United States Department of the Interior

FISH AND WILDLIFE SERVICE
2369 West Orton Circle, Suite 50
West Valley City, Utah 84119

In Reply Refer to:
FWS/IR05/IR07
06E23000-2020-F-0871

Ms. Danielle Gosselin
Acting Director
Surface Transportation Board
Washington, DC 20423

Subject: Conclusion of formal section 7 consultation for the Seven County Infrastructure Coalition – Uinta Basin Railway project proposal

Dear Ms. Gosselin,

In accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.), and the Interagency Cooperation Regulations (50 CFR 402), this transmits our final biological opinion (BO) based on review of the Surface Transportation Board's (STB) proposed Uinta Basin Railway project (hereafter, Project). Our BO evaluates Project effects to Ute ladies'-tresses (*Spiranthes diluvialis*), Pariette cactus (*Sclerocactus brevispinus*), Uinta basin hookless cactus (*Sclerocactus wetlandicus*), and Barneby ridge-cress (*Lepidium barnebyanum*). In addition, our BO evaluates project effects associated with water depletions in the upper Colorado River basin to the Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), and bonytail (*Gila elegans*) (collectively referred to as Colorado River fishes) and their designated critical habitats. Our BO is based on information provided in communication between our agencies via email, meetings, phone, your March 18, 2021 request for formal consultation, and your biological assessment (BA) (see Consultation History, below). A complete administrative record of this consultation is on file at the U.S. Fish and Wildlife Service (USFWS) Utah Field Office.

Canada Lynx (*Lynx canadensis*) and Mexican spotted owl (*Strix occidentalis lucida*) were also analyzed as part of the Biological Assessment (BA), and we concur with your determination of may affect, not likely to adversely affect for these two species. Our concurrence for Canada lynx is based upon the absence of high-quality habitat in the action area, the disjunct nature of the marginal habitat that is present, the absence of historic observations in the action area, and the fact that the U.S. Forest Service considers the area to be unoccupied by the species. Our concurrence for Mexican spotted owl is based upon the absence of high-quality habitat in the

action area, that the majority of habitat in the action area is considered low-quality, that the species has not been observed within in a 2-mile (mi) distance of the action area, and the commitment by the STB to implement species-specific conservation measures. As stated in the BA, this includes conducting Mexican spotted owl surveys in the moderate-quality habitat located along the Wells Draw Alternative. The Project does not affect critical habitat for Canada lynx or Mexican spotted owl.

Upper Colorado Endangered Fish Recovery Program

Water depletions from the Upper Colorado River Basin are likely to adversely affect the Colorado River fishes and their designated critical habitat through multiple ecological stressors, such as habitat loss, competition from nonnative fish, and degraded water quality. Because water depletions from the Upper Colorado River Basin are a major factor in the decline of the endangered fishes, historically we determined that any depletion will jeopardize their continued existence and will likely contribute to the destruction or adverse modification of their critical habitat (USFWS 1997).

To address the ecological effects from water depletions and aid in the recovery of the four species, the Department of the Interior, the States of Wyoming, Colorado, and Utah, and the Western Area Power Administration established the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) in 1988. The objective of the Recovery Program is to recover the listed species while water development continues in accordance with Federal and State laws and interstate compacts.

The Recovery Program participants implemented an agreement under section 7 (Agreement) on October 15, 1993 to further define and clarify the process for addressing water depletion impacts. This Agreement established the Recovery Program and its activities as the reasonable and prudent alternative (RPA) for impacts to Colorado River fishes caused by depletions from the Upper Colorado River Basin. Incorporated into this Agreement is a plan of actions (Recovery Implementation Program Recovery Action Plan or RIPRAP) that identifies activities required to recover the endangered fishes to be carried out by Recovery Program participants. Also incorporated into the Agreement is the requirement of a financial contribution to the Recovery Program (also known as a depletion fee) that would help fund recovery activities. We use procedures outlined in the Agreement to determine if sufficient progress is being accomplished in the recovery of the endangered fishes to enable the Recovery Program to continue to serve as a reasonable and prudent alternative to avoid jeopardy. We finalized the RIPRAP on October 15, 1993 and have reviewed and updated the plan annually.

In accordance with the 1993 Agreement, we annually assess progress of the implementation of recovery actions to determine if progress toward recovery is sufficient for the Recovery Program to serve as an RPA for projects that deplete water from the Colorado River Basin. In the last review, we determined that the Program made sufficient progress to offset water depletions from individual projects up to 4,500 acre-feet/year. Therefore, it is appropriate for Recovery Program activities to serve as conservation measures for projects up to 4,500 acre-feet/year.

After many years of successful implementation of the Recovery Program, the Agreement, and the RIPRAP, federal action agencies now anticipate Recovery Program activities and payment of the depletion fee to serve as the RPA. Thus, the RPA has essentially become part of a Proposed Action. Because we now consider it part of a Proposed Action, the depletion fee and Recovery Program activities now serve as conservation measures that minimize adverse effects to listed species or critical habitat. Therefore, we no longer consider depletions to jeopardize the continued existence of these species, but rather believe that depletions may affect and are likely to adversely affect the species, and that the Recovery Program activities will now serve as conservation measures within the Proposed Action and minimize adverse effects to listed species or critical habitat.

As mentioned above, included in the Recovery Program was the requirement that a depletion fee would be paid by Project applicants to help support the Recovery Program. On July 8, 1997, we issued an intra-Service biological opinion determining that depletion fees for average annual depletions of 100 acre-feet or less are no longer required due to sufficient progress on the recovery of Colorado River fishes. The estimated water depletion for this Project is 875 acre-feet per year. Therefore, a depletion fee is required for this Project.

