintenance effects on Colorado cutthroat trout habitat would be the same as discussed for Alternative I-A.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah CAS)

Two streams (Little Snake and Yampa rivers) would be crossed by the Alternative I-B 250-foot-wide transmission line ROW. There would be no habitat loss from construction because culverts or low water construction techniques would not be required. Impacts would be the same as discussed for Alternative I-A. The same BMPs and design features discussed for game fish streams would also apply to streams containing these BLM sensitive species.

Alternative I-C

In total, 10 streams are located within the Alternative I-C 2-mile transmission line corridor that contain special status aquatic species. These streams include Separation Creek, Antelope Creek, Elkhead Creek, Fortification Creek, Fourmile Creek, Little Cottonwood Creek, Little Snake River, Muddy Creek (two crossings), Willow Creek, and the Yampa River. Except for Separation, Muddy, and Willow creeks, these streams would be crossed by the Alternative I-C 250-foot-wide transmission line ROW. Species-specific impacts associated with Alternative I-C are discussed below.

Colorado Pikeminnow and Razorback Sucker (Federally Endangered and BLM Sensitive)

Construction activities could result in direct disturbance to 3 acres of Colorado pikeminnow critical habitat in the Yampa River. Mitigation measure **SSS-2** would be implemented to avoid disturbance to critical habitat by restricting structures or new roads from being located within the critical habitat area. Potential impacts of sedimentation and fuel spills on Colorado pikeminnow habitat near the Yampa River crossing and downstream reaches occupied by Colorado pikeminnow and razorback sucker would be minimized by BMPs and design features involving erosion control and spill prevention.

In summary, Alternative I-C would cross 3 acres of critical habitat for Colorado pikeminnow. Surface disturbance activities near the Yampa River pose a risk for sediment and fuel spills. A combination of BMPs, design features, and mitigation measure **SSS-2** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and downstream reaches occupied by Colorado pikeminnow and razorback sucker.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered) Water Depletions

Approximately 2 acre-feet for foundation concrete and 137 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 130 acre-feet of the construction water use would occur within the Colorado River Basin. The determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by federally endangered fish species in the Upper Colorado River Basin.

Pallid Sturgeon (Federally Endangered)

Construction water use for Alternative I-C would be approximately 9 acre-feet from the Platte River Basin. This water would be obtained from municipal sources, commercial sources, or a temporary water use

agreement with landowners holding existing water rights. After specific water sources are identified, an evaluation would be completed to determine if the water sources could result in new depletions in the North Platte watershed in Wyoming or the downstream section of the Platte River Basin in Nebraska.

In summary, the determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by the pallid sturgeon in the Platte River system.

Northern Leopard Frog (BLM Sensitive, and Nevada Protected)

Potential habitat for northern leopard frog would be crossed by Alternative I-C in one stream, Muddy Creek. The potential effects of construction activities on northern leopard frog would be the same as discussed for Alternative I-A. BMPs and design features associated with WWEC would be applicable to northern leopard frog habitat in Region I. In addition, BMP-310 would be applied to wetlands within the Rock Springs FO, which would require a buffer of 500 feet around wetlands, streams, springs, ponds, and lakes. This measure would minimize effects on amphibian occurrence in and movements to these areas. Impacts from vehicle movement during construction would be considered of a low magnitude. Vehicle traffic could cause northern leopard frog mortalities if traffic movement coincides with frog movements during breeding periods.

Great Basin Spadefoot Toad (BLM Sensitive)

The Great Basin spadefoot toad has potential to occur in sagebrush habitats below 6,000 feet amsl in Wyoming, Colorado, and Utah, although there are no specific records of occurrence within the Alternative I-C transmission line corridor. Surface disturbance activities could alter Great Basin spadefoot toad terrestrial habitat during the nonbreeding period or aquatic habitat during the breeding period. Potential impacts to habitat would be considered short-term and low magnitude due to low traffic volume and one-time vehicle movement. Vehicle traffic during construction could cause mortalities during movements to and from water sources used for breeding in the spring months.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Four streams (Fourmile, Little Cottonwood, and Willow creeks, and the Yampa River) that contain Colorado River cutthroat trout would be crossed by the Alternative I-C 250-foot-wide transmission line ROW. Potential instream disturbance to their habitat could occur if vehicles cross smaller streams such as Fourmile and Little Cottonwood creeks using ford or culvert techniques for road access. Vehicle traffic within the ROW also could cross streams that contain these species. Direct habitat loss could be 800 ft² (0.02 acre), if a culvert or low water construction is required at the Fourmile and Little Cottonwood Creek crossings. The same BMPs and design features discussed for game fish streams would also apply to streams containing Colorado River cutthroat trout. Other applicable BMPs would be used to protect these species. BMP 287 (White River National Forest) restricts construction of new roads within 350 feet of occupied cutthroat trout streams and 150 feet from the edge of historic floodplain. The following mitigation measure is recommended to avoid potential effects on cutthroat trout spawning.

SSS-3 (*Avoid Spawning Habitat Disturbance for Special Status Trout Species*): *If spawning areas for Colorado River cutthroat trout are known to occur at streams proposed for vehicle crossing or culvert construction, instream disturbance would be scheduled to avoid the spawning period from April through May. The exact dates for avoidance would be determined through discussions with WGFD, CPW, or UDWR. All disturbed areas would be restored to pre-construction conditions prior to the next spawning season. The state agencies also would determine if a habitat survey would be required prior to any project disturbance, which would assist in defining habitat conditions for restoration.*

Effectiveness: This measure would be highly effective in avoiding spawning periods for special status trout species and restoring any disturbed habitat.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on Colorado River cutthroat trout habitat during construction would be of a low magnitude. Impacts on spawning special status trout species would be avoided by implementing mitigation measure **SSS-2**.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah CAS)

The following BLM sensitive sucker and chub species are located in streams that would be crossed by the transmission line corridor for Alternative I-C: bluehead sucker (Yampa River and Little Snake rivers and Fortification and Muddy creeks), flannelmouth sucker (Elkhead Creek, Fortification Creek, Muddy Creek, Little Snake River, and the Yampa River), and roundtail chub (Fortification Creek, Muddy Creek, and the Little Snake and Yampa rivers). The Alternative I-C 250-foot-wide transmission line ROW would cross the Little Snake River, Yampa River, Muddy Creek, Elkhead Creek, Fortification Creek, and Fourmile Creek. Direct disturbance to these species' habitats could occur in the small to mid-size streams such as Elkhead, Fortification, Fourmile, and Muddy Creek due to vehicle traffic. Habitat loss could be 1,600 to 2,400 ft² (0.04 to 0.06 acre) for these species, if culverts or low water construction are required in the smaller streams. The same BMPs and design features discussed for game fish streams would also apply to streams containing these BLM sensitive species.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in six streams during construction would be of a low magnitude. If roads are constructed across small and mid-sized streams such as Elkhead, Fourmile, Fortification, and Muddy creeks, construction impacts would occur to habitat for special status sucker species and roundtail chub. Disturbed habitat would be restored to pre-construction conditions resulting in impacts of relatively low net magnitude.

Mountain Sucker (BLM Sensitive)

The Alternative I-C 250-foot-wide transmission line ROW would cross two streams (Fourmile and Muddy creeks) containing mountain sucker. Muddy Creek would be crossed three times and Fourmile Creek would be crossed once by the 250-foot-wide transmission line ROW. Habitat loss could be 1,600 ft² (0.04 acre), if culverts or low water construction are required for the four 250-foot-wide transmission line ROW crossings. Potential sediment input and fuel spill risks could occur as a result of construction. The same BMPs and design features discussed for game fish streams would also apply to streams containing this BLM sensitive species.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on mountain sucker habitat in two streams potentially crossed during construction would be of a low magnitude. If a culvert or road is constructed across two perennial stream crossings, direct loss of habitat could occur. Disturbed habitat from road construction would be restored to pre-construction conditions resulting in construction impacts of a relatively low net magnitude.

Alternative I-D (Agency Preferred)

In total, two streams (Little Snake and Yampa rivers) that contain special status aquatic species are located within the 2-mile transmission line corridor and would be crossed by 250-foot-wide transmission line ROWs. Species-specific impacts are discussed below for Alternative I-D.

Colorado Pikeminnow and Razorback Sucker (Federally Endangered and BLM Sensitive)

Construction activities could result in direct disturbance to 1 acre of Colorado pikeminnow critical habitat in the Yampa River. Mitigation measure **SSS-2** would be implemented to avoid disturbance to critical habitat by restricting structures or new roads to be located within the critical habitat area. Potential impacts of sedimentation and fuel spills on Colorado pikeminnow habitat near the Yampa River crossing and downstream reaches occupied by razorback sucker would be minimized by BMPs and design features involving erosion control and spill prevention.

In summary, Alternative I-D would cross 1 acre of critical habitat for Colorado pikeminnow. Surface disturbance activities near the Yampa River pose a risk for sediment and fuel spills. A combination of BMPs, design features, and additional mitigation measure **SSS-2** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and downstream reaches occupied by Colorado pikeminnow and razorback sucker.

Colorado Pikeminnow, Humpback chub, Bonytail, and Razorback Sucker (Federally Endangered) Water Depletions

Approximately 2 acre-feet for foundation concrete and 126 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 119 acre-feet would occur within the Colorado River Basin.

In summary, the determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by federally endangered fish species in the Upper Colorado River Basin.

Pallid Sturgeon (Federally Endangered)

Construction water use for Alternative I-D would require approximately 9 acre-feet from the Platte River Basin. This water would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. After specific water sources are identified, an evaluation would be completed to determine if the water sources could result in new depletions in the North Platte watershed in Wyoming or the downstream section of the Platte River Basin in Nebraska.

In summary, the determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by the pallid sturgeon in the Platte River system.

Northern Leopard Frog (BLM Sensitive and Nevada Protected)

One stream, the Little Snake River at Project Segment 186, contains potential habitat for northern leopard frog and would be crossed by Alternative I-D. The potential effects of construction activities on northern leopard frog would be the same as those discussed for Alternative I-A. BMPs and design features associated with WWEC would be applicable to northern leopard frog habitat in Region I. These measures would minimize adverse effects on amphibian occurrence and movements in these areas. Impacts from vehicle movement during construction would be considered of a low magnitude. Vehicle traffic could cause northern leopard frog mortalities if traffic movement coincides with frog movements during breeding periods. Mortalities are expected to be relatively low considering the traffic volume.

Great Basin Spadefoot Toad (BLM Sensitive)

The Great Basin spadefoot toad has potential to occur in sagebrush habitats below 6,000 feet amsl in Wyoming, Colorado, and Utah, although there are no specific records of occurrence within the Alternative I-D transmission line corridor. Surface disturbance activities could alter Great Basin spadefoot toad terrestrial habitat during the nonbreeding period or aquatic habitat during the breeding period. Potential impacts to habitat would be considered short-term in duration and low magnitude due to low traffic volume and one-time vehicle movements. Vehicle traffic during construction could cause mortalities during movements to and from water sources used for breeding in the spring months.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Two streams (Yampa and Little Snake rivers) that contain Colorado River cutthroat trout would be crossed by the Alternative I-D 250-foot-wide transmission line ROW. There would be no habitat loss due to construction because culverts or low water construction techniques would not remove habitat. Construction and operation maintenance effects on Colorado cutthroat trout habitat would be the same as discussed for

Alternative I-A. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Colorado River cutthroat trout habitat in the Yampa and Little Snake rivers during construction would be of a low magnitude.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive)

Two streams (Little Snake and Yampa rivers) would be crossed by the Alternative I-D 250-foot-wide transmission line ROW. There would be no habitat loss due to construction because culverts or low water construction techniques would not remove habitat. Impacts would be the same as discussed for Alternative I-A. The same BMPs and design features discussed for game fish streams would also apply to streams containing these BLM sensitive species. By implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in the Yampa and Little Snake rivers during construction would be of a low magnitude.

The Tuttle Easement micro-siting options would not affect special status aquatic species since no aquatic habitat is located within the areas associated with these variations.

Alternative Connectors in Region I

The Mexican Flats, Fivemile Point North, and Baggs alternative connectors each would cross one stream, Muddy Creek, which contains special status sucker and chub species. Fivemile Point South Alternative Connector would not cross any perennial streams. **Table 3.10-12** summarizes the impacts and advantages/disadvantages associated with the two alternative connectors.

Table 3.10-12 Summary of Region I Alternative Connector Impacts for Special Status Aquatic Species

Alternative Connector	Analysis	Impact Conclusion
Mexican Flats and Fivemile Point North Alternative Connectors	One additional perennial stream (Muddy Creek) containing special status aquatic species is located within the transmission line corridor, and could be impacted by vehicle traffic on access roads.	The disadvantage of using these alternative connectors would be potential increased disturbance to Muddy Creek and special status species, flannelmouth sucker and roundtail chub.
Baggs Alternative Connector	One additional perennial stream (Muddy Creek) containing special status aquatic species is located within the proposed ROW and the transmission line corridor, and could be impacted by vehicle traffic.	The disadvantage of using this alternative connector would be potential increased disturbance to Muddy Creek and special status species, flannelmouth sucker and roundtail chub.

Alternative Ground Electrode Systems in Region I

The northern electrode system would be required within 100 miles of the northern terminal, which is based on the conceptual locations and connections to the alternative routes. There would be no impacts on special status aquatic species, since the conceptual locations do not support habitat for special status fish, amphibian, or invertebrate species.