CONSULTATION HISTORY

- **April 10, 2019.** We received a letter from your office requesting preliminary comments on the proposed rail line and concurrence with STB's preliminary list of ESA-listed species to consider for the proposed rail line.
- **August 1, 2019.** The U.S. Department of Interior's Office of Environmental Policy and Compliance responded to STB's Notice of Intent (NOI) to prepare an EIS and provided comments on behalf of our office. Our office concurred with STB's list of ESA-listed species to consider and reminded STB that it must consult with our office under Section 7 of the ESA should the proposed rail line affect ESA-listed species or designated critical habitat.
- **February 18, 2020.** STB and Office of Environmental Review's third-party consultant (ICF) held a teleconference with biologists from our office to discuss the proposed rail line, ESA-listed species potentially affected by the proposed project, potential survey needs for ESA-listed species, and development of the BA.
- **May 21, 2020.** STB and ICF held a teleconference with our office biologists to discuss potential survey needs and methods for assessing ESA-listed plants, Mexican spotted owl, and Canada lynx.
- **June 10, 2020.** STB and ICF held a teleconference with our office biologists to follow up on the May 21, 2020 call to resolve issues related to fieldwork and BA content to adequately complete Section 7 consultation.
- **September 1, 2020**. We received a preliminary draft BA from the STB including supporting information, fieldwork reports prepared by the Project applicants, and a request for review and comment.
- **September 14, 2020**. We had a teleconference with STB and ICF to review preliminary comments on the draft BA.
- **October 6, 2020.** Endangered Species Action Section 7 conference call between USFWS, STB, ICF, and the Corps. We discussed the project description and cumulative effects.

- **October 6, 2020 through March 16, 2021.** A biweekly teleconference call was scheduled and staff from our office attended as schedules allowed. This call included staff from our office, STB, ICF, and cooperating and consulting agencies to discuss potential revisions to the draft BA, and coordinate Section 7 consultation for all federal actions and decisions related to the proposed rail line.
- **March 3, 2021.** Endangered Species Act Section 7 conference call between USFWS, STB, ICF, and the Corps. We discussed the project description and cumulative impacts (i.e., how to treat rail terminals).
- **March 11, 2021.** We had a teleconference call with STB and the Corps to discuss the project description and cumulative effects.
- **March 15, 2021.** We had a teleconference call with STB, UDWR, and the Project applicants to discuss mitigation options for the Barneby ridge-cress.
- **March 16, 2021.** We had a teleconference call with STB about the forthcoming revisions to Barneby ridge-cress range maps and habitat descriptions.
- **March 18, 2021.** We received the final BA and request for consultation.
- **July 19, 2021.** We notified the STB via email that the BO will not be completed by the time the final EIS is published on August 6, 2021. We requested an extension to the BO deadline.
- **August 11, 2021.** We had a phone call with STB to discuss a deadline for the BO.
- **August 24, 2021.** We had a phone call with STB and Project applicants who agreed to a deadline of September 20, 2021 for the BO.
- **September 10, 2021.** We received an email with revisions to the conservation measures proposed by the Project applicants and approved by STB.
- **September 10, 2021.** We received preliminary results from plant surveys from the Project applicants' consultant, HDR.

BIOLOGICAL OPINION

1 PROPOSED ACTION

The Seven County Infrastructure Coalition (Project applicants; Coalition) seeks a permit from the STB to construct, operate, and maintain a new rail line in Carbon, Duchesne, Uintah, and Utah Counties, Utah. The Coalition is a political subdivision of the State of Utah established under an inter-local agreement by the Utah counties of Carbon, Daggett, Duchesne, Emery, San Juan, Sevier, and Uintah. The proposed rail line will provide a new rail connection between the Uinta Basin in northeastern Utah and the existing interstate freight rail network near Kyune, Utah. The proposed rail line is approximately 85 miles long, with the exact length dependent on the final route approved by the STB. There are three alternative routes proposed for the rail line, Indian Canyon, Wells Draw, and Whitmore Park. The Whitmore Park route is the Coalition's preferred alternative and is the alternative carried forward for evaluation in this BO.

The Whitmore Park route is 88 mi long from terminus points in the Uinta Basin near Myton and Leland Bench to an existing Union Pacific rail line near Kyune, Utah (Figure 1). The Whitmore Park Alternative will cross 12 mi of National Forest Service land within Ashley National Forest, 8.1 mi of Ute Indian Tribe trust lands in the Uintah and Ouray Reservation, with the remaining length occurring on State of Utah and private lands. The Project will result in the use of 875 acre-feet of water from existing water rights within the Upper Colorado River Basin.