Region I Conclusion

Based on a comparison of impact parameters for Region I alternatives, potential impacts to special status aquatic species would be greatest for Alternative I-C. Potential effects for Alternatives I-A (Applicant Proposed), I-B, and I-D (Agency Preferred) would be similar and relatively low compared to Alternative I-C (**Table 3.10-9**). Alternative I-C would cross the highest number of streams with special status aquatic species (10) and critical habitat for federally listed Colorado pikeminnow (3 acres). In comparison, the other three alternatives would cross 2 to 4 streams with special status aquatic species and would cross 1 acre of critical habitat for federally endangered fish. Alternative I-C also could result in the greatest alteration or loss of habitat (800 to 2,400 ft² or 0.02 to 0.06 acre) compared to no loss or alternation of habitat for the other

three alternatives. Less than 0.1 percent of special status species habitat would be affected by Alternative I-C and the other three alternatives. Alternative I-C could result in the highest potential construction disturbance to riparian areas (17 acres at a 100-foot buffer and 51 acres at a 300-foot buffer) compared to the other three alternatives (2 to 3 acres at a 100-foot buffer and 4 to 10 acres at a 300-foot buffer) (**Table 3.10-10**). Alternative I-D (Agency Preferred) ranks in the low range of potential riparian effects. Alternative I-C also would result in increased new road density in seven watersheds compared to two watersheds for the other alternatives (**Table 3.10-11**). Alternative I-D (Agency Preferred) could affect road densities in two watersheds. Even though the greatest level of impacts are associated with Alternative I-C, project effects on special status species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, design features, and additional mitigation (Section 3.10.6.3 and **Appendix C**). The only potential long-term impacts would be in streams where a culvert would displace stream bottom habitat. In comparison with available stream habitat, the relatively small long-term impacts of all alternatives are unlikely to impact the population viability of special status aquatic species inhabiting these streams.

3.10.6.4 Region II

Table 3.10-13 provides a summary of impact parameters used to describe impacts for alternative routes in Region II. Based on species occurrence information and habitat associations, special status aquatic species that may be impacted by the proposed Project in Region II include 4 amphibians, 13 fish, and 2 invertebrate species (**Table 3.10-5**). Species occurrence in Region II streams is provided in **Appendix G, Table G-6**. Project Segment ID numbers referenced in this section are listed in **Table G-6** and depicted in **Figure 2-22**. Parameter information in **Table 3.10-13** is discussed separately for each of the Region II alternatives.

Table 3.10-13 Summary of Region II Alternative Route Impacts for Special Status Aquatic Species

Parameter	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Number of streams with special status aquatic species that would be crossed by 250-foot-wide transmission line ROWs	12	8	11	7	13	11
Number of streams with special status aquatic species that would be crossed by the 2-mile transmission line corridors or located within 2 miles downstream of corridor boundaries	18	12	12	7	17	18
Number of streams with federally listed aquatic species that would be crossed by 250-foot-wide transmission line ROWs	1	2	2	2	1	2
Acres of critical habitat for federally listed fish species that would be crossed by 250-foot-wide transmission line ROWs						
Colorado pikeminnow	2	4	4	4	2	4
Razorback sucker	2	3	3	3	2	3
Potential Aquatic Habitat Alteration or Loss ¹ (ft ²) (acres shown in parentheses)						
Northern leopard frog	400 (0.01)	800 (0.02)	800 (0.02)	0	2,000 (0.05)	2,000 (0.05)
Columbia spotted frog	400 (0.01)	400 (0.01)	0	400 (0.01)	0	0
Boreal toad	800 (0.02)	0	0	0	6,000 (0.14)	0
Bonneville cutthroat trout	2,800 (0.06)	1,200 (0.03)	0	1,200 (0.03)	3,200 (0.07)	3,200 (0.07)
Colorado River cutthroat trout	400 (0.01)	400 (0.01)	0	800 (0.02)	0	1,200 (0.03)
Southern leatherside chub	1,200 (0.03)	1,200 (0.03)	2,800 (0.06)	800 (0.02)	2,800 (0.06)	1,600 (0.04)
Bluehead sucker	2,800 (0.04)	400 (0.01)	1,200 (0.03)	0	1,200 (0.03)	0

Table 3.10-13 Summary of Region II Alternative Route Impacts for Special Status Aquatic Species

Parameter	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F
Flannelmouth sucker	2,800 (0.04)	0	1,600 (0.04)	0	1,200 (0.03)	0
Mountain sucker	800 (0.02)	1,200 (0.03)	1,600 (0.04)	800 (0.02)	2,000 (0.05)	2,800 (0.06)
Roundtail chub	2,000 (0.05)	0	0	0	1,200 (0.03)	0
California floater	400 (0.01)	0	0	0	0	0
Southern Bonneville pyrg	0	0	0	0	0	0

¹ Habitat loss represents area that could be permanently or temporarily removed due to the use of a culvert or low water crossing or temporarily disturbed from the instream use of equipment. The calculation excludes large rivers such as the Duchesne, Green, Price, San Pitch, Sevier, Uinta, and White.

Parameter information regarding riparian disturbance and road density is provided in **Tables 3.10-14** and **3.10-15**. The analyses focus on streams that contain special status aquatic species. A summary of these parameters is provided below.

Table 3.10-14 Ground Disturbance (Acres) for Buffer Distances from Riparian Habitat Associated with Special Status Species, Region II Corridor

Streams	Alternatives											
	II-A		II-B		II-C		II-D		II-E		II-F	
	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet
Construction	22	64	25	63	15	42	15	55	30	82	28	76
Operation	8	24	7	19	5	12	5	17	11	30	11	30

- Riparian Disturbance – A comparison of the construction effects to riparian vegetation near streams containing special status aquatic species indicates similar potential disturbance (i.e., 15 to 30 acres for the 100-foot buffer distance and 42 to 82 acres for the 300-foot buffer distance). These impacts would be reduced by BLM and USFS requirements, which range from avoiding a riparian buffer area of 200 to 1,200 feet adjacent to perennial streams to total avoidance of riparian areas. In conclusion, the disturbance to riparian vegetation would be avoided on BLM and USFS lands. There could be disturbance on private lands if riparian vegetation is present.
- Road Density – The number of watersheds that would be crossed by the Region II alternative 250-foot-wide transmission line ROWs range from 8 (II-D) to 13 (II-A). The road density units are highest for Alternative II-A. The increase in road density ranged from <0.1 to 0.5 mile/mile², with the highest increase in the Upper San Pitch River (Alternative II-B); Soldier Creek (Alternatives II-E and II-F); Outlet Douglas Creek (Alternative II-C); and Willow Creek (Alternative II-E) watersheds. BMPs and design features would be implemented to reduce sediment input to streams including those that support special status aquatic species.

The Strawberry IRA (Option 1 Section 320.101, Option 2 Segment 320.102, and Option 3 Segment 320.103) and Cedar Knoll IRA (Option 1 Segment 320.151 and Option 2 Section 320.152) micro-siting adjustments would not substantially affect the impact analysis for special status aquatic species.

Alternative II-A (Applicant Proposed)

In total, 17 streams that contain special status aquatic species are located within the 2-mile transmission line corridor. These include Bennie, Cottonwood, Currant, Dry Gulch, Hop, Lake Fork, Montes, Nebo, Red, Soldier, Thistle, Tie Fork, and Willow creeks, and the Duchesne, Green, Strawberry, Uinta, and Lake Fork

Table 3.10-15 Open Road Density (Miles/Mile²) within 100 and 300 Feet of Stream Crossings Associated with Special Status Species in Region II Corridor

Watershed	II-A					Watershed	II-B				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Cottonwood Creek-Dry Gulch Creek	1.95	2.74	0.18	0.11	Cottonwood Creek (1), Montes Creek (1), Dry Gulch Creek (2)	Coal Creek-Price River	2.03	2.90	0.12	0.08	Price River (1)
Currant Creek	3.46	3.43	0.01	0.03	Currant Creek (2)	Cottonwood Creek	1.63	2.97	0.01	0.01	Lowry River (1)
Dry Gulch Creek	1.64	2.45	0.21	0.18	Dry Gulch Creek (1)	Huntington Creek	3.94	4.22	0.03	0.03	Huntington Creek (2)
Strawberry River-Duchesne River	1.57	1.95	0.10	0.08	Duchesne River (1)	Middle Sevier River	1.45	2.18	0.01	0.02	Sevier River (1)
Middle Strawberry River	8.03	5.55	0	0.08	Willow Creek (1)	Outlet Douglas Creek	1.14	3.28	0.16	0.38	Douglas Creek (1)
Pelican Lake-Green River	0.55	1.44	0.03	0.03	Green River (1)	Red Wash-White River	1.18	2.61	0.06	0.05	White River (1)
Pigeon Water Creek-Lake Fork River	0.84	1.47	0.06	0.06	Lake Fork River (1)	Salt Wash-Green River	0.13	0.64	0.04	0.04	Green River (2)
Red Creek	3.50	4.73	0.05	0.09	Red Creek (1)	Upper San Pitch River	4.29	4.57	0.54	0.45	San Pitch River (1), Dry Pole Fork (1), North Fork Pleasant Creek (1), Pleasant Creek (1)
Soldier Creek	8.48	6.99	0.27	0.19	Soldier Creek (2), Tie Fork (1), Lake Fork (1)	Upper Sevier River	0.99	1.90	0.06	0.06	Sevier River (1)
Thistle Creek	10.98	7.25	0.23	0.19	Thistle Creek (2), Nebo Creek (1)						
Uinta River	1.41	2.20	0.01	0.01	Uinta River (1)						
Upper Strawberry River	1.03	1.61	<0.01	<0.01	Strawberry River (2)						
West Creek	3.67	4.24	0.22	0.24	Hop Creek (2), Currant Creek (1), Birch Creek (1)						

Table 3.10 15 Open Road Density (Miles/Mile²) within 100 and 300 Feet of Stream Crossings Associated with Special Status Species in Region II Corridor

Watershed	II-C					Watershed	II-D				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Cottonwood Creek	1.63	2.97	0.01	0.01	Cottonwood Creek (1)	Agency Draw-Willow Creek	3.30	4.19	0.07	0.06	Willow Creek (1)
Ferron Creek	1.57	2.10	0.01	0.02	Ferron Creek (1)	Beaver Creek-Price River	7.16	6.85	0.03	0.06	Price River (1)
Headwaters Muddy Creek	2.01	2.10	0.03	0.04	Muddy Creek (1)	Cottonwood Wash-White River	0.15	0.25	0.05	0.05	White River (1)
Ivie Creek	3.91	6.30	0.05	0.15	Quitcupah Creek (2)	Huntington Creek	3.94	4.22	0.01	0.01	Huntington Creek (2)
Lost Creek-Sevier River	9.67	9.84	0.06	0.08	Lost Creek (1), Sevier River (1)	Scofield Reservoir	3.90	4.66	0.03	0.16	Mud Creek (1)
Middle Sevier River	1.45	2.18	0.04	0.04	Sevier River (1)	Sheep Wash-Green River	0.09	0.33	0.06	0.06	Green River (1)
Outlet Douglas Creek	1.14	3.28	0.16	0.38	Douglas Creek (1)	Upper San Pitch River	4.29	4.57	0.08	0.18	Oak Creek (1), Cottonwood Creek (1)
Red Wash-White River	1.18	2.61	0.06	0.05	White River (1)	West Creek	3.67	4.24	0.14	0.16	Hop Creek (1)
Salina Creek	8.89	12.15	0.13	0.13	Gooseberry Creek (1), Little Creek (1)						
Salt Wash-Green River	0.13	0.64	0.04	0.04	Green River (2)						

Table 3.10 15 Open Road Density (Miles/Mile²) within 100 and 300 Feet of Stream Crossings Associated with Special Status Species in Region II Corridor

Watershed	II-E					Watershed	II-F				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Beaver Creek-Price River	7.16	6.85	0.12	0.20	Price River (1), Kyune Creek (1)	Agency Draw-Willow Creek	3.30	4.19	0.07	0.06	Willow Creek (1)
Cottonwood Creek-Dry Gulch Creek	1.95	2.74	0.18	0.11	Cottonwood Creek (1), Montes Creek (1), Dry Gulch Creek (2)	Beaver Creek-Price River	7.16	6.85	0.03	0.03	Price River (1), Kyune Creek (1), Kyune Creek Right Fork (1)
Dry Gulch Creek	1.64	2.45	0.21	0.16	Dry Gulch Creek (1)	Cottonwood Wash-White River	0.15	0.25	0.05	0.05	White River (1)
Pelican Lake-Green River	0.55	1.44	0.03	0.03	Green River (1)	Middle Sevier River	1.45	2.18	0.01	0.02	Sevier River (1)
Pigeon Water Creek-Lake Fork River	0.84	1.47	0.11	0.16	Lake Fork River (1)	Sheep Wash-Green River	0.09	0.33	0.06	0.06	Green River (1)
Soldier Creek	8.48	6.99	0.53	0.44	Clear Creek (1), Soldier Creek (2), Tie Fork (1), Lake Fork (1)	Soldier Creek	8.48	6.99	0.53	0.44	Soldier Creek (2), Tie Fork (1), Lake Fork (1)
Strawberry River-Duchesne River	1.57	1.95	0.16	0.13	Duchesne River (1)	Thistle Creek	10.98	7.25	0.23	0.19	Bennie Creek (1), Thistle Creek (1)
Thistle Creek	10.98	7.25	0.23	0.19	Bennie Creek (1), Thistle Creek (1), Nebo Creek (1)	Upper Sevier River	0.99	1.90	0.06	0.06	Sevier River (1)
Uinta River	1.41	2.20	0.01	0.01	Uinta River (1)	West Creek	3.67	4.29	0.16	0.19	Hop Creek (2)
West Creek	3.67	4.24	0.16	0.19	Hop Creek (2)	White River	6.37	6.29	0.19	0.24	White River (2), Tabbyune Creek (1), White River Right Fork (1)
White River	6.37	6.29	0.04	0.06	White River (2), Tabbyune Creek (1)	Willow Creek	4.16	4.26	0	0	West Fork Willow Creek (1)
Willow Creek	4.16	4.26	0.43	0.45	West Fork Willow Creek (1)						

Note: Zero indicates no new roads within the buffer area.

ivers. All of these streams except Bennie, Cottonwood, Hop, Nebo, Thistle, and Willow creeks would be crossed by the Alternative II-A 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative II-A.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered and BLM Sensitive)

Direct Disturbance and Indirect Water Quality Effects

Construction activities could result in direct disturbance to 2 acres of Colorado pikeminnow and razorback sucker critical habitat in the Green River. The 250-foot-wide transmission line ROW would cross critical habitat in Project Segment 213. Critical habitat for both species is defined as the 100-year floodplain in the Green River. Vehicles and equipment would not enter the wetted area of the river channel; however, disturbance could occur in the dry area of the 100-year floodplain on both sides of the Green River. It should be clarified that this area is an overestimate of disturbance because it includes the wet portion of the floodplain. Mitigation measure **SSS-2** would be implemented to avoid disturbance to critical habitat by restricting structures or new roads from being located within the critical habitat area. Potential impacts of sedimentation and fuel spills on Colorado pikeminnow and razorback sucker habitat near the Green River crossing and downstream reaches occupied by all four federally endangered fish species would be minimized by BMPs and design features involving erosion control and spill prevention.

In summary, Alternative II-A would cross 2 acres of critical habitat for Colorado pikeminnow and razorback sucker. Surface disturbance activities near the Green River pose a risk for sediment and fuel spills for all four federally endangered fish species. A combination of BMPs, design features, and additional mitigation measure **SSS-2** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and razorback sucker and downstream reaches occupied by all four federally endangered fish species.

Water Depletions

Approximately 3 acre-feet for foundation concrete and 189 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 111 acre-feet of construction water use would occur within the Colorado River Basin. The determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by federally endangered fish species in the Upper Colorado River Basin.

June Sucker (Federally Endangered, BLM Sensitive, and Utah Special Concern)

June sucker habitat in Utah Lake and the Provo River is located approximately 15 miles upgradient from the Region II corridors. There would be no direct disturbance to habitat. In addition, there would be no effects of construction water use on June sucker habitat, as the proposed water sources are not connected to surface flows in the Provo River or Utah Lake. As a result, there would be no direct or indirect effects of project construction and operation on the June sucker. This conclusion also would apply to the other Region II alternatives.

Least Chub (Federal Candidate)

Least chub habitat occurs in springs and wetland areas within the Carrant Creek drainage, which are located approximately 1.5 miles downgradient of the Alternative II-A 2-mile transmission line corridor and 3.5 miles from the 250-foot-wide transmission line ROW. There would be no direct disturbance on least chub habitat. In addition, there would be no indirect effects on least chub habitat from construction, since water sources for the springs and wetlands would not be disturbed or used as dust control or concrete

formation. Least chub habitat is not located near or within the 2-mile transmission line corridors for the other Region II alternatives.

Boreal Toad (Forest Sensitive Species and Colorado Endangered and Utah CAS)

Potential breeding habitat for boreal toad overlaps with the Alternative II-A 250-foot-wide transmission line ROW near Birch Creek and Willow Creek. Potential direct habitat loss could be 800 ft² (0.02 acre), if a culvert or low water construction is required. Vehicle traffic could cause toad mortalities, if construction coincides with migration periods to and from a water source used for breeding or terrestrial habitat during the non-breeding period. By applying a 2-mile dispersal distance around Willow and Birch creeks, potential effects could occur in approximately 17,420 acres of terrestrial habitat. BMPs and design features associated with WWEC would be applicable to boreal toad habitat in Region II.

Impacts from vehicle movement would be considered of a low magnitude. Vehicle traffic could cause toad mortalities, if traffic movement coincides with their movements during breeding periods.

Columbia Spotted Frog (Forest Sensitive Species and Nevada and Utah Protected)

Four habitat areas (Soldier and Willow creeks in Project Segment 320.1 and Currant Creek and unnamed tributary to Currant in segment 340) that contain Columbia spotted frog would be crossed by the Alternative II-A 2-mile transmission line corridor. One of these areas (Soldier Creek) would be crossed by the 250-foot-wide transmission line ROW. Construction activities within these streams could alter habitat used for eggs and rearing of young. Potential direct habitat loss could be 400 ft² (0.01 acre), if a culvert or low water crossing is required at the one ROW crossing. Direct effects of construction activities and maintenance could include mortalities to frogs from vehicle traffic within the ROW or along access roads due to stream crossings or periods when frogs move to upland areas for overwintering. Vehicle traffic also could cause sedimentation in the disturbance area near these streams. BMPs and design features for Columbia spotted frog would be the same as discussed for northern leopard frog. As discussed for California floater, mitigation measures WET-2 and WET-4 would restrict disturbance in the wetland near Currant Creek. Impacts from vehicle traffic during construction would be considered of a low magnitude. Vehicle traffic could cause Columbia spotted frog mortalities, if traffic movement coincides with frog movements during breeding periods.

Northern Leopard Frog (BLM Sensitive and Nevada State Protected)

Three areas (Soldier Creek, Project Segment 320.1 and 320.15, and Currant Creek, Project Segment 340) contain potential habitat for northern leopard frog and would be crossed by Alternative II-A. The potential effects of construction activities on northern leopard frog would be the same as discussed for Region I. Potential loss of habitat would be 400 ft² (0.01 acre), if a culvert is used at the 250-foot-wide transmission line ROW crossing. BMPs and design features associated with WWEC would be applicable to northern leopard frog habitat in Region II. As discussed for California floater, mitigation measures WET-2 and WET-4 would restrict disturbance in the wetland near Currant Creek. Impacts from vehicle traffic would be considered of a low magnitude. Vehicle traffic could cause northern leopard frog mortalities, if traffic movement coincides with frog movements during breeding periods.

Bonneville Cutthroat Trout (BLM and Forest Sensitive Species and Utah Protected and CAS)

Eight streams including Bennie, Currant (Wasatch County), Lake Fork, Nebo, Red, Soldier, Thistle, and Tie Fork creeks would be crossed by the Alternative II-A 2-mile transmission line corridor. All of these streams except Bennie and Nebo creeks would be crossed by the 250-foot-wide transmission line ROW. Direct disturbance to habitat would occur if vehicles or equipment cross any of these streams or if culverts were constructed as part of developing new access roads. Potential loss or alteration of habitat would be 2,800 ft² (0.06 acre), if culverts or low water crossings are required at seven 250-foot-wide transmission line ROW crossings involving small streams. Indirect effects of instream work or surface disturbance near the streams could result in sedimentation or potential fuel spills. The same BMPs and design features discussed for

game fish streams would also apply to streams containing Bonneville cutthroat trout. Other applicable BMPs would be used to protect these species. A White River National Forest management requirement restricts construction of new roads within 350 feet of occupied cutthroat trout streams and 150 feet from the edge of historic floodplains. A Uinta National Forest requirement specifies that work in Tie Fork and Willow creeks in Utah should avoid disturbance to Bonneville and Colorado River cutthroat habitat. These streams are considered to be recovery habitat for these cutthroat subspecies. Mitigation measure **SSS-3** also would be applied to streams that contain spawning habitat for Bonneville cutthroat trout.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on Bonneville cutthroat trout habitat in up to eight streams would be minimized during construction and be considered of a low magnitude. Impacts on spawning special status trout species would be avoided by implementing mitigation measure **SSS-3**.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Three streams (Willow Creek and Green and Strawberry rivers) that contain Colorado River cutthroat trout would be crossed by the Alternative II-A 2-mile transmission line corridor and 250-foot-wide transmission line ROW. Construction- and operations-related effects on Colorado River cutthroat trout could disturb habitat in the smaller stream, Willow Creek. Potential loss of habitat would be 400 ft² (0.01 acre), if a culvert is used on Willow Creek. No crossings would be constructed across the Green or Strawberry rivers. BMPs, design features, and mitigation measure **SSS-3** would minimize effects to Colorado River cutthroat trout.

Southern Leatherside Chub (BLM and Forest Sensitive Species and Utah CAS)

Three streams (Soldier, Hop, and Thistle creeks) containing southern leatherside chub would be crossed by the 250-foot-wide transmission line ROW and 2-mile-wide transmission line corridor. Potential direct effects on southern leatherside chub habitat could occur in these small and mid-size streams due to vehicle and equipment crossings and removal of riparian vegetation. Potential direct habitat loss could be 1,200 ft² (0.03 acre), if culverts or low water crossings are required at three 250-foot-wide transmission line ROW crossings. Indirect effects involving sedimentation and potential fuel spills on southern leatherside chub habitat would be the same as discussed for other fish species. The same BMPs and design features discussed for other sensitive fish species also would be applied to construction activities in or near streams containing southern leatherside chub. The following mitigation measure would be implemented to avoid impacts on spawning chub.

SSS-4 (*Avoid Spawning Habitat Disturbance for Southern Leatherside Chub*): *If spawning areas for southern leatherside chub are known to occur at streams proposed for vehicle crossing or culvert construction, instream disturbance would be scheduled to avoid the spawning period from April through June. The exact dates for avoidance would be determined through discussions with UDWR. All disturbed areas would be restored to pre-construction conditions prior to the next spawning season.*

Effectiveness: This measure would be highly effective in avoiding spawning periods for southern leatherside chub and restoring any disturbed habitat.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah CAS)

The following number of streams that contain these BLM sensitive sucker and chub species would be crossed by the transmission line corridor for Alternative II-A: bluehead sucker (nine streams), flannelmouth sucker (eight streams), and roundtail chub (seven streams). The Alternative II-A 250-foot-wide transmission line ROW would cross nine streams (Cottonwood Creek, Currant Creek, Dry Gulch, Montes Creek, Lake Fork River, and Green, Strawberry, Uinta and White rivers) that contain one or more of these species. Direct disturbance to their habitat could occur in the small to mid-size streams such as Currant, Dry Gulch, Lake Fork, and Montes creeks due to vehicle traffic. Habitat loss could be 2,000 to 2,800 ft² (0.05 to 0.06 acre) for these species, if culverts or low water construction are required in the smaller streams. The same BMPs and

design features discussed for game fish streams would also apply to streams containing these BLM sensitive species.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in nine streams during construction would be of a low magnitude. If roads are constructed across Currant, Dry Gulch, Lake Fork, and Montes creeks, impacts during construction would occur to habitat for special status sucker species and roundtail chub. Disturbed habitat would be restored to pre-construction conditions resulting in construction impacts of a relatively low net magnitude.

Mountain Sucker (BLM Sensitive)

The Alternative II-A 250-foot-wide transmission line ROW would cross two streams (Soldier and Thistle creeks) containing mountain sucker. Habitat loss could be 800 ft² (0.02 acre), if culverts or low water construction are required in this small stream. Potential sediment input and fuel spill risks could occur as a result of construction. The same BMPs and design features discussed for game fish streams would also apply to streams containing this BLM sensitive species.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on mountain sucker habitat in one stream during construction would be of a low magnitude. If a culvert or road is constructed across Soldier Creek, direct loss of habitat could occur. Disturbed habitat from road construction would be restored to pre-construction resulting in construction impacts of a relatively low net magnitude.

Southern Bonneville Pyrg (Utah Protected)

The transmission line corridor for Alternative II-A would cross one unnamed spring near Thistle Creek that is inhabited by the springsnail, southern Bonneville pyrg. The spring is located approximately 600 feet east of the 250-foot-wide transmission line ROW or approximately 500 feet from the ROW. Direct effects of construction could include the potential disturbance to habitat or springsnail mortalities as a result of access road traffic within or near the spring. Disturbance to habitat features involving bottom substrates or aquatic vegetation used by this species would reduce the number of individuals and possibly eliminate the population in this spring. Habitat loss or alteration could occur if vehicles cross this small spring. This spring contains one of six populations known to occur in Utah. Indirect effects of construction could adversely affect water quality and habitat from sediment input or a potential fuel spill near the spring. BMPs and design features involving sediment control and restrictions on refueling within 100 feet of waterbodies would minimize potential indirect effects on this species and habitat. The following mitigation measure is recommended to avoid potential direct effects on southern Bonneville pyrg.

SSS-5 (*Avoid Direct Disturbance to Habitat for Southern Bonneville Pyrg*): No vehicle or equipment disturbance from ROW work or access road construction would be allowed within 300 feet of the unnamed spring located near Thistle Creek that contains southern Bonneville pyrg.

California Floater (BLM Sensitive)

California floater habitat would be crossed by the Alternative II-A 250-foot-wide transmission line ROW at Currant Creek in Juab County. Direct effects of construction could include the potential disturbance to habitat or mortalities as a result of access road traffic within or near the stream or adjacent wetland complex. Two vegetation mitigation measures, WET-2 and WET-4, would protect wetlands by establishing a 500-foot buffer that would restrict direct disturbance. Habitat loss could be 400 ft² (0.01 acre), if a culvert or low water construction is required in Currant Creek. The following mitigation measure is proposed to protect California floater in Currant Creek.

SSS-6 (*Survey to Avoid Direct Disturbance to California Floater Habitat*): *If instream construction is proposed for Currant Creek, a survey would be conducted to determine if California floater is present. If the species is absent, construction would be allowed after meeting UDWR requirements for restoration. If the species is present, relocation of individuals in the disturbance area would be considered to avoid impacts to it.*

In summary, potential direct impacts to California floater would be minimized by implementing mitigation measures **SSS-6**, **WET-2**, and **WET-4**. BMPs, BLM stipulations, and design features would be followed to minimize potential sedimentation or fuel spill impacts to California floater habitat. These protection measures would assist in maintaining the population and contribute to a trend in avoiding federal listing.

USFS Sensitive Species

In total, seven perennial streams are located within the Alternative II-A transmission line corridor in one National Forest (Uinta-Wasatch-Cache) (**Appendix G, Table G-13**). Four of these streams (Soldier, Tie Fork, and Willow creeks and the Strawberry River) contain USFS sensitive species. Species include Bonneville cutthroat trout and southern leatherside chub in Soldier and Tie Fork creeks, and Colorado River cutthroat trout in Willow Creek and Strawberry River. Columbia spotted frog also occurs in Soldier Creek at Project Segment 320.1 and 320.15. Three of the streams would be crossed by the 250-foot-wide transmission line ROW, which could result in a direct loss of aquatic habitat of 400 ft² (0.01 acre) in each stream, if construction of culverts or low water crossings is required. A stipulation for the Uinta-Wasatch-Cache National Forest requires that no actions affect cutthroat trout in Tie Fork and Willow creeks. Therefore, direct disturbance to habitat or other indirect effects involving sediment or fuel spills would not be allowed in these two streams. Sediment input and riparian disturbance would be avoided by following the Uinta-Wasatch-Cache National Forest stipulation that requires a 300-foot buffer along perennial streams.