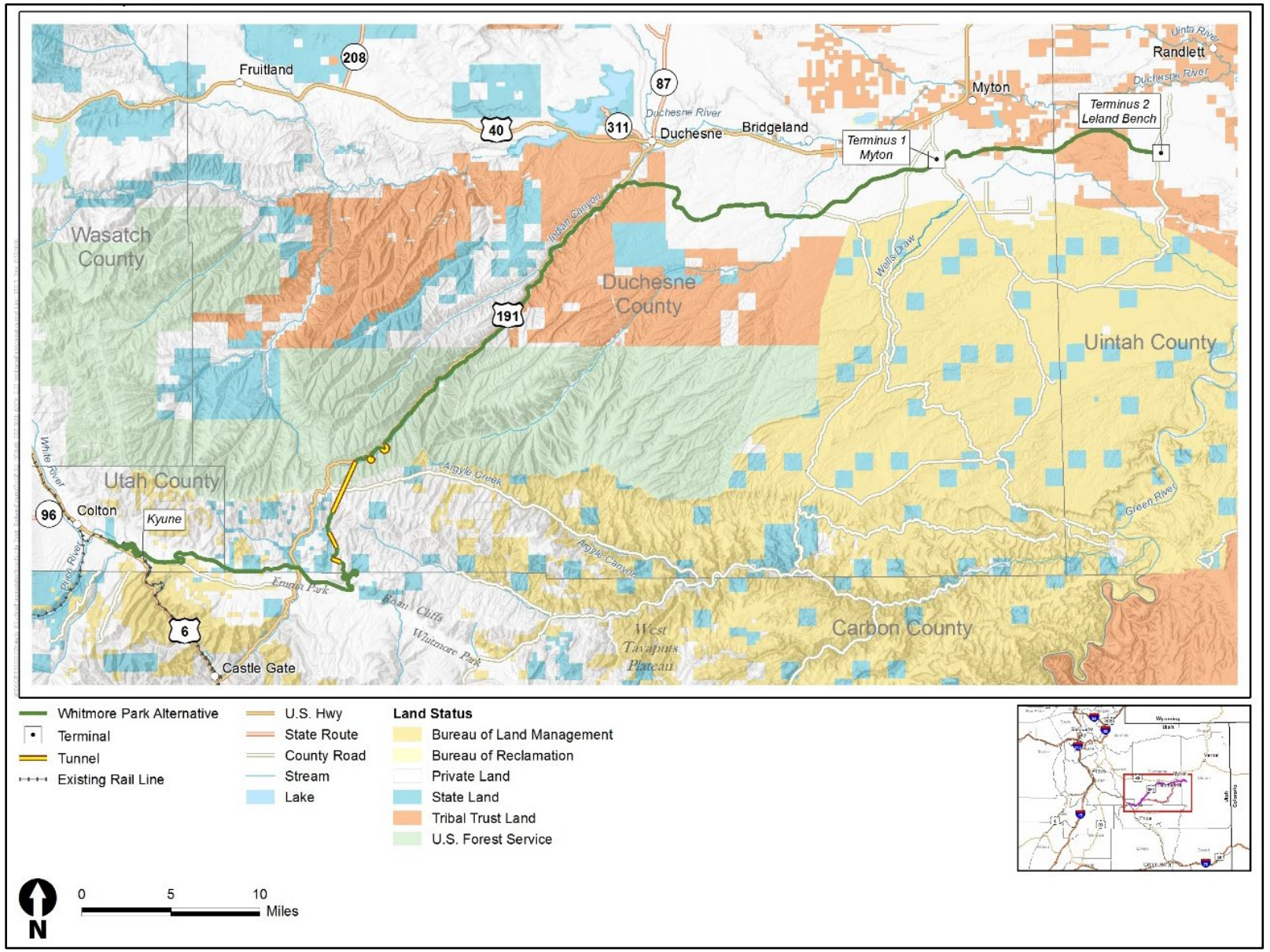

Figure 1. Whitmore Park Alternative Route (STB 2021).

Completion of the proposed Project will depend on additional approval from the U.S Forest Service, Ute Indian Tribe, Bureau of Indian Affairs, State of Utah, and private landowners. If approved, construction is proposed to begin in 2022 and last for up to 28 months. The Project includes the following activities and temporary and permanent facilities:

- construction of the rail bed and track,
- siding and set-out tracks,
- access roads,
- staging areas,
- temporary worker housing,
- tunnels,
- bridge and road relocations,
- culverts,
- stream crossings,
- fence lines,
- communication towers, and
- power distribution lines.

1.1 Project Construction

The following terms describe the areas where construction and operation of the proposed rail line would occur.

- Rail line footprint. The rail line footprint includes the permanent area of the rail bed and track, as well as the full width of the area cleared and cut or filled. The rail line footprint will include other physical structures installed as part of the proposed rail line, such as siding and set-out tracks, access roads, tunnels, culverts, fence lines, communications towers, siding tracks, relocated roads and bridges, and power distribution lines. The rail line footprint is approximately 1,430.6 acres (ac) which will be permanently disturbed and where rail line operations and maintenance will occur (Table 1).
- Temporary footprint. The temporary footprint is the area that could be temporarily disturbed during construction, including areas for temporary material laydown, staging, and logistics. The temporary footprint is approximately 3,087.7 ac which will be disturbed during construction and reclaimed and revegetated following construction (Table 1).
- Project footprint. The project footprint is approximately 4,518.3 ac that combines the areas of the rail line footprint and temporary footprint of the Project (Table 1).

Table 1. Project Length and Footprint

Alternative	Length (miles)	Rail Line Footprint (acres)	Temporary Footprint (acres)	Project Footprint (acres)
Whitmore Park (Proposed Action)	87.7	1,430.6	3,087.7	4,518.3

The Project applicants will either purchase the land or obtain easements for the entire project footprint. However, only the rail line footprint will be permanently cleared of vegetation for construction and operation of the proposed rail line.

The Proposed Action will require constructing temporary and permanent access roads. The Project applicants will construct temporary access roads that will provide access to the rail embankment, tunnel portals, and bridge and drainage structure locations during construction. The Project applicants will construct several permanent access roads to provide access to rail sidings and long tunnels during rail operations. The temporary and permanent access roads will be 13 feet (ft) wide on average and will connect to the nearest existing roadways to minimize the length of the access roads.

The width of the rail line footprint will vary depending on site-specific conditions, such as topography, soil slope stability, and other geotechnical conditions. Under the Proposed Action, the width of the railbed will extend approximately 10 to 20 ft from the centerline to the edge of the subballast. This distance will vary in cut-and-fill locations where ditches could be required. The Project applicants will construct the track on top of approximately 12 inches (in) of subballast material and 8 in of ballast. Timber, steel, or concrete ties will support the continuously welded steel rail.

Construction of the Proposed Action will involve a variety of construction methods and equipment. Bull dozers, front-end loaders, and dump trucks will be used to create the appropriate corridor and grade. Cranes may be needed to construct bridges over roads and surface waters. Mining and potentially blasting methods would be used to construct tunnels. Rail will be laid and welded by track welding machine or crews where necessary. The Project applicants will use existing, permanent quarries located in Carbon, Duchesne, Uintah, and Utah Counties to obtain and stockpile aggregate and rock materials and acquire concrete aggregate and subballast material from existing Utah Department of Transportation (UDOT)-certified quarries and ballast material from an existing rail-served quarry near Milford, Utah. Trucks will deliver the materials to the rail line using existing roadways and temporary and permanent access roads.

The proposed rail line and associated access roads and road relocations will require 30 rail bridges, one road bridge, and 423 culverts to cross streams, rivers, drainages, and existing roadways. Construction of the proposed rail line will require 55 realignments of stream segments totaling 3.8 mi of stream bed to accommodate permanent project features. The proposed rail line will require five tunnels totaling 5.7 mi to traverse mountainous terrain. The proposed rail line will require relocating 71 existing public and private roads totaling 13.8 mi. Finally, the proposed rail line will consist of a single main track with sidings to enable trains to meet or pass. Siding tracks will add 15 to 20 ft to the width of the track structure and the Proposed Action will require an estimated nine sidings totaling 18.0 mi in length.

The Proposed Action will require power distribution lines for signals, communications, and safety equipment. The Project applicants will determine the exact locations of power distribution lines during detailed design following the conclusion of the Board's environmental review process. Any needed power distribution lines will be constructed within the rail line footprint and will connect to existing lines adjacent to the rail line footprint. In more remote or

inaccessible locations, the Proposed Action will use solar-powered equipment for power needed for communications towers and remote grade crossings requiring active warning devices.