Alternative II-B

In total, 11 streams (Bitter, Douglas, Dry Pole, Huntington, North Fork Pleasant, and Pleasant creeks and the Green, Lowry, Price, San Pitch, Sevier, and White rivers) that contain special status aquatic species are located within the Alternative II-B 2-mile transmission line corridor. Except for Bitter Creek, Dry Pole Creek, North Fork Pleasant Creek, and the Lowry River, these streams would be crossed by the 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative II-B.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered and BLM Sensitive)

Direct Disturbance and Indirect Water Quality Effects

Construction activities could result in direct disturbance to 4 acres of Colorado pikeminnow critical habitat in the Green and White rivers and 3 acres of razorback sucker critical habitat in the Green River. The 250-foot-wide transmission line ROW would cross critical habitat in Project Segment 220.1 at the two locations. Mitigation measure **SSS-2** would be implemented to avoid disturbance to critical habitat by restricting structures or new roads from being located within the critical habitat area. Potential impacts of sedimentation and fuel spills on Colorado pikeminnow and razorback sucker habitat near the Green River crossing and downstream reaches occupied by all four federally endangered fish species would be minimized by BMPs and design features involving erosion control and spill prevention.

In summary, Alternative II-B would cross 4 acres of critical habitat for Colorado pikeminnow and 3 acres for razorback sucker. Surface disturbance activities near the Green and White rivers pose a risk for sediment and fuel spills for all four federally endangered fish species. A combination of BMPs, design features, and additional mitigation measure **SSS-2** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and razorback sucker and downstream reaches occupied by all four federally endangered fish species.

Water Depletions

Approximately 4 acre-feet for foundation concrete and 254 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 191 acre-feet of construction water use would occur within the Colorado River Basin. The determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by federally endangered fish species in the Upper Colorado River Basin.

Columbia Spotted Frog (Forest Sensitive Species and Nevada and Utah CAS)

One stream (San Pitch River in Sanpete County, Project Segment 310) containing Columbia spotted frog would be crossed by the Alternative II-B 250-foot-wide transmission line ROW and 2-mile transmission line corridor. Direct effects of construction and maintenance activities would be the same as discussed for Alternative II-A. Potential direct loss of aquatic habitat could be 400 ft² (0.01 acre), if a culvert or low water construction is required. BMPs and design features for Columbia spotted frog would be the same as discussed for northern leopard frog. Impacts from construction traffic would be considered a low magnitude. Vehicle traffic could cause Columbia spotted frog mortalities, if traffic movement coincides with frog movements during breeding periods.

Northern Leopard Frog (BLM Sensitive and Nevada State Protected)

Two streams (White River and Douglas Creek) contain potential habitat for northern leopard frog and would be crossed by Alternative II-B. The potential effects of construction activities on northern leopard frog would be the same as discussed for Region I. Potential loss of habitat would be 800 ft², if culverts are used at the 250-foot-wide transmission line ROW crossings. BMPs and design features associated with WWEC would be applicable to northern leopard frog habitat in Region II. Impacts from construction activities would be considered a low magnitude. Vehicle traffic could cause northern leopard frog mortalities if traffic movement coincides with frog movements during breeding periods. Mortalities are expected to be relatively low considering the traffic volume.

Bonneville Cutthroat Trout (BLM and Forest Sensitive Species and Utah Protected and CAS)

Three streams consisting of Dry Pole, North Fork Pleasant, and Pleasant creeks would be crossed by the Alternative II-B 2-mile transmission line corridor. Pleasant Creek is the only stream that would be crossed by the 250-foot-wide transmission line ROW. Direct disturbance to habitat would occur if vehicles or equipment cross any of these streams or if culverts were constructed as part of developing new access roads. Potential habitat loss would be 1,200 ft² (0.03 acre) associated with the Pleasant Creek crossings. Indirect effects of instream work or surface disturbance near the streams could result in sedimentation or potential fuel spills. The same BMPs and design features discussed for game fish streams would also apply to streams containing Bonneville cutthroat trout. Other applicable BMPs would be used to protect these species. Mitigation measure **SSS-3** also would be applied to streams that contain spawning habitat for Bonneville cutthroat trout.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on Bonneville cutthroat trout habitat in up to six streams during construction would be a low magnitude. Impacts on spawning special status trout species would be avoided by implementing mitigation measure **SSS-3**.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Five streams (Bitter and Huntington creeks and the Green, Lowry, and White rivers) containing Colorado River cutthroat trout habitat would be crossed by the Alternative II-B 2-mile transmission line corridor. The Green and White rivers and Huntington Creek also would be crossed by the 250-foot-wide transmission line ROW. Potential habitat loss of 400 ft² (0.01 acre) would occur, if a culvert or low water construction occurred

at the Huntington Creek crossing. BMPs, design features, and mitigation measure **SSS-3** would minimize effects to Colorado River cutthroat trout.

Southern Leatherside Chub (BLM and Forest Sensitive Species and Utah CAS)

Two streams (San Pitch and Sevier rivers) contain southern leatherside chub habitat and would be crossed by the 250-foot-wide transmission line ROW and the 2-mile transmission line corridor. Potential effects of construction and maintenance operations on southern leatherside habitat would be the same as discussed for Alternative II-A. Direct habitat loss could be 1,200 ft² (0.03 acre), if culverts or low water construction is required. The same BMPs and design features discussed for other sensitive fish species also would be applied to construction activities in or near streams containing southern leatherside chub. In addition, mitigation measure **SSS-4** also would be implemented to avoid impacts on spawning.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah CAS)

The following BLM sensitive sucker and chub species occur in streams that would be crossed by the transmission line corridor for Alternative II-B: bluehead sucker (Green River, Huntington Creek, Lowry River, Price River, and White River), flannelmouth sucker (Green, Price, and White rivers), and roundtail chub (Green and White rivers). The number of 250-foot-wide transmission line ROW crossings for these species include four for bluehead sucker, three for flannelmouth sucker, and three for roundtail chub. Direct disturbance to their habitat could occur in the small to mid-size streams such as Huntington Creek due to vehicle traffic. Habitat loss could be 0 to 400 ft² (0.01 acre) for these species, if culverts or low water crossings are required in the smaller streams. The same BMPs and design features discussed for game fish streams would also apply to streams containing these BLM sensitive species.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in five streams during construction would be of a low magnitude. If roads are constructed across Huntington Creek, impacts during construction would occur in habitat for special status sucker species and roundtail chub. Disturbed habitat would be restored to pre-construction resulting in construction impacts of a relatively low net magnitude.

Mountain Sucker (BLM Sensitive)

The Alternative II-B 250-foot-wide transmission line ROW would cross two streams (San Pitch and Sevier rivers) containing mountain sucker. Habitat loss could be 1,200 ft² (0.03 acre), if culverts or low water crossings are required in these streams. Potential sediment input and fuel spill risks could occur as a result of construction. The same BMPs and design features discussed for game fish streams would also apply to streams containing this BLM sensitive species. By implementing erosion control and spill prevention BMPs and design features, water quality effects on mountain sucker habitat in two streams during construction would be of a low magnitude.

USFS Sensitive Species

In total, six perennial streams, one spring, and one pond are located within the Alternative II-B transmission line corridor in one National Forest (Manti-LaSal) (**Appendix G, Table G-13**). Two streams in the Manti-LaSal National Forest contain USFS sensitive species (Bonneville cutthroat trout in Dry Pole Creek and Colorado River cutthroat trout in Lowry River). There would be no direct habitat loss in these two streams, since they would not be crossed by the 250-foot-wide transmission line ROW. Potential sediment input and riparian disturbance would be minimized by Forest management direction that avoids impacts to riparian habitat.

Alternative II-C

In total, 12 streams (Bitter, Cottonwood, Douglas, Ferron, Gooseberry, Little, Lost, Muddy, and Quitcupah creeks and the Green, Sevier, and White rivers.) are located within the 2-mile transmission line corridor that

contains special status aquatic species. All of these streams except Bitter Creek would be crossed by the 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative II-C.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered and BLM Sensitive)

Direct Disturbance and Indirect Water Quality Effects

Direct and indirect effects on the federally endangered fish species in the Upper Colorado River Basin for Alternative II-C would be the same as discussed for Alternative II-B. Alternative II-C would cross 4 acres of critical habitat for Colorado pikeminnow in the Green and White rivers and 3 acres for razorback sucker in the Green River (Project Segment 220.1). Surface disturbance activities near the Green and White rivers pose a risk for sediment and fuel spills for all four federally endangered fish species. A combination of BMPs, design features, and additional mitigation measure **SSS-2** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and razorback sucker and downstream reaches occupied by all four federally endangered fish species.

Water Depletions

Approximately 4 acre-feet for foundation concrete and 269 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 197 acre-feet of construction water use would occur within the Colorado River Basin. The determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by federally endangered fish species in the Upper Colorado River Basin.

Northern Leopard Frog (BLM Sensitive and Nevada State Protected)

Impacts of Alternative II-C on northern leopard frog would be the same as discussed for Alternative II-B. Two streams, the White River and Douglas Creek, with northern leopard frog habitat would be crossed by the Alternative II-C. Potential loss of habitat would be 800 ft² (0.02 acre), if a culvert is used at the 250-foot-wide transmission line ROW crossing on Douglas Creek. Impacts from construction activities would be considered of a low magnitude. Vehicle traffic could cause northern leopard frog mortalities, if traffic movement coincides with frog movements during breeding periods. Mortalities are expected to be relatively low considering the traffic volume.

Bonneville Cutthroat Trout (BLM and Forest Sensitive Species and Utah Protected and CAS)

No streams containing Bonneville cutthroat trout habitat would be crossed by Alternative II-C. Therefore, this alternative would cause no effects on Bonneville cutthroat trout.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Three streams (Bitter Creek and the Green and White rivers) that contain Colorado River cutthroat trout would be crossed by the 2-mile transmission line corridor. The Green and White rivers would be crossed by the 250-foot-wide transmission line ROW for Alternative II-C. Construction- and operations-related effects on Colorado cutthroat trout would not disturb habitat in the two larger rivers. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Colorado River cutthroat trout habitat during construction would be of a low magnitude.

Southern Leatherside Chub (BLM and Forest Sensitive Species and Utah CAS)

Six streams (Gooseberry, Little, Lost, Muddy, and Quitcupah creeks and the Sevier River) contain southern leatherside chub habitat and would be crossed by the 2-mile transmission line corridor. All of these streams except Little Creek would be crossed by the Alternative II-C 250-foot-wide transmission line ROW.

Potential effects of construction and maintenance operations on southern leatherside habitat would be the same as discussed for Alternative II-A. Direct habitat loss could be 2,800 ft² (0.06 acre), if culverts or low water construction is required at seven 250-foot-wide transmission line ROW crossings. The same BMPs and design features discussed for other sensitive fish species also would be applied to construction activities in or near streams containing southern leatherside chub along with mitigation measure **SSS-4**.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah CAS)

The following sucker and chub species occur in streams that would be crossed by the 2-mile transmission line corridor for Alternative II-C: bluehead sucker (Cottonwood Creek, Ferron Creek, Green River, Muddy Creek, and White River), flannelmouth sucker (Ferron Creek, Green River, Muddy Creek, Quitchupah Creek, and White River), and roundtail chub (Green and White rivers). The number of 250-foot-wide transmission line ROW crossings for these species include six for bluehead sucker, seven for flannelmouth sucker, and three for roundtail chub.. Habitat loss could be 0 to 1,600 ft² (0.04 acre) for these species, if culverts or low water construction are required in the smaller streams. No direct disturbance to their habitat would be expected due to the relatively large size of these streams. The same BMPs and design features discussed for game fish streams would also apply to streams containing these BLM sensitive species.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in seven streams during construction would be of a low magnitude. Road disturbance and effects on habitat for these species would not be expected for these larger streams.

Mountain Sucker (BLM Sensitive)

The Alternative II-C 250-foot-wide transmission line ROW would cross three streams (Muddy and Quitchupah creeks and the Sevier River) containing mountain sucker. Habitat loss could be 1,600 ft² (0.04 acre), if culverts or low water construction are required in this small stream. Potential sediment input and fuel spill risks could occur as a result of construction. The same BMPs and design features discussed for game fish streams would also apply to streams containing this BLM sensitive species. By implementing erosion control and spill prevention BMPs and design features, water quality effects on mountain sucker habitat in three streams during construction would be of a low magnitude. If a culvert or road is constructed across Muddy and Quitchupah creeks, direct loss of habitat could occur. Disturbed habitat from road construction would be restored to pre-construction resulting in construction impacts of a relatively low net magnitude.

USFS Sensitive Species

In total, six perennial streams, one reservoir, and four springs are located within the Alternative II-C transmission line corridor in the Fishlake National Forest (**Appendix G, Table G-13**). One of these streams (Little Creek) contains a USFS sensitive species, the southern leatherside chub. The 250-foot-wide transmission line ROW would cross this stream, which could result in a direct loss of aquatic habitat of 400 ft² (0.01 acre), if culverts or low water construction is required. By following the Forest management guidance involving avoidance of riparian areas near streams, effects on riparian vegetation and sediment input would be minimized.

Alternative II-D

In total, seven streams (Cottonwood, Huntington, Mud, and Oak creeks and the Green, San Pitch, and White rivers) are located within the 2-mile transmission line corridor that contains special status aquatic species. All of these streams would be crossed by the 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative II-D.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered and BLM Sensitive)

Direct Disturbance and Indirect Water Quality Effects

Direct effects on critical habitat due to potential disturbance within the 250-foot-wide transmission line ROW crossing would be 4 acres for Colorado pikeminnow in the Green and White rivers and 3 acres for razorback sucker in the Green River. Indirect effects on the federally endangered fish species in the Upper Colorado River Basin for Alternative II-D would be the same as discussed for Alternative II-A.

In summary, Alternative II-D would cross 4 acres of critical habitat for Colorado pikeminnow and 3 acres for razorback sucker. Surface disturbance activities near the Green and White rivers pose a risk for sediment and fuel spills for all four federally endangered fish species. A combination of BMPs, design features, and additional mitigation measure **SSS-2** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and razorback sucker and downstream reaches occupied by all four federally endangered fish species.

Water Depletions

Approximately 3 acre-feet for foundation concrete and 193 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 132 acre-feet of construction water use would occur within the Colorado River Basin. The determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by federally endangered fish species in the Upper Colorado River Basin.