The proposed rail line will require the construction of four permanent communications towers. Each tower site will be approximately 0.5 ac in area and approximately 120 ft high, though the exact height would depend on final design details. The Project applicants will construct permanent access roads to provide access to the communications towers for maintenance.

1.2 Project Operation and Maintenance

Following construction of the proposed rail line, Rio Grande Pacific Corporation will operate the proposed rail line. The Project applicants anticipate shippers will primarily use the proposed rail line to transport crude oil using trains composed of 110 tank cars each, on average. Other items transported on the proposed rail line could also include frac sand (sand injected into oil wells) and other commodities. Each train will be powered by approximately eight 4,300- to 4,400-horsepower locomotives. The STB defined two reasonably foreseeable scenarios for future rail traffic levels for the purposes of analysis in the EIS. The two scenarios correspond to the lowest and highest estimated rail traffic estimates. Under the high rail traffic scenario, an average of 10.52 trains will move on the proposed rail line each day and under the low rail traffic scenario, an average of 3.68 trains will move on the proposed rail line each day.

The Project applicants will construct the proposed rail line using new materials, which will initially require a minimal amount of maintenance. For the Project, maintenance activities on the tracks will include rail surfacing, ballast cleaning and tamping, and rail grinding. Other maintenance activities will include maintaining rail sensors; lubricating rails; replacing rail, ties, and ballast; and inspecting track. In addition, any tunnels will require regular inspections and maintenance.

A detailed description of the Proposed Action including equipment and materials can be found in chapter 2 of the BA (STB 2021).

1.3 Applicant Committed Conservation Measures

The Coalition and STB have committed to conservation measures to reduce Project effects to the four Colorado River fishes, Barneby ridge-cress, Ute ladies'-tresses, Pariette cactus, and Uinta Basin hookless cactus. Key conservation measures from the BA are identified below, while a complete list of general and species-specific conservation measures are provided in Appendix A of this BO. If STB authorizes the Project and imposes the conservation measures set forth in this BA, all of the measures listed below and in Appendix A would be binding conditions that the Coalition would need to implement as part of the Project.

1. The Coalition shall consult with STB and our office regarding voluntary donations to the plant conservation fund for impacts to ESA-listed plants that are identified in suitable

habitat[1] areas during preconstruction surveys and shall implement mitigation that STB and our office approve.
2. The Coalition will comply with any conditions and mitigation commitments contained in a biological opinion for ESA-listed species that could potentially be affected by the project.
3. The Coalition will finalize all plans for mitigating species-specific effects described below (i.e., identifying lands for permanent protections, payments to conservation funds, funding surveys) with our office prior to initiating construction. The Coalition will finalize and provide proof of payment for any payments to species specific conservation funds or recovery programs prior to construction.
4. The Coalition shall share the results of all threatened and endangered species surveys with the USFWS, the State of Utah, and all action agencies except for surveys occurring on Ute Indian Tribal land. For data from surveys on Ute Indian Tribal land, the Coalition shall seek the permission of the Ute Indian Tribe before sharing the survey results with the USFWS, the State of Utah, and all action agencies.

Barneby ridge-cress

1. Use the updated 2021 potential habitat polygon for conducting pre-construction surveys for Barneby ridge-cress and calculating acres of effected suitable habitat for subsequent conservation measures based on acres affected.
2. If ground-disturbing activities within 300 ft of Barneby ridge-cress plants or populations (i.e., occupied habitat) will be unavoidable, the Coalition shall develop a project-specific plan in consultation with our office, STB, and any appropriate land-management agencies to offset effects and monitor individuals or populations. The plan shall incorporate the following requirements:
    a. The Coalition shall fund the permanent protection of occupied habitat at a 5:1 ratio, where one acre of occupied habitat lost would be replaced by five acres of occupied habitat of equal or better condition for Barneby ridge-cress. If Barneby ridge-cress mitigation is needed, the Coalition will prioritize the Utah Division of Wildlife Resources' (UDWR) Cottonwood Wildlife Management Area for permanent protection of occupied Barneby ridge-cress habitat in consultation with our office and UDWR. If insufficient acreage of documented habitat is available for permanent protection, the Coalition may fund survey efforts to identify currently undocumented habitat for permanent protection at a 5:1 ratio.
    b. If permanent protection of occupied habitat cannot be achieved at a 5:1 ratio, the Coalition shall establish permanent protections to the extent possible and shall also fund and implement, in coordination with our office, the restoration or enhancement of Barneby ridge-cress habitat at a 5:1 ratio. Habitat restoration or enhancement activities, including maintenance and monitoring activities, shall be

[1] "Suitable habitat" is defined as areas that contain or exhibit the specific components or primary constituent elements necessary for plant persistence and may or may not contain target individuals (USFWS 2010a, b); "potential habitat" is defined as areas identified that may contain suitable or occupied habitat based on environmental factors but has not been surveyed for presence of the target species; "occupied habitat" is defined as a 300-foot area around target individuals (USFWS 2014).

conducted in accordance with protocols developed in consultation with and agreed to by our office.

c. If neither the permanent protection of Barneby ridge-cress occupied habitat nor the restoration or enhancement of habitat can be implemented at the agreed upon ratios, the Coalition shall fund and ensure the implementation of specific reasonable research or other activities for the conservation of Barneby ridge-cress identified in consultation with and agreed to by our office.
d. If any Barneby ridge-cress individuals would be crushed or killed by project activities, the Coalition shall collect seeds from the plants prior to construction, if possible. Seeds will be collected by a qualified botanist and stored according to USFWS and Center for Plant Conservation guidelines. The Coalition shall deliver any collected seeds to our office or designee.
e. If construction activities would crush or kill Barneby ridge-cress individuals on public lands, the Coalition shall consult with the appropriate land-management agency and our office prior to undertaking activities that would crush or kill individual Barneby ridge-cress and shall relocate individual plants if requested by the land-management agency. A post-transplant monitoring plan would be developed in agreement with our office, and individuals would be monitored for 5 years post-transplant.

Ute ladies'-tresses

1. If ground-disturbing activities within 300 ft of Ute ladies'-tresses plants or populations (i.e., occupied habitat) would be unavoidable, the Coalition shall develop a project-specific plan in consultation with our office, STB, and appropriate land-management agencies to offset impacts and monitor individuals or populations. The plan shall incorporate the following requirements:
    a. The Coalition shall fund the permanent protection of occupied habitat at a 3:1 ratio, where one acre of habitat lost would be replaced by three acres of protected habitat of equal or better condition for Ute ladies'-tresses. If insufficient acreage of documented occupied habitat is available for permanent protection, the Coalition may fund survey efforts to identify currently undocumented habitat for permanent protection at a 3:1 ratio.
    b. If permanent protection of occupied habitat cannot be achieved at a 3:1 ratio, the Coalition shall establish permanent protections to the extent possible and shall also fund and implement, in coordination with our office, the restoration or enhancement of Ute ladies'-tresses habitat at a 5:1 ratio, where one acre of habitat lost would be replaced by five acres of restored habitat. Appropriate habitat enhancements may include, but are not limited to, removal of invasive woody vegetation [e.g., Russian olive (*Elaeagnus angustifolia*) or tamarisk (*Tamarix ramosissima*)], removal of native woody vegetation [e.g. Willow (*Salix spp*.)], suitable habitat reconnection, and reestablishment of native herbaceous communities in riparian areas. Habitat enhancements, including maintenance and monitoring of enhancements, shall be conducted in accordance with protocols developed in consultation with and agreed to by our office.

c. If neither the permanent protection of occupied habitat nor the restoration or enhancement of habitat can be implemented at the agreed upon ratios, the Coalition shall fund and ensure the implementation of specific reasonable research or other activities for the conservation of Ute ladies'-tresses identified in consultation with and agreed to by our office.
d. If any Ute ladies'-tresses individuals would be directly killed by project activities, the Coalition shall fund the collection, transplantation, and monitoring of those individuals. Plants shall be moved to suitable habitat within the same 10-digit hydrologic unit, if possible. If transplantation within the same 10-digit hydrologic unit is not possible because suitable habitat is unavailable or because of other considerations, plants may be placed in another hydrologic unit identified through consultation with our office. Transplanting and monitoring activities shall be conducted in accordance with protocols agreed to by our office.

Uinta Basin hookless cactus and Pariette cactus

1. On non-Ute Indian Tribe lands, if new surface disturbance occurs within occupied habitat, the Coalition shall either implement ecological restoration activities to be developed in consultation with and with the agreement of our office or may contribute to the *Sclerocactus* Conservation Fund. Proof of payment shall be provided to the STB prior to construction. The payment shall be calculated based on acres of disturbance using the USFWS "2014 Ecological Restoration Mitigation Calculation Guidelines for impacts to *Sclerocactus wetlandicus* and *Sclerocactus brevispinus* Habitat." For impacts to habitat on non-Tribal lands funds shall be sent to:

   Sclerocactus Conservation Fund
   Impact-Directed Environmental Accounts National Fish and Wildlife Foundation
   1133 Fifteenth Street NW, Suite 1100
   Washington, DC 20005

2. If new surface disturbance occurs within occupied habitat on Tribal lands, the Coalition shall abide by the requirements of the 2015 Ute Indian Tribe's Sclerocactus Management Plan for the Uintah and Ouray Indian Reservation, Uinta Basin Utah (Ute Indian Tribe 2015) for mitigation of project-related activities on Tribal lands. Proof of payment shall be provided to the STB prior to construction. The payment shall be calculated based on acres of disturbance from the results of pre-construction surveys. The Coalition shall work with our office and the Ute Indian Tribe to calculate the mitigation as described in the Tribe's *Sclerocactus* Management Plan. Funds shall be deposited to the Tribal *Sclerocactus* Conservation Fund, as directed by the Ute Indian Tribe.

Four Colorado River Fishes

As the project's average annual new depletion of 875 acre-feet is below the current sufficient progress threshold of 4,500 acre-feet, the Recovery Program will serve as conservation measures to minimize adverse effects to the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail, and destruction or adverse modification of critical habitat caused by the project's new depletion.

With respect to the depletion contribution, the Project applicants will make a one-time payment which has been calculated by multiplying the Project's average annual depletion (acre-feet) by the depletion charge in effect at the time payment is made. The fiscal year 2022 fee for water depletion projects is $22.84 per acre-foot. Therefore, for the Uinta Basin Railway Project, the Project applicants owe $19,985.00. Ten percent of the total is due upon issuance of approvals from the STB and other action agencies. The remainder is due when construction of the project commences. However, full payment of the fee is acceptable prior to project initiation if that is easier for the Project applicants.

Please note that the fee rate changes each September 1st based on inflation and your office is responsible for paying the rate in place at time of the writing of the check. Therefore, the rate may change subsequent to the writing of this letter, and the rate may change between the initial 10 percent payment and the payment of the remaining fee. Please check with George Weekley with the U.S. Fish and Wildlife Service Utah Field Office at (385) 285-7929 to ensure the Project applicants pay the correct amount.

Funds are not received by the U.S. Fish and Wildlife Service but are rather deposited into an account held by our partners at the National Fish and Wildlife Foundation (NFWF). Courtney Kwiatkowski is the account manager and can be reached at Courtney.Kwiatkowski@nfwf.org or (202) 857-0166. The Tax ID for NFWF is 52 1384139. To correctly submit the payments to NFWF please follow the directions below.

Payments can be made via check or secure Electronic Fund Transfer (EFT), although the preferred option of payment is EFT. Please contact NFWF to receive instructions for secure EFT payment. Payments made by check should be mailed to the address below. The check should include the following notation: “Upper Colorado Fish Recovery Program (IM.A131).”

National Fish and Wildlife Foundation
Attn: Chief Financial Officer
1133 15th Street, NW
Suite 1000
Washington, DC 20005

All payments should be accompanied by a cover letter (either mailed or emailed) that identifies the project title noted above, the amount of the payment, the check number (if applicable), the name and address of the payor (Project applicants), the name and address of the Federal Agency responsible for authorizing the project (STB), the USFWS office issuing the biological opinion (Utah ES office), and a note that the payment pertains to the “Upper Colorado Fish Recovery

Program." This information will be used by NFWF to notify the Recovery Program within 5 working days that payment was received.