Columbia Spotted Frog (Forest Sensitive Species and Nevada and Utah Protected)

One stream (San Pitch River in Sanpete County, Project Segment 217.15) containing Columbia spotted frog would be crossed by the Alternative II-D 250-foot-wide transmission line ROW and 2-mile transmission line corridor. Direct effects of construction and maintenance activities would be the same as discussed for Alternative II-A. Potential direct loss of aquatic habitat could be 400 ft² (0.01 acre) if a culvert or low water construction is required. BMPs and design features for Columbia spotted frog would be the same as discussed for northern leopard frog. Impacts from construction activities would be considered a low magnitude. Vehicle traffic could cause Columbia spotted frog mortalities, if traffic movement coincides with frog movements during breeding periods.

Northern Leopard Frog (BLM Sensitive and Nevada State Protected)

One stream with northern leopard frog habitat, the White River, would be crossed by the Alternative II-D 2-mile transmission line corridor. The potential effects of construction activities on northern leopard frog would be the same as discussed for Region I, but only one habitat area would be crossed by the Alternative II-D 250-foot-wide transmission line ROW. There would be no loss of habitat, since culverts or low water construction would not occur at the White River crossing. Impacts from construction activities would be considered a low magnitude. Vehicle traffic could cause northern leopard frog mortalities, if traffic movement coincides with frog movements during breeding periods. Mortalities are expected to be relatively low considering the traffic volume.

Bonneville Cutthroat Trout (BLM and Forest Sensitive Species and Utah Protected and CAS)

Three streams consisting of Mud, Oak, and Cottonwood creeks would be crossed by the Alternative II-D 2-mile transmission line corridor and 250-foot-wide transmission line ROW. Direct disturbance to habitat would occur if vehicles or equipment cross any of these streams or if culverts were constructed as part of developing new access roads. Potential habitat loss would be 1,200 ft² (0.03 acre) associated with the three 250-foot-wide transmission line ROW crossings. Indirect effects of instream work or surface disturbance

near the streams could result in sedimentation or potential fuel spills. The same BMPs and design features discussed for game fish streams would also apply to streams containing Bonneville cutthroat trout. Other applicable BMPs would be used to protect these species. Mitigation measure **SSS-3** also would be applied to streams that contain spawning habitat for Bonneville cutthroat trout.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on Bonneville cutthroat trout habitat in three streams during construction would be of a low magnitude. Impacts on spawning special status trout species would be avoided by implementing mitigation measure **SSS-3**.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Four streams (Huntington and Willow creeks and the Green and White rivers) that contain Colorado River cutthroat trout would be crossed by the 2-mile transmission line corridor and 250-foot-wide transmission line ROW for Alternative II-D. Construction- and operations-related effects on Colorado River cutthroat trout could disturb habitat in Huntington and Willow creeks. Direct loss of habitat could be 800 ft² (0.02 acre), if culverts or low water construction is required at the Willow Creek crossing. BMPs, design features, and mitigation measure **SSS-3** would minimize effects to Colorado River cutthroat trout. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Colorado River cutthroat trout habitat in four streams during construction would be of a low magnitude.

Southern Leatherside Chub (BLM and Forest Sensitive Species and Utah CAS)

Two streams (Hop Creek and the San Pitch River) contain southern leatherside chub habitat and would be crossed by the 2-mile transmission line corridor and the 250-foot-wide transmission line ROW. Potential effects of construction and maintenance operations on southern leatherside habitat would be the same as discussed for Alternative II-A. Direct habitat loss could be 800 ft² (0.02 acre) if culverts or low water construction is required. The same BMPs and design features discussed for other sensitive fish species also would be applied to construction activities in or near streams containing southern leatherside chub along with mitigation measure **SSS-4**.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah CAS)

The following number of streams that contain these sucker and chub species would be crossed by the 2-mile transmission line corridor for Alternative II-D: bluehead sucker (Green and White rivers), flannelmouth sucker (Green and White rivers), and roundtail chub (Green and White rivers). The Alternative II-D 250-foot-wide transmission line ROW would cross two streams (Green and White rivers) that contain one or more of these species. No direct disturbance to their habitat would be expected due to the relatively large size of these streams. The same BMPs and design features discussed for game fish streams would also apply to streams containing these BLM sensitive species.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in two streams during construction would be of a low magnitude. Road disturbance and effects on habitat for these species would not be expected for these larger streams.

Mountain Sucker (BLM Sensitive)

The Alternative II-D 250-foot-wide transmission line ROW would cross two streams (Mud Creek and the San Pitch River) containing mountain sucker. Habitat loss could be 800 ft² (0.02 acre), if culverts or low water construction are required in these streams. Potential sediment input and fuel spill risks could occur as a result of construction. The same BMPs and design features discussed for game fish streams would also apply to streams containing this BLM sensitive species. By implementing erosion control and spill prevention BMPs and design features, water quality effects on mountain sucker habitat in two streams during construction would be of a low magnitude. If a culvert or road is constructed across Mud Creek and the San

Pitch River, direct loss of habitat could occur. Disturbed habitat from road construction would be restored to pre-construction resulting in construction impacts of a relatively low net magnitude.

USFS Sensitive Species

Seven streams and two reservoirs in the Manti-LaSal National Forest occur within the Alternative II-D 2-mile transmission line corridor (**Appendix G, Table G-13**). Two streams (Huntington and Cottonwood creeks) contain USFS sensitive species, Bonneville cutthroat trout (Huntington Creek) and Colorado River cutthroat trout (Cottonwood Creek). Cottonwood Creek would be crossed by the 250-foot-wide transmission line ROW, which could result in direct loss of aquatic habitat of 400 ft² (0.01 acre), if culverts or low water construction is required. By following the Forest management guidance involving avoidance of riparian areas near streams, effects on riparian vegetation and sediment input would be minimized.

Alternative II-E

In total, 17 streams (Bennie, Clear, Cottonwood, Dry Gulch, Kyune, Lake Fork, Montes, Nebo, Soldier, Tabbyune, Thistle, Tie Fork, and West Fork Willow creeks and the Duchesne, Green, Uinta, and White rivers) are located within the 2-mile transmission line corridor that contains special status aquatic species. Except for Clear, Kyune, and Tabbyune creek and the White River, these streams would be crossed by the 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative II-E.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered and BLM Sensitive)

Direct Disturbance and Indirect Water Quality Effects

Surface disturbance within the Alternative II-E 250-foot-wide transmission line ROW crossing near the Green River could affect 2 acres for both Colorado pikeminnow and razorback sucker. Indirect effects on Colorado pikeminnow and razorback sucker and on the downstream reaches occupied by all four federally endangered fish species would be the same as discussed for Alternative II-A.

In summary, Alternative II-E would cross 2 acres of critical habitat for both Colorado pikeminnow and razorback sucker in the Green River. Surface disturbance activities near the Green River pose a risk for sediment and fuel spills for all four federally endangered fish species. A combination of BMPs, design features, and additional mitigation measure **SSS-2** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and razorback sucker and downstream reaches occupied by all four federally endangered fish species.

Water Depletions

Approximately 3 acre-feet for foundation concrete and 196 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 117 acre-feet of construction water use would occur within the Colorado River Basin. The determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by federally endangered fish species in the Upper Colorado River Basin.

Boreal Toad (Forest Sensitive Species and Colorado Endangered and Utah CAS)

Boreal toad habitat within the Sowers Creek drainage is located within the Alternative II-E 2-mile transmission line corridor and would be crossed 15 times by the 250-foot-wide transmission line ROW. Potential breeding habitat for this toad species could be disturbed by vehicle crossings or culvert construction in Sowers Creek (6,000 ft² or 0.14 acre for 15 crossings). Vehicle traffic within the 2-mile transmission line corridor also could disturb upland habitat used by this toad species during non-breeding periods. By applying a 2-mile dispersal distance around Sowers Creek, potential effects could occur within

approximately 28,536 acres. Vehicle traffic could cause mortalities to boreal toads, if construction activities overlap with dispersal periods to and from Sowers Creek. However, mortalities are expected to be minor due to low traffic volumes. Indirect effects involving sedimentation and potential fuel spills on breeding habitat in Sowers Creek would be minimized by BMPs and design features for erosion control and refueling restrictions near waterbodies. The following mitigation measure is proposed to reduce potential direct disturbance on breeding habitat for boreal toad.

SSS-7 (*Reduce Crossings of Sowers Creek to Protect Boreal Toad Breeding Habitat*): *The ROW alignment would be evaluated so that the number of Sowers Creek crossings can be reduced. The portion of the creek that would be crossed by the ROW also would be evaluated as breeding habitat for boreal toad to identify any priority areas that should be avoided if possible.*

Effectiveness: This measure would be highly effective in reducing direct disturbance effects on breeding habitat for boreal toad.

In summary, implementation of BMPs, design features, and additional mitigation measure **SSS-7** would minimize direct and indirect effects to a minor level for boreal toad.

Northern Leopard Frog (BLM Sensitive and Nevada State Protected)

Two streams, Soldier Creek and the White River, with northern leopard frog habitat would be crossed by the Alternative II-E 250-foot-wide transmission line ROW. The 250-foot-wide transmission line ROW crossings are five for Soldier Creek and one for the White River. Potential impacts would consist of habitat disturbance and mortalities due to construction traffic. Potential loss of habitat would be 2,000 ft² (0.05 acre), if culverts are used at the Soldier Creek 250-foot-wide transmission line ROW crossings. BMPs and design features would be implemented to minimize effects of construction activities and on northern leopard habitat. Impacts from construction activities would be considered a low magnitude. Vehicle traffic could cause northern leopard frog mortalities, if traffic movement coincides with frog movements during breeding periods. Mortalities are expected to be relatively low considering the traffic volume.

Bonneville Cutthroat Trout (BLM and Forest Sensitive Species and Utah Protected and CAS)

Seven streams consisting of Bennie, Clear, Lake Fork, Nebo, Soldier, Thistle, and Tie Fork creeks would be crossed by the Alternative II-E 2-mile transmission line corridor. There are eight 250-foot-wide transmission line ROW crossings for these streams. Potential loss of habitat would be 3,200 ft² (0.07 acre), if culverts or low water construction is required. Indirect effects of instream work or surface disturbance near the streams could result in sedimentation or potential fuel spills. The same BMPs and design features discussed for game fish streams would also apply to streams containing Bonneville cutthroat trout. Other applicable BMPs would be used to protect these species, as discussed for Alternative II-A. Mitigation measure **SSS-3** also would be applied to streams that contain spawning habitat for Bonneville cutthroat trout.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on Bonneville cutthroat trout habitat in seven streams during construction would be of a low magnitude. Impacts on spawning special status trout species would be avoided by implementing mitigation measure **SSS-3**.

Colorado River Cutthroat Trout (BLM and Forest Sensitive Species and Utah CAS)

Five streams that contain Colorado River cutthroat trout would be crossed by the 2-mile transmission line corridor (Kyune, Tabbyune, and West Fork Willow creeks and the Green and White rivers). The Green and White rivers are the only streams that would be crossed by the 250-foot-wide transmission line ROW. There would be no direct loss of habitat from construction activities at these large river crossings. BMPs, design features, and mitigation measure **SSS-2** would minimize effects to Colorado River cutthroat trout.

Southern Leatherside Chub (BLM and Forest Sensitive Species and Utah CAS)

Three streams (Hop, Soldier, and Thistle creeks) contain southern leatherside chub habitat and would be crossed by the transmission line corridor. Potential effects of construction and maintenance operations on southern leatherside chub habitat would be the same as discussed for Alternative II-A. Direct habitat loss could be 2,800 ft² (0.06 acre), if culverts or low water construction is required. The same BMPs and design features discussed for other sensitive fish species also would be applied to construction activities in or near streams containing southern leatherside chub along with mitigation measure **SSS-4**. By implementing these protection measures, effects on southern leatherside chub habitat during construction would be of a low magnitude.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah CAS)

The following number of streams that contain these sucker and chub species would be crossed by the 2-mile transmission line corridor for Alternative II-E: seven streams (Cottonwood Creek, Dry Gulch Creek, Duchesne River, Green River, Montes Creek, Uinta River, and White River) each for bluehead sucker, flannelmouth sucker, and roundtail chub. The Alternative II-E 250-foot-wide transmission line ROW would cross six streams (Duchesne, Green, Uinta, and White rivers and Dry Gulch and Montes creeks) that contain one or more of these species. Habitat loss could be 1,200 ft² (0.03 acre) for each of these species, if culverts or low water construction are required in the smaller streams such as Dry Fork and Montes creeks. The same BMPs and design features discussed for game fish streams would also apply to streams containing these BLM sensitive species.

In summary, by implementing erosion control and spill prevention BMPs and design features, water quality effects on special status sucker and roundtail chub habitat in seven streams during construction would be of a low magnitude. Road disturbance and effects on habitat for these species would not be expected for the larger streams.

Mountain Sucker (BLM Sensitive)

The Alternative II-E 250-foot-wide transmission line ROW would cross one stream (Soldier Creek) containing mountain sucker. Habitat loss could be 2,000 ft² (0.05 acre), if culverts or low water construction are required at the five 250-foot-wide transmission line ROW crossings. Potential sediment input and fuel spill risks could occur as a result of construction. The same BMPs and design features discussed for game fish streams would also apply to streams containing this BLM sensitive species. By implementing erosion control and spill prevention BMPs and design features, water quality effects on mountain sucker habitat in one stream during construction would be of a low magnitude. If a culvert or road is constructed across Soldier Creek, direct loss of habitat could occur. Disturbed habitat from road construction would be restored to pre-construction conditions resulting in construction impacts of relatively low net magnitude.

Southern Bonneville Pyrg (Utah Protected)

One unnamed spring near Thistle Creek containing the springsnail, southern Bonneville pyrg, is located within the Alternative II-E 2-mile transmission line corridor. The spring would not be crossed by the 250-foot-wide transmission line ROW. Potential impacts to this special status springsnail would be the same as discussed for Alternative II-A. BMPs, design features, and mitigation measure **SSS-5** would avoid direct habitat impacts and minimize water quality effects from sedimentation or spills on springsnail habitat. Indirect effects to southern Bonneville pyrg habitat could occur in an unnamed spring near Thistle Creek due to vehicle traffic. Mitigation measure **SSS-5** would be implemented to avoid direct impacts to this springsnail species and its habitat.