The payment will be accompanied by a cover letter that identifies the project and biological opinion number (06E23000-2020-F-0871) that requires the payment, the amount of payment enclosed, check number, and the following notation on the check – "Upper Colorado Fish Recovery Program, NA.1104". The cover letter also shall identify the name and address of the payor, the name and address of the Federal Agency responsible for authorizing the project, and the address of the USFWS office issuing the biological opinion. This information will be used by the Foundation to notify the STB and the USFWS that payment has been received. The Foundation is to send notices of receipt to these entities within 5 working days of its receipt of payment.

2 ACTION AREA

The Project action area is defined in 50 CFR 402 to mean "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."

For the purpose of our evaluation of impacts to Barneby ridge-cress, Ute ladies'-tresses, Pariette cactus, Uinta Basin hookless cactus, and the four Colorado River fishes, we define the action area to include:

- The entire Project footprint;
- A 300-ft buffer from the edge of the Project footprint and any ground disturbance to account for effects from dust and to pollinators from Project actions; and
- The area of the Upper Colorado River Basin affected by water depletions. This includes the Green and Colorado Rivers and their 100-year floodplains from Flaming Gorge Reservoir downstream to Lake Powell.

3 STATUS OF THE SPECIES

The purpose of this section is to summarize the best available information regarding the current range-wide status of Barneby ridge-cress, Ute ladies'-tresses, Pariette cactus, Uinta Basin hookless cactus, and the four Colorado River fishes. Additional information regarding these species may be obtained from the sources cited below.

3.1 Barneby ridge-cress

Species Description

Barneby ridge-cress is an herbaceous perennial of the mustard (Brassicaceae) family known only from the Uinta Basin region of northeastern Utah and in Duchesne County, Utah (Welsh *et al.* 2008; USFWS 1993, USFWS 2021a). This species grows on sparsely vegetated ridgelines with poorly developed whitish soils derived from the Uinta and Green River formations (Service 1993; Lindstrom 2021). It is found at elevations between 5,896 to 6,654 ft (Service 1993; Lindstrom 2021). The plants grow in raised cushions 2.7 to 3.9 in tall and up to 8 in wide (Welsh et al. 2008). The stems are sub-glabrous (mostly hairless) to glabrous (hairless) with

narrow leaves clustering at the base of the plant (Welsh et al. 2008). Flowers are cream colored, about 0.25 in across and alternate along a stem rising 1 to 1.5 in above the base of the plant (Welsh et al. 2008). Flowering occurs from April through May; fruit development and seed dispersal occur from June through July (Welsh et al. 2008). Seeds are small, about 0.04 in across and are borne in egg-shaped capsules (silicles) about 0.2 in long (Welsh et al. 2008).

Life History and Population Dynamics

Barneby ridge-cress reproduces by seeds, but we lack information on its pollinators and breeding system (USFWS 1993). Other *Lepidium* species with showy flowers like Barneby ridge-cress depend on pollination by bees in the Apidae and Halictidae families and wasps in the *Sphecidae* family (Robertson and Klemash 2003). Low seed production has been observed in this species and we need more information to evaluate whether seed production is a limiting factor for the species (USFWS 2011a). The species produces viable seeds with high germination rates (90 percent) which remain viable for long periods (at least 21 years) in off-site (ex-situ) storage, indicating the potential of a long-lived seedbank in the wild (Hinz 2017). Life history and long-term population dynamics are unknown; individuals live at least five years based on infrequent site visits and monitoring (USFWS 1993). Associated plant species include other cushion-like plants, stemless four-nerve daisy (*Tetraneurius acaulis*), Hooker's sandwort (*Arenaria hookeri*), Townsend daisy (*Townsendia mensana*), and Colorado feverfew (*Parthenium ligulatum*); other forbs, Bateman's buckwheat (*Eriogonum batemanii*), tufted milkvetch (*Astragalus spatulatus*), and rough Indian paintbrush (*Castilleja scabrida*); and tree species, Colorado pinyon (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) (USFWS 1993).

Status, Distribution, and Threats

We listed Barneby ridge-cress as endangered under the authority of the ESA on September 28, 1990 (59 FR 39860). At the time of listing the primary threats to the species were oil and gas development and unauthorized off-road vehicle (OHV) use in the habitat. The restricted range and single population of this species were listed as vulnerabilities with the potential to exacerbate the effects to the species from identified threats. There is no critical habitat designated for this species. In 2019, the recovery criteria for the species were amended to include objective delisting criteria not included in the 1993 Recovery Plan (USFWS 2019a). In 2021, the potential habitat polygon was updated (Lindstrom 2021) and a five-year review was completed (USFWS 2021a).

The species' current range has expanded to approximately 985 ac of known occupied habitat spanning only 9 miles across (east to west) and distributed over three populations. We revised the potential habitat polygon in 2021 using the best available information for the species and its current range (Figure 1; Lindstrom 2021). The new polygon contains 45,714 ac of potential habitat (USFWS 2021a).

We now know of three populations[2] (Indian Canyon, Starvation Reservoir, and Coyote Canyon) that contain approximately 7,731 plants (Spector 2015; Environmental and Engineering Consulting (EIS) 2014; USFWS 2021a). The most recent population estimate of 6,614

[2] Population delineations are based on NatureServe criteria (NatureServe 2004).

individuals for the Indian Canyon population is larger than we identified at listing (USFWS 2021a). The Indian Canyon population is almost entirely on Ute Indian Tribal lands with a few individuals located on private lands (Service 2021a). Two new populations were located in 2014 and 2015, the Starvation Reservoir and Coyote Canyon populations, respectively (Figure 1). The Starvation Reservoir population is entirely on private land and has 27 individuals (EIS 2014; USFWS 2021a). The Coyote Canyon population contains at least 1,090 individuals located entirely on Utah Department of Wildlife Resources (UDWR) land that is managed as a wildlife management area (WMA). Additional suitable habitat throughout the species range has not been surveyed (Spector 2015; USFWS 2021a). Acres of potential habitat and occupied habitat by landowner type is shown in Table 2.