USFS Sensitive Species

The Alternative II-E 2-mile transmission line corridor overlaps with waterbodies in the following national forests: Uinta-Wasatch-Cache (Indian, Sheep, and Tie Fork creeks), Manti-LaSal (Long Hollow, Lookout,

and Sky High springs), and Ashley (Sowers Creek). One of these waterbodies (Tie Fork Creek) contains the USFS sensitive species, Bonneville cutthroat trout. Potential direct loss of aquatic habitat includes 400 ft² (0.01) if culverts or low water construction is required. A stipulation for the Uinta-Wasatch-Cache National Forest requires that no actions affect cutthroat trout in Tie Fork Creek. Therefore, direct disturbance to habitat or other indirect effects involving sediment or fuel spills would not be allowed in Tie Fork Creek. Sediment input and riparian disturbance would be avoided by following the Uinta-Wasatch-Cache National Forest stipulation that requires a 300-foot buffer along perennial streams.

Alternative II-F (Agency Preferred)

Eighteen streams with special status aquatic species are located within the Alternative II-F 2-mile transmission line corridor (Bennie, Clear, Hop, Kyune, Kyune Creek Right Fork, Lake Fork, Nebo, Soldier, Tabbyune, Thistle, Tie Fork, West Fork Willow, and Willow creeks, White River Fork and White River [tributaries to the Price River], and the Green, Price, Sevier, and White rivers). Eleven of these streams (Hop, Lake Fork, Soldier, Tabbyune, Thistle, Tie Fork, and Willow creeks, White River [tributary to the Price River], and the Green, Sevier, and White rivers) also would be crossed by the 250-foot-wide transmission line ROW. Species-specific effects are discussed below for Alternative II-F.

Colorado Pikeminnow, Humpback Chub, Bonytail, and Razorback Sucker (Federally Endangered and BLM Sensitive)

Direct Disturbance and Indirect Water Quality Effects

Surface disturbance within the Alternative II-F 250-foot-wide transmission line ROW crossing could affect critical habitat within the 100-year floodplain of the Green and White rivers. Potential disturbance could include 4 acres for Colorado pikeminnow (1 acre in the White River and 3 acres in the Green River) and 3 acres for razorback sucker in the Green River. Indirect effects on Colorado pikeminnow and razorback sucker and downstream reaches containing these two species plus bonytail and humpback chub would be the same as discussed for Alternative II-A.

In summary, critical habitat for Colorado pikeminnow and razorback sucker could be affected by project construction within the 100-year floodplain of the Green and White river crossings by the 250-foot-wide transmission line ROW. In total, approximately 4 and 3 acres, respectively, could be affected for these species. A combination of BMPs, design features, and additional mitigation measure **SSS-2** would be implemented to avoid impacts to critical and occupied habitat for Colorado pikeminnow and razorback sucker and downstream reaches occupied by all four federally listed species.

Water Depletions

Approximately 3 acre-feet for foundation concrete and 197 acre-feet for dust control would be obtained from municipal sources, commercial sources, or a temporary water use agreement with landowners holding existing water rights. An estimated 117 acre-feet of construction water use would occur within the Colorado River Basin. Specific water sources would be evaluated to determine if there are connections to surface water in the Upper Colorado River Basin, which provides habitat for four federally listed fish species. The determination of potential depletions would be made after specific water sources are identified. The evaluation would determine if water use could affect surface water quantity or habitat used by the federally listed fish species in the Upper Colorado River Basin.

Northern Leopard Frog (BLM Sensitive and Nevada State Protected)

Northern leopard frog habitat associated with Soldier Creek and the White River crossings by the Alternative II-F 250-foot-wide transmission line ROW potentially could be disturbed by construction vehicles and equipment. Potential impacts would consist of habitat disturbance associated with up to five Soldier Creek crossings and mortalities due to construction traffic. Potential habitat loss or alteration would be

2,000 ft² (0.05 acre), if culverts or low water construction occurs at the Soldier Creek crossings. BMPs and design features would be implemented to minimize effects of construction activities on this amphibian species. Vehicle traffic near Soldier Creek and the White River could cause mortalities, if traffic coincides with movement periods to and from aquatic habitat.

Bonneville Cutthroat Trout (BLM and Forest Sensitive and Utah Protected and CAS)

Seven streams with habitat for Bonneville cutthroat trout would be crossed by the Alternative II-F 2-mile transmission line corridor (Bennie, Clear, Lake Fork, Nebo, Soldier, Thistle, and Tie Fork creeks). Habitat could be altered at four of these streams, with the number of 250-foot-wide transmission line ROW crossings noted in parentheses: Lake Fork (1), Soldier (5), Thistle (1), and Tie Fork (1). Potential loss of habitat could be 3,200 ft² (0.07 acre), if culverts or low water construction is required. Indirect effects of construction on habitat for this species could include sedimentation or fuel spills. The same BMPs and design features discussed for game fish species would be implemented for streams containing Bonneville cutthroat trout. Mitigation measure **SSS-3** also would be applied to the seven streams containing spawning habitat for this species. By implementing BMPs, design features, and additional mitigation, impacts would be reduced for streams containing Bonneville cutthroat trout. Construction of culverts could remove a small amount of habitat for this species in four streams. Mitigation measure **SSS-3** would avoid direct impacts to Bonneville cutthroat trout spawning during construction.

Colorado River Cutthroat Trout (BLM and Forest Sensitive and Utah CAS)

Nine streams that contain Colorado River cutthroat trout would be crossed by the Alternative II-F 2-mile transmission line corridor (Kyune, Kyune Creek Right Fork, Tabbyune, West Fork Willow, and Willow creeks, White River and White River Right Fork [tributaries to the Price River], and the Green and White rivers). Five of these streams (Green and White rivers, Tabbyune Creek, Willow Creek, and the White River [tributary to the Price River]) would be crossed by the 250-foot-wide transmission line ROW. Potential loss or alteration of approximately 1,200 ft² (0.03 acre) of habitat could occur if a culvert or low water construction is required in Tabbyune and Willow creeks and the White River (Price River tributary). Other direct and indirect effects of construction on cutthroat habitat would be the same as discussed for Alternative II-A. BMPs, design features, and mitigation measure **SSS-3** would minimize effects on Colorado River cutthroat trout. By implementing erosion control, spill prevention, and riparian protection BMPs and design features, other direct and indirect effects of construction on habitat for this cutthroat species would be of low magnitude.

Southern Leatherside Chub (BLM and Forest Sensitive Species and Utah CAS)

Potential impacts from access road use could affect southern leatherside chub habitat in four streams located within the Alternative II-F 2-mile transmission line corridor (Hop, Soldier, and Thistle creeks and the Sevier River). Direct effects on habitat also could occur at four 250-foot-wide transmission line ROW crossings (one crossing each in Hop and Thistle creeks and two Sevier River crossings). Potential habitat loss or alteration would be approximately 1,600 ft² (0.04 acre), if culverts or low water construction are required. The same BMPs and design features discussed for other sensitive fish species also would be implemented for streams containing southern leatherside chub. In addition, mitigation measure **SSS-4** would avoid direct impacts to spawning chub. By implementing erosion control, spill prevention, and riparian protection BMPs and design features, other direct and indirect effects of construction on habitat for this chub species would be of low magnitude.

Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub (BLM Sensitive and Utah CAS)

Two streams, the Green and White rivers, would be crossed by the Alternative II-F 2-mile transmission line corridor and 250-foot-wide transmission line ROW for these three special status sucker species. When considering multiple crossings of the White River, there would be total of four ROW crossings for the three species. There would be no direct loss or alteration of habitat, since vehicles or equipment would not cross or enter the Green and White rivers. Other indirect effects of construction on sucker habitat would be the

same as discussed for Alternative II-A. BMPs and design features would minimize effects on these three sucker species. In summary, by implementing erosion control, spill prevention, and riparian protection BMPs and design features, effects on special status sucker species in the Green and White rivers would be of low magnitude. Alternative II-F would cause direct loss or alteration of special status sucker habitat, since culverts or low water construction would not be used.

Mountain Sucker (BLM Sensitive)

Potential impacts from access road use could affect mountain sucker habitat in two streams located within the Alternative II-F 2-mile transmission line corridor (Soldier Creek and the Sevier River). Direct effects on habitat also could occur at seven 250-foot-wide transmission line ROW crossings (five Soldier Creek crossings and two Sevier River crossings). Potential habitat loss or alteration would be approximately 2,800 ft² (0.06 acre), if culverts or low water construction are required. Other effects on mountain sucker and its habitat would be the same as discussed for Alternative II-A. The same BMPs and design features for sediment control, spill prevention, and riparian protection discussed for other special status fish species would be implemented for construction near streams containing mountain sucker. By implementing erosion control, spill prevention, and riparian protection BMPs and design features, other direct and indirect effects of construction on mountain sucker habitat would be of low magnitude.

Southern Bonneville Pyrg (Utah Protected)

One unnamed spring near Thistle Creek containing the springsnail, southern Bonneville pyrg, is located within the Alternative II-F 2-mile transmission line corridor. The spring would not be crossed by the 250-foot-wide transmission line ROW. Potential impacts to this special status springsnail would be the same as discussed for Alternative II-A. BMPs, design features, and mitigation measure **SSS-5** would avoid direct habitat impacts and minimize water quality effects from sedimentation or spills on springsnail habitat.

USFS Sensitive Species

The Alternative II-F 2-mile transmission line corridor would cross two streams (Tie Fork and Soldier creeks) in the Uinta-Wasatch-Cache National Forest (**Appendix G, Table G-13**). Both streams contain USFS sensitive species, Bonneville cutthroat trout and southern leatherside chub. The 250-foot-wide transmission line ROW for Alternative II-F would only cross Tie Fork Creek. Potential direct loss or alteration of habitat in Tie Fork Creek would be 400 ft² (0.01 acre), if a culvert or low water crossing is required. However, Uinta-Wasatch-Cache National Forest stipulations require that no actions affect cutthroat trout populations in Tie Fork Creek. Impacts on riparian vegetation would be avoided by a stipulation that requires a 300-foot buffer along perennial streams. BMPs and design features involving sediment control and spill prevention would be implemented during construction to minimize adverse effects on water quality in the two streams inhabited by Bonneville cutthroat trout and southern leatherside chub.

Alternative Variation in Region II

Emma Park Alternative Variation

Potential impacts of constructing the Emma Park Alternative Variation on special status aquatic species would be similar to the comparable portion of Alternative II-F, based on the number of streams located within the 2-mile transmission line corridors that contain special status species. In total, four streams (Kyune, Kyune Right Fork, Tabbyune, and White River Right Fork) are located within the 2-mile transmission line corridor for the Emma Park Alternative Variation and the comparable portion of Alternative II-F. All of these streams contain the special status species, Colorado River cutthroat trout. There would be a slightly greater risk of sediment input to Kyune and Tabbyune creeks as a result of 250-foot-wide transmission line ROW crossings by the Emma Park Alternative Variation. However, erosion control measures would be implemented to reduce sediment-related impacts for the Emma Park Alternative Variation and Alternative II-F.

Alternative Connectors in Region II

The Castle Dale, Highway 191, Price, Lyndyll, and IPP East alternative connectors would have no impacts on special status aquatic species, since these alternatives would not cross streams that support habitat for special status fish, amphibian, or invertebrate species.

Region II Conclusion

Based on a comparison of impact parameters for Region II alternatives, potential impacts to special status aquatic species would be greatest for Alternative II-A (Applicant Proposed), II-E, and II-F (Agency Preferred). Potential effects for Alternatives II-B, II-C, and II-D would be similar and lower compared to Alternatives II-A, II-E, and II-F (**Table 3.10-13**). Alternatives II-A, II-E, and II-F would cross the highest number of streams with special status aquatic species (17 or 18) and potential alteration or loss of habitat (upper end of range for some species being 2,800 to 6,000 ft² or 0.06 to 0.14 acre). In comparison, the other three alternatives would cross 7 to 12 streams with special status aquatic species and result in loss or alternation of habitat of 1,200 to 2,800 ft² or 0.03 to 0.06 acre (upper end of range for some species). Less than 0.1 percent of special status species habitat would be affected by each of the six alternatives. Potential effects on critical habitat for federally listed fish species (Colorado pikeminnow and razorback sucker) would be similar for all alternatives (2 to 4 acres that would be crossed by the 250-foot-wide transmission line ROW). Potential disturbance to riparian areas near streams containing special status aquatic species would be similar for all alternatives (**Table 3.10-14**). Alternatives II-A and II-E also would result in increased new road density in 13 and 12 watersheds, respectively, compared to 8 or 11 watersheds for the other alternatives (**Table 3.10-15**). Alternative II-F (Agency Preferred) could affect road densities in 11 watersheds. Even though the greatest level of impacts are associated with Alternatives II-A, II-E, and II-F, project effects on special status species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, design features, and additional mitigation (Section 3.10.6.4 and **Appendix C**). The only potential long-term impacts would be in streams where a culvert would displace stream bottom habitat. In comparison with available stream habitat, the relatively small long-term impacts of all alternatives are unlikely to impact the population viability of special status aquatic species inhabiting these streams.

3.10.6.5 Region III

Table 3.10-16 provides a summary of impact parameters used to describe impacts for alternative routes in Region III. Based on species occurrence information and habitat associations, special status aquatic species that were analyzed by the proposed Project in Region III included two amphibians, nine fish, and one invertebrate species (**Table 3.10-6**). Species occurrence in Region III streams is provided in **Appendix G, Tables G-8** for streams and **G-9** for waterbodies. Project Segment ID numbers referenced in this section are listed in **Tables G-8** and **G-9** and depicted in **Figure 2-23**. Parameter information in **Table 3.10-16** is discussed separately for each of the Region III alternatives.

Table 3.10-16 Summary of Region III Alternative Route Impacts for Special Status Aquatic Species

Parameter	Alternative III-A	Alternative III-B	Alternative III-C
Number of streams with special status aquatic species that would be crossed by 250-foot-wide transmission line ROWs	4	3	1
Number of streams with special status aquatic species that would be crossed by 2-mile transmission line corridors or located within 2 miles downstream of corridor boundaries	4	3	1
Number of streams with federally listed aquatic species ¹ that would be crossed by 250-foot-wide transmission line ROWs	1	1	0
Acres of critical habitat for federally listed aquatic species that would be crossed by 250-foot-wide transmission line ROWs	0	0	0

Table 3.10-16 Summary of Region III Alternative Route Impacts for Special Status Aquatic Species

Parameter	Alternative III-A	Alternative III-B	Alternative III-C
Potential Aquatic Habitat Alteration or Loss ² (ft ²) (acres shown in parentheses)			
Virgin River chub	400 (0.01)	400 (0.01)	0
Virgin River spinedace	1,200 (0.03)	0	0
Bluehead sucker	400 (0.01)	0	0
Roundtail chub	400 (0.01)	0	0
Meadow Valley Wash desert sucker	400 (0.01)	1,200 (0.03)	400 (0.01)
Meadow Valley Wash speckled dace	400 (0.01)	1,200 (0.03)	400 (0.01)
Moapa speckled dace	400 (0.01)	400 (0.01)	0
Moapa White River springfish	400 (0.01)	400 (0.01)	0
Arizona toad	800 (0.02)	400 (0.01)	400 (0.01)

¹ Federal listing is under review for Virgin River chub.

² Habitat loss represents area that could be permanently or temporarily removed due to the use of a culvert or low water crossing or temporarily disturbed from the instream use of equipment.

Parameter information regarding riparian disturbance and road density is provided in **Tables 3.10-17** and **3.10-18**. The analyses focus on streams that contain special status aquatic species. A summary of these parameters is provided below.

Table 3.10-17 Ground Disturbance (Acres) for Buffer Distances from Riparian Habitat Associated with Special Status Species, Region III Corridor

Streams	Alternatives					
	III-A		III-B		III-C	
	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet
Construction	6	20	7	21	2	8
Operation	2	6	2	5	1	2

- Riparian Disturbance – A comparison of the construction and operation effects to riparian vegetation near streams containing special status aquatic species indicates that Alternatives III-A and III-B would have the highest acres of potential disturbance. However, these impacts would be reduced by BLM and USFS stipulation requirements that range from avoiding a buffer area of 200 to 1,200 feet adjacent to perennial streams to total avoidance of riparian areas. In conclusion, the disturbance to riparian vegetation would be avoided on BLM and USFS lands. There could be disturbance on private lands.
- Road Density – The number of watersheds that would be crossed by the Region III alternative 250-foot-wide transmission line ROWs range from 1 (III-C) to 3 (III-B). The road density units are highest for Alternative III-B. The increase in new road density ranged from <0.1 to 0.4 mile/mile², with the highest density increase in the Lower Meadow Valley Wash watershed (Alternative III-B). BMPs and design features would be implemented to reduce sediment input to streams including those that support special status aquatic species.

Table 3.10-18 Open Road Density (Miles/Mile²) within 100 and 300 Feet of Stream Crossings Associated with Special Status Species in Region III Corridor

Watershed	III-A					Watershed	III-B				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Lower Muddy River	1.70	2.80	0.11	0.23	Muddy River	Clover Creek	7.75	5.63	0	0	Clover Creek (1)
Moody Wash	2.09	3.02	0	0	Magotsu Creek (1), Moody Wash (1), Spring Creek (1)	Lower Meadow Valley Wash	0.38	1.00	0.31	0.36	Meadow Valley Wash (1)
						Upper Muddy River	1.02	1.92	0.07	0.09	Muddy River (1)
Watershed	III-C										
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)						
	100 feet	300 feet	100 feet	300 feet							
Cathedral Gorge-Meadow Valley Wash	5.05	4.66	0	0	Meadow Valley Wash (1)						

Note: Zero indicates no new roads within the buffer area.

Alternative III-A (Applicant Proposed)

In total, four streams (Magotsu Creek, Spring Creek, Moody Wash, and the Muddy River) are located within the 2-mile transmission line corridor that contains special status aquatic species. All four streams would be crossed by the 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative III-A.

Virgin River Chub (Federally Endangered and BLM Sensitive)

The 250-foot-wide transmission line ROW and transmission line for Alternatives III-A would cross one stream, the Muddy River, which contains Virgin River chub. The types of impacts that could result from vehicle traffic and equipment disturbance within the ROW and access roads would be the same as discussed for other fish species. Direct disturbance to habitat would occur if vehicles cross the river, culverts are constructed, or riparian vegetation is removed during construction. Habitat loss could be 400 ft² (0.01 acre), if culverts or low water construction is required. Indirect effects involving sedimentation or fuel spill risks would result from disturbance near the Muddy River. BMPs and design features would minimize erosion effects on waterbodies and restrict refueling within 100 feet of the Muddy River. The following mitigation measure is proposed to avoid vehicle crossing and road disturbance effects on this species:

SSS-8 (*No Vehicle Crossings or New Roads in the Muddy River*): No vehicle crossings or new roads would be constructed for the Muddy River. This measure would protect habitat for special status fish species (Virgin River chub, Moapa speckled dace, Moapa White River springfish, Meadow Valley Wash desert sucker, and Meadow Valley Wash speckled dace) in the Muddy River.

Effectiveness: This measure would be highly effective in avoiding direct disturbance to habitat for special status fish species in the Muddy River.

By implementing erosion control and spill prevention BMPs and design features, water quality effects on Virgin River chub habitat in the Muddy River during construction would be of a low magnitude. Direct impacts on Virgin River chub habitat would be avoided by implementing mitigation measure **SSS-8**.

Virgin River Spinedace (BLM Sensitive, Nevada Protected, and Utah CAS)

Three streams containing Virgin River spinedace, Magotsu Creek, Moody Wash, and Spring Creek in Utah, would be crossed by the Alternative III-A 250-foot-wide transmission line ROW and 2-mile transmission line corridor. Direct disturbance to habitat could occur if vehicles cross these streams or culverts are constructed. Direct loss of habitat could be 1,200 ft² (0.03 acre), if culverts or low water construction is required. Indirect effects on this species would be the same as discussed for other fish species. The same BMPs and design features would be implemented to reduce impacts from erosion and fuel spills. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Virgin River spinedace habitat during construction would be of a low magnitude. If roads are constructed across Magotsu and Spring creeks or Moody Wash, construction would directly disturb habitat for this species. Disturbed habitat from any instream construction would be restored to pre-construction conditions resulting in construction impacts of a relatively low net magnitude. Culvert installation would be a permanent loss of habitat.

Bluehead Sucker and Roundtail Chub (BLM Sensitive and Utah CAS)

Potential impacts to these two fish species could occur as a result of the Alternative III-A 250-foot-wide transmission line ROW crossings and potential access road use within the transmission line corridor at the Magotsu Creek crossing. Direct and indirect effects would be the same as discussed for other fish species such as the Virgin River spinedace. Direct loss of habitat could be 400 ft² (0.01 acre) for each species, if a culvert or low water construction is required. The same BMPs and design features would be implemented to minimize direct impacts on habitat and indirect effects from erosion and fuel spill effects. By implementing erosion control and spill prevention BMPs and design features, water quality effects on bluehead sucker and

roundtail chub habitat during construction would be of a low magnitude. If roads are constructed across Magotsu Creek, construction impacts would occur to habitat for this species. Disturbed habitat from instream construction would be restored to pre-construction conditions resulting in construction impacts of a relatively low magnitude. A culvert installation would result in permanent loss of habitat.

Meadow Valley Wash Desert Sucker and Meadow Valley Wash Speckled Dace (BLM Sensitive and Nevada Protected)

Construction activities could adversely affect habitat for these two species at the Muddy River crossing. Direct loss of habitat could be 400 ft² (0.01 acre) for each species if a culvert or low water construction is required. The same BMPs and design features and additional mitigation measure **SSS-8** would be implemented to minimize direct and indirect impacts on these species. By implementing erosion control and spill prevention BMPs and design features during construction, water quality effects on Meadow Valley Wash desert sucker and speckled dace habitat in the Muddy River would be of a low magnitude. Direct impacts on habitat would be avoided by implementing mitigation measure **SSS-8**.

Moapa Speckled Dace and Moapa White River Springfish (Nevada Protected)

Construction activities could adversely affect habitat for these two species at the Muddy River crossing. Habitat loss could be 400 ft² (0.01 acre) for each species, if a culvert is used. The same BMPs and design features and additional mitigation measure **SSS-8** would be implemented to minimize direct and indirect impacts on these species. By implementing mitigation measure **SSS-8**, there would be no direct loss of habitat.

Arizona Toad (BLM Sensitive and Utah Protected and CAS)

This species, also commonly referred to as the southwestern toad, has been collected in standing water with marsh or riparian vegetation within Meadow Valley Wash (BIO-WEST 2005). It also is known to occur in gravelly areas of streams and arroyos in the drier portion of range; often on the sandy banks of quiet water in other areas. This species also occurs in Abe and Hiway springs, Magotsu Creek, and Moody Wash, which are located within the 2-mile transmission line corridor for Alternative III-A. Vehicle traffic on access roads near marsh or riparian vegetation could result in mortalities to toads particularly during movement to breeding habitat consisting of wet areas. Risk of effects also could occur within approximately 9,850 acres of terrestrial habitat by applying a 2-mile dispersal distance around Magotsu Creek and Moody Wash. Vehicle traffic also could result in sediment input and fuel spill risks to habitat for Arizona toad. The same BMPs and design features would be implemented to minimize direct impacts on habitat and indirect effects from erosion and fuel spill effects. The following mitigation measure is proposed to protect breeding habitat in springs used by Arizona toad.

SSS-9 (Avoid Direct Disturbance to Abe and Hiway Springs Used by Arizona Toad): No vehicle or equipment disturbance from ROW work or access road construction would be allowed in Abe and Hiway Springs to protect Arizona toad breeding habitat.

BMPs and design features would be implemented to minimize effects of construction activities and on Arizona toad habitat. Impacts from these activities during construction would be considered of a low magnitude. Vehicle traffic could cause toad mortalities, if traffic movement coincides with toad movements during breeding periods. Mitigation measure **SSS-9** would protect breeding habitat in Abe and Hiway springs.

Moapa Warm Springs Riffle Beetle (BLM Sensitive)

The Moapa Warm Springs riffle beetle is restricted to the Warm Springs area within the Muddy River. Direct and indirect impacts could occur if construction activities occur within or near the Warm Springs area that would be crossed by the 250-foot-wide transmission line ROW and 2-mile transmission line corridor for Alternative III-A. The same BMPs and design features would be implemented to minimize direct impacts on

habitat and indirect effects from erosion and fuel spill effects. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Moapa Warm Springs riffle beetle habitat in the Muddy River during construction would be of a low magnitude. Direct impacts on habitat would be avoided by implementing mitigation measure **SSS-8**.

USFS Sensitive Species

No USFS sensitive species occur in the two perennial streams and six springs that are located within the Alternative III-A transmission line corridor in the Dixie National Forest (**Appendix G, Table G-13**).

Alternative III-B (Agency Preferred)

In total, three streams (Clover Creek, Meadow Valley Wash, and the Muddy River) that contain special status aquatic species are located within the Alternative III-B 2-mile transmission line corridor. All three of these streams would be crossed by the 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative III-B.

Virgin River Chub (Federally Endangered and BLM Sensitive)

The potential impacts of constructing and maintaining Alternative III-B on Virgin River chub would be the same as those discussed for Alternative III-A. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Virgin River chub habitat in the Muddy River during construction would be of a low magnitude. Direct impacts on Virgin River chub habitat would be avoided by implementing mitigation measure **SSS-8**.

Meadow Valley Wash Desert Sucker and Meadow Valley Wash Speckled Dace (BLM Sensitive and Nevada Protected)

The 250-foot-wide transmission line ROW and 2-mile transmission line corridor would cross habitat for these two species in Meadow Valley Wash and the Muddy River. Direct loss of habitat could be 1,200 ft² (0.03 acre) for both species, if a culvert or low water construction is required. Mitigation measure **SSS-8** would avoid direct effects to habitat in the Muddy River. Vehicle crossings or new road construction could adversely affect habitat in Meadow Valley Wash. By implementing erosion control and spill prevention BMPs and design features during construction, water quality effects on Meadow Valley Wash desert sucker and speckled dace habitat would be of a low magnitude. If roads are constructed across Meadow Valley Wash, construction impacts would occur to habitat for this species. Disturbed habitat would be restored to pre-construction conditions resulting in construction impacts of a relatively low net magnitude. Direct effects to habitat in the Muddy River would be avoided by mitigation measure **SSS-8**.

Moapa Speckled Dace and Moapa White River Springfish (Nevada Protected)

The potential impacts of constructing and operating Alternative III-B on Virgin River chub are the same as discussed for Alternative III-A. By implementing erosion control and spill prevention BMPs and design features during construction, water quality effects on Meadow Valley Wash desert sucker and speckled dace habitat in the Muddy River would be of a low magnitude. Direct impacts on habitat would be avoided by implementing mitigation measure **SSS-8**.

Arizona Toad (BLM Sensitive and Utah Protected and CAS)

Meadow Valley Wash would be crossed by the transmission line corridor for Alternative III-B. Vehicle traffic on access roads near marsh or riparian vegetation could result in mortalities to toads particularly during movement to breeding habitat consisting of wet areas. Direct loss of habitat could be 400 ft² (0.01 acre), if a culvert or low water construction is required. Risk of effects also could occur within approximately 7,900 acres of terrestrial habitat by applying a 2-mile dispersal distance around Meadow Valley Wash. Vehicle traffic also could result in sediment input and fuel spill risks to habitat for Arizona toad. The same BMPs and design features would be implemented to minimize direct impacts on habitat and indirect effects

from erosion and fuel spill effects. Impacts from construction activities would be considered of a low magnitude. Vehicle traffic could cause toad mortalities, if traffic movement coincides with toad movements during breeding periods. Mortalities are expected to be relatively low considering the traffic volume.

Moapa Warm Springs Riffle Beetle (BLM Sensitive)

The potential impacts of constructing and maintaining Alternative III-B on Moapa Warm Springs riffle beetle are the same as discussed for Alternative III-A. By implementing erosion control and spill prevention BMPs and design features, water quality effects on Moapa Warm Springs riffle beetle habitat in the Muddy River during construction would be of a low magnitude. Direct impacts on habitat would be avoided by implementing mitigation measure **SSS-8**.