Table 2. Acres of potential and occupied habitat for Barneby ridge-cress by landowner type (Service 2021b)**.**

	Ute Indian Tribe (acres)	**State (UDWR) (acres)**	**Private (acres)**
Potential Habitat	24,668	5,971	15,046
Occupied Habitat	868	32	86

The threats originally identified for Barneby ridge-cress remain threats to the species today. Oil and gas development and off-road vehicle (OHV) use are the primary threats to Barneby ridge-cress (USFWS 2021a).

Habitat loss associated with oil and gas development occurs across the known range of Barneby ridge-cress. There are 311 active oil and gas wells on 236 well pads within the potential habitat polygon boundaries, with only 1 well pad in occupied habitat (USFWS 2021a, b). The estimated area of disturbance is approximately 2.6 percent (1,199 ac) of potential habitat and less than one percent (5.25 ac) of occupied habitat (USFWS 2021a, b). These disturbance calculations only include surface disturbance that is associated with oil and gas development.

The Ute Indian Tribe has been actively policing OHV trespassing, reducing (but not eliminating) OHV use in Barneby ridge-cress habitat on Tribal lands (USFWS 2011). Vehicle tracks and damage to plants have been observed in the Coyote Canyon population and habitat area within the Cottonwood WMA (Spector 2015; Croft 2021; Reisor 2021). The species is not located on Federal land, and therefore a Federal nexus to address project-level effects is not assured. A conservation agreement or other similar type of protection has not established for the species. Therefore, additional regulatory mechanisms are needed to address threats to the species.

Climate change and drought were not identified as threats to Barneby ridge-cress at the time of listing. As a desert-adapted species in an environment characterized by drought cycles, we expect the species is well adapted to naturally occurring droughts. However, an increase in periodic prolonged droughts due to climate change beyond the naturally occurring drought cycles may reduce the resiliency and redundancy of Barneby ridge-cress (Gonzalez et al. 2018). The potential effects of climate change and drought to the species have not been evaluated.

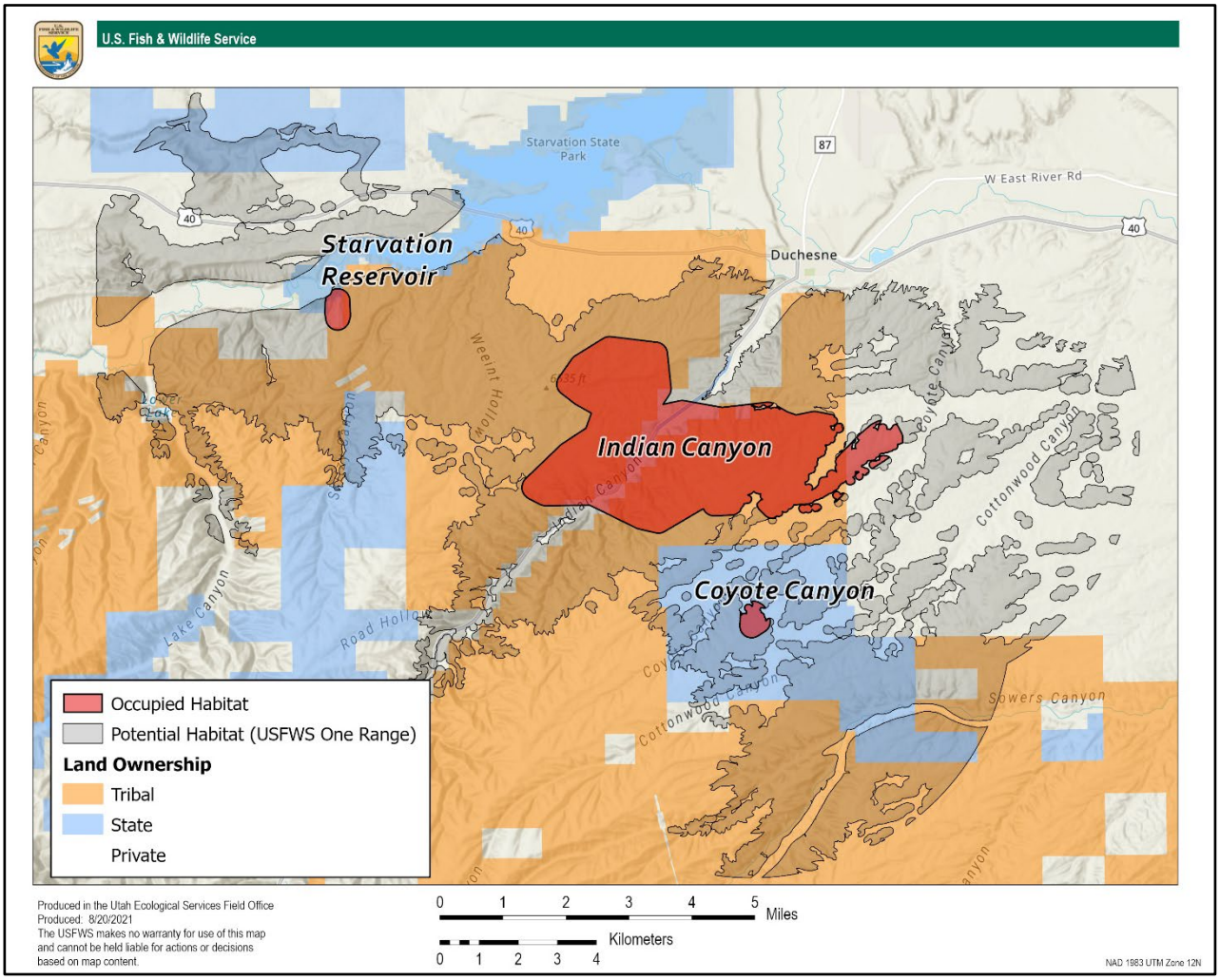

Figure 2. Map showing the three known populations of Barneby ridge-cress (red) on either Tribal (orange) or State (blue) land. The 2021 potential habitat polygon is shown in gray.

Critical Habitat Description

Critical habitat has not been proposed or designated for Barneby ridge-cress.