USFS Sensitive Species

No NFS lands would be crossed by the Alternative III-B 2-mile transmission line corridor or 250-foot-wide transmission line ROW.

Alternative III-C

One stream (Meadow Valley Wash) that contains special status aquatic species is located within the Alternative III-C 2-mile transmission line corridor. This stream also would be crossed by the 250-foot-wide transmission line ROW. Species-specific impacts are discussed below for Alternative III-C.

Meadow Valley Wash Desert Sucker and Meadow Valley Wash Speckled Dace (BLM Sensitive and Nevada Protected)

Vehicle crossings or new road construction could detrimentally affect habitat in Meadow Valley Wash. Habitat loss could be 400 ft² (0.01 acre), if a culvert or low water construction is required. By implementing erosion control and spill prevention BMPs and design features during construction, water quality effects on Meadow Valley Wash desert sucker and speckled dace habitat would be of a low magnitude. If roads are constructed across Meadow Valley Wash, construction impacts would occur to habitat for this species. Disturbed habitat would be restored to pre-construction conditions resulting in construction impacts of a relatively low net magnitude. Culvert installation would result in a permanent loss of habitat.

Arizona Toad (BLM Sensitive and Nevada Protected)

Arizona toad habitat would be crossed by the Alternative III-C 250-foot-wide transmission line ROW in Meadow Valley Wash. Potential impacts of construction and operation would be the same as discussed for Alternative III-B. The same BMPs and design features would be implemented to minimize direct impacts on habitat and indirect effects from erosion and fuel spill effects. Impacts from these activities would last through construction and be considered of low magnitude. Vehicle traffic could cause toad mortalities, if traffic movement coincides with toad movements during breeding periods. Mortalities are expected to be relatively low considering the traffic volume.

Northern Leopard Frog (BLM Sensitive and Nevada Protected)

The Alternative III-C 2-mile transmission line corridor would cross through the Pahrnatag National Wildlife Refuge, which contains habitat for the northern leopard frog. Although there is no northern leopard frog habitat within the 2-mile transmission line corridor, the species occurs in Maynard Spring located approximately 600 feet west of the corridor. Since the spring is located outside of the transmission line corridor, project construction and road access would not affect habitat or movements to and from breeding areas for northern leopard frog in the Pahrnatag National Wildlife Refuge. Furthermore, northern leopard frog would not be expected to disperse from the Refuge springs into the transmission line corridor due to the lack of waterbodies. In conclusion, Alternative III-C would not affect northern leopard frog.

USFS Sensitive Species

No NFS lands would be crossed by the Alternative III-C 2-mile transmission line corridor or 250-foot-wide transmission line ROW.

Alternative Variations in Region III

The Ox Valley East and West alternative variations 250-foot-wide transmission line ROW and 2-mile transmission line corridor would cross one stream (Spring Creek) that contains one special status species (Virgin River spinedace). The comparable portion of III-A would cross two streams, Spring and Magotsu creeks. Special status species in Magotsu Creek includes Arizona toad, Virgin River spinedace, bluehead sucker, flannelmouth sucker, and roundtail chub. Two springs, Abe and Hiway, also are located adjacent to the III-A 250-foot-wide transmission line ROW. These springs contain habitat for Arizona toad.

The Pinto Alternative Variation would cross two streams (Magotsu Creek and the Santa Clara River) that contain special status species Arizona toad, bluehead sucker, flannelmouth sucker, roundtail chub, and Virgin spinedace. The comparable portion of Alternative III-A would cross one stream (Spring Creek) with special status species, Virgin River spinedace.

Alternative Connectors in Region III

No perennial streams would be crossed by the Avon and Moapa Alternative Connectors in Region III.

Alternative Ground Electrode Systems in Region III

The southern electrode system would be required within 100 miles of the southern terminal, which is based on the conceptual locations and connections to the alternative routes. There would be no impacts on special status aquatic species, since the conceptual locations do not support habitat for fish, amphibian, or invertebrate species.

No Forest sensitive species occur in the streams or springs that would be crossed by alternative variations on NFS lands in Region III (**Appendix G, Table G-14**).

Region III Conclusion

Based on a comparison of impact parameters for Region III alternatives, potential impacts to special status aquatic species would be greatest for Alternatives III-A and III-B. Potential effects for Alternatives III-C would be relatively low compared to Alternatives III-A and III-B (**Table 3.10-16**). Alternative III-A and III-B would cross the highest number of streams with special status aquatic species (4 and 3, respectively). In addition, Alternatives III-A and III-B also could result in the greatest potential alteration or loss of habitat (upper end of range being 1,200 ft² or 0.03 acre for several species). In comparison, Alternative III-C would cross one stream with special status aquatic species and disturb less habitat (upper end of range being 400 ft² or 0.01 acre for several species). Less than 0.1 percent of special status species habitat would be affected by each of the three alternatives. Alternatives III-A and III-B could result in the highest potential construction disturbance to riparian areas (6 and 7 acres at a 100-foot buffer and 20 and 21 acres at a 300-foot buffer, respectively) compared to Alternative III-C (2 acres at a 100-foot buffer and 8 acres at a 300-foot buffer) (**Table 3.10-17**). Alternative III-B also would result in increased new road density in three watersheds compared to one or two watersheds for the other two alternatives (**Table 3.10-18**). The highest increase in road densities also could occur as a result of Alternative III-B. Even though the greatest level of impacts are associated with Alternatives III-A or III-B, project effects on special status species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, design features, and additional mitigation (Section 3.10.6.5 and **Appendix C**). The only potential long-term impacts would be in streams where a culvert would displace stream bottom habitat. In comparison with available stream habitat, the relatively small long-term impacts of all alternatives are unlikely to impact the population viability of special status aquatic species inhabiting these streams.

3.10.6.6 Region IV

Table 3.10-19 provides a summary of impact parameters used to describe impacts for alternative routes in Region IV. Based on species occurrence information and habitat associations, special status aquatic species that may be impacted by the proposed Project in Region IV includes one fish species (**Table 3.10-7**). Species occurrence in Region IV streams is provided in **Appendix G, Tables G-10** for streams and **G-11** for waterbodies. Project Segment ID numbers referenced in this section are listed in **Tables G-10** and **G-11** and depicted in **Figure 2-24**. Parameter information in **Table 3.10-19** is discussed separately for each of the Region IV alternatives.

Table 3.10-19 Summary of Region IV Alternative Route Impacts for Special Status Aquatic Species

Parameter	Alternative IV-A	Alternative IV-B	Alternative IV-C
Number of streams with special status aquatic species that would be crossed by 250-foot-wide transmission line ROWs	1	0	0
Number of streams with special status aquatic species that would be crossed by 2-mile-wide transmission line corridors or located within 2 miles downstream of corridor boundaries	1	1	1
Number of streams with federally listed aquatic species that would be crossed by 250-foot-wide transmission line ROWs	1	0	0
Acres of critical habitat for federally listed aquatic species that would be crossed by 250-foot-wide transmission line ROWs	0	0	0

Parameter information regarding riparian disturbance and road density is provided in **Tables 3.10-20** and **3.10-21**. The analyses focus on streams that contain special status aquatic species. A summary of these parameters is provided below.

Table 3.10-20 Ground Disturbance (Acres) for Buffer Distances from Riparian Habitat Associated with Special Status Species, Region IV Corridor

Streams	Alternatives					
	IV-A		IV-B		IV-C	
	100 feet	300 feet	100 feet	300 feet	100 feet	300 feet
Construction	1	2	2	5	1	3
Operation	<1	<1	1	2	<1	1

- Riparian Disturbance – A comparison of the construction and operation effects to riparian vegetation near streams containing special status aquatic species indicates that Alternative IV-B would have the highest acres of potential disturbance. However, these impacts would be reduced by BLM stipulations that range from avoiding a buffer area of 300 to 500 feet adjacent to perennial streams to total avoidance of riparian areas. In conclusion, the disturbance to riparian vegetation would be avoided on BLM lands. There could be disturbance on private lands.
- Road Density – Two watersheds would be crossed by the Region IV alternative 250-foot-wide transmission line ROWs. The road density units are highest for Alternative IV-A. The increase in new road density ranged from 0 to 0.2 mile/mile², with the highest increase in the Duck Creek-Las Vegas Wash watershed (Alternative IV-A). BMPs and design features would be implemented to reduce sediment input to streams including those that support special status aquatic species.

Table 3.10-21 Open Road Density (Miles/Mile²) within 100 and 300 Feet of Stream Crossings Associated with Special Status Species in Region IV Corridor

Watershed	IV-A					Watershed	IV-B				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Duck Creek-Las Vegas Wash	2.93	4.39	0.16	0.09	Las Vegas Wash (1)	Government Wash-Colorado River	0.05	0.12	0	0	Las Vegas Wash (1)
Watershed	IV-C					Watershed	IV-D				
	Current Density		Density Increase		Streams with Special Status Species (# of Segments)		Current Density		Density Increase		Streams with Special Status Species (# of Segments)
	100 feet	300 feet	100 feet	300 feet			100 feet	300 feet	100 feet	300 feet	
Government Wash-Colorado River	0.05	0.12	0	0	Las Vegas Wash (1)						

Note: Zero indicates no new roads within the buffer area.

Alternative IV-A (Applicant Proposed and Agency Preferred)

The 250-foot-wide transmission line ROW and 2-mile transmission line corridor would cross one stream (Las Vegas Wash) that contains a special status fish species in a downstream area near Lake Mead. Species-specific impacts are discussed below for Alternative IV-A.

Razorback Sucker (Federally Endangered and BLM Sensitive)

The 250-foot-wide transmission line ROW and 2-mile transmission line corridor for Alternative IV-A would cross Las Vegas Wash. Razorback sucker occurs in the Lake Mead and Las Vegas Bay, which is located approximately 6 miles downstream of the Las Vegas Wash crossing. Construction activities within Las Vegas Wash would not adversely affect water quality or razorback sucker habitat in Las Vegas Bay due to the considerable distance between the crossing and Las Vegas Bay. Even if sediment entered Las Vegas Wash, wetland areas would filter and reduce any increased sediment levels.

Alternative IV-B

The 2-mile transmission line corridor would cross Las Vegas Wash, which contains one special status fish species in a downstream area near Lake Mead. Species-specific impacts are discussed below for Alternative IV-B.

Razorback Sucker (Federally Endangered and BLM Sensitive)

Construction and maintenance activities would not affect razorback sucker due to habitat being located at least 2 miles downstream of the Las Vegas Wash crossing.

Alternative IV-C

The 2-mile transmission line corridor would cross Las Vegas Wash, which contains a special status fish species in a downstream area near Lake Mead. Species-specific impacts are discussed below for Alternative IV-C.

Razorback Sucker (Federally Endangered and BLM Sensitive)

Construction and maintenance activities would not affect razorback sucker due to habitat being located at least 2 miles downstream of the Las Vegas Wash crossing.

Alternative Variations in Region IV

No waterbodies would be crossed by the Marketplace Alternative Variation in Region IV that contain special status aquatic species.

Alternative Connectors in Region IV

One alternative connector (River Mountain) could be utilized through various combinations to avoid crossing Las Vegas Wash. There is no advantage or disadvantage from the perspective of special status aquatic species, since Alternatives IV-A, IV-B, or IV-C would not affect razorback sucker. There are no apparent unique opportunities or constraints for special status aquatic species by utilizing the River Mountain Alternative connector.

Region IV Conclusion

Based on a comparison of impact parameters for Region IV alternatives, potential impacts to special status aquatic species would be similar. All three alternatives including IV-A (Applicant Proposed and Agency Preferred) would cross one stream with a special status aquatic species (**Table 3.10-19**). Less than 0.1 percent of special status species habitat would be affected by each of the four alternatives. Construction and operation disturbance on riparian habitat would be similar for the three alternatives, with values ranging from <1 to 5 acres (**Table 3.10-20**). There would be minor effects of road use on stream buffers for

Alternative IV-A, and no road effects on Alternatives IV-B and IV-C (**Table 3.10-21**). Project effects on special status species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, design features, and additional mitigation (Section 3.10.6.6 and **Appendix C**). The only potential long-term impacts would be in streams where a culvert would displace stream bottom habitat. In comparison with available stream habitat, the relatively small long-term impacts of all alternatives are unlikely to impact the population viability of special status aquatic species inhabiting these streams.

3.10.6.7 Impacts to Special Status Aquatic Species from the No Action Alternative

Under the No Action Alternative, the proposed Project would not be constructed or operated. No Project-related disturbance would occur in waterbodies as a result of vehicle traffic or removal of riparian vegetation. No Project-related sedimentation or risks to aquatic species from potential fuel spills or introduction of invasive species would occur in the Project area. Impacts to aquatic habitat and species would continue at present levels as a result of natural conditions (e.g., annual fluctuations in stream flow due to varying precipitation, erosion, and wildfires) and existing development in drainages within the Project area.

3.10.6.8 Residual Impacts

- Potential loss or alteration of aquatic habitat for special status fish species in smaller streams that require culverts or vehicle crossings.
- Potential short-term sedimentation effects on aquatic habitat for special status species as a result of direct disturbance within or adjacent to streams from vehicle traffic.
- Potential loss or disturbance to riparian vegetation along streams containing special status fish species on private lands or public lands where the ROW is parallel and adjacent to streams.
- Potential special status amphibian mortalities from vehicle traffic during amphibian movements to and from waterbodies located within the ROWs.

3.10.6.9 Irreversible and Irretrievable Commitment of Resources

- Potential loss of aquatic habitat for special status fish species in streams that require culverts for vehicle crossings would be irretrievable. However, the habitat loss would be reversible if the culvert was removed at a later time.
- Potential amphibian mortalities from vehicle traffic would be an irretrievable and irreversible loss of a portion of amphibian populations.

3.10.6.10 Relationship Between Local Short-term Uses and Long-term Productivity

The proposed action and alternatives would result in short-term disturbance to aquatic habitat and use of these habitats by aquatic species, but these effects would not affect the long-term productivity of special status fish, invertebrate, or amphibian populations.