3.2 Ute ladies'-tresses

Species Description

Ute ladies'-tresses was first described as a species in 1984 from a population discovered near Golden, Colorado (Sheviak 1984). The species is a perennial orchid (member of the plant family Orchidaceae) that first emerges above ground as a rosette of thickened leaves and is very difficult to distinguish from other vegetation given the dense herbaceous vegetation where the species often grows. Its leaves are up to 0.6 in wide and 11 in long; the longest leaves are near the base. The usually solitary flowering stem is 8 to 20 in tall, terminating in a spike of 3 to 15

white or ivory flowers. Flowering generally occurs from mid-July through August. However, in some locations the species may bloom in early July, or may still be in flower in early October, depending on elevation and timing of high water flows.

Ute ladies'-tresses looks most similar to hooded ladies'-tresses (*Spiranthes romanzoffina*) but differs in the detailed characteristics of the individual flowers. In hooded ladies'-tresses (which is more common), each individual flower has petals and sepals that are fused to form a covering, or "hood." In Ute ladies'-tresses, these floral parts are not fused, appearing instead to be widely spread, or "gaping" open.

Life History and Population Dynamics

Ute ladies'-tresses is a long-lived perennial herb that is thought to reproduce exclusively by seed (Fertig et al. 2005). Bees are the primary pollinators; however, because Ute ladies'-tresses provides only nectar as a food reward, other pollen-providing plant species must be present to attract and maintain pollinators (Sipes and Tepedino 1995, Sipes et al. 1995, Pierson and Tepedino 2000).

The life cycle of Ute ladies'-tresses consists of four main stages including seedling, dormant, vegetative, and reproductive (flowering or fruiting) (Fertig et al. 2005). Ute ladies'-tresses seedlings may develop slowly into larger, dormant mycorrhizal roots or grow directly into above-ground vegetative shoots (Wells 1981), but neither has been confirmed in the wild. The Cincinnati Zoo and Botanical Garden has grown plants from seed under laboratory and greenhouse conditions; germination took 6 to 8 months and development from a protocorm (dormant orchid seedling) into a plant was slow (Pence 2009). Long-term demographic monitoring studies indicate that vegetative or reproductive Ute ladies'-tresses plants can revert to a below-ground existence for as many as four consecutive growing seasons before reemerging above ground (Arft 1995, Allison 2001, Heidel 2001).

Flowering individuals are necessary to reliably distinguish Ute ladies'-tresses from other similar-looking plant species (esp. other *Spiranthes* species), and surveys during flowering season also maximize the likelihood of detecting Ute ladies'-tresses among dense stands of other herbaceous plant species. However, surveys in which only flowering stems are tallied are of limited value for assessing population trends, given that individual Ute ladies'-tresses plants do not flower consistently from one year to the next, and the relative proportion of individual Ute ladies'-tresses plants in each of the four life stages (seedling, dormant, vegetative, reproductive) can vary widely within and among years and between different colonies (Arft 1995, Pierson and Tepedino 2000, Allison 2001, Heidel 2001, Fertig et al. 2005).

Population trends are less variable when inferred from datasets where all life stages are counted (Arft 1995, Heidel 2001). However, because non-reproductive individuals are inherently difficult and laborious to detect, most surveys tend to focus on the detection (and counting) of flowering individuals (Fertig et al. 2005). As a result, knowledge of Ute ladies'-tresses population trends is severely hindered. This also suggests that available estimates (derived solely from flowering stem counts) are likely to represent conservative estimates of total population size.

When Ute ladies'-tresses was listed under the ESA in 1992, the rangewide population was estimated to contain fewer than 6,000 individuals (USFWS 1992, Fertig et al. 2005). In 1995, the draft recovery plan increased this estimate to 20,500 individuals, primarily the result of 21 new populations discovered over the previous 3 years (USFWS 1995). As of 2005, 53 populations were estimated to collectively contain more than 80,000 (83,316) individuals (Fertig et al. 2005). For these populations, available population estimates ranged in size from 1 to more than 28,000 plants. More than 80 percent of these populations contained fewer than 1,000 individuals, and 38 percent contained fewer than 100 individuals. A review of the latest information on the species biology, trend, and stressors (called a Species Status Assessment [SSA]) is currently in progress and is expected to be finalized in 2022.

Status, Distribution, and Threats

We listed Ute ladies'-tresses as threatened in its entire range under the ESA on January 17, 1992 (USFWS 1992). A draft recovery plan was prepared, but not finalized (USFWS 1995). The descriptions that follow are derived from a draft recovery plan, a range-wide status review (Fertig et al. 2005), and additional sources as necessary. When it was listed under the ESA in 1992, Ute ladies'-tresses was known from 10 extant populations within portions of only two states (Colorado and Utah, USFWS 1992). At that time, these 10 populations were estimated to encompass approximately 170 ac of occupied habitat. At listing, the species was presumed extirpated in Nevada.

Since listing, Ute ladies'-tresses was rediscovered in Nevada, and new populations were discovered in southern Idaho, southwestern Montana, western Nebraska, central and northern Washington, southeastern Wyoming (Fertig et al. 2005), and south-central British Columbia (Bjork 2007). In 2005, 53 populations (encompassing 674 to 784 ac of habitat) were considered extant across the range of the species (Fertig et al. 2005); the British Columbia locations were discovered the following year (Björk 2007). Utah had the most populations (23), the largest amount of occupied habitat (234 to 308 ac), and the highest number of reported plants (47,859 individuals) of any state (Fertig et al. 2005). The Spanish Fork watershed in Utah was assessed as having the highest recorded population estimate (28,825 plants), whereas the Upper Green-Flaming Gorge Reservoir population (which spans the Colorado-Utah border) spanned the most extensive area (117 to 126 ac). The majority of known populations (66 percent) occupied between 0.1 and 10 ac, whereas relatively few (4.9 percent) occupied more than 50 ac.

Ute ladies'-tresses occurs in a variety of human-modified and natural habitats, including, seasonally flooded river terraces, sub-irrigated or spring-fed abandoned stream channels and valleys, and lakeshores (Jennings 1989, USFWS 1992, Fertig et al. 2005). Numerous populations also occur along irrigation canals, behind berms, within abandoned roadside borrow pits, along reservoir edges, and other human created or modified wetlands. Streamside populations of Ute ladies'-tresses typically occur on shallow alluvial soils overlying permeable cobbles, gravels, and sediments. Across the range of the species, populations occur at elevations ranging from 720 to 1,830 ft in Washington and British Columbia to 7,000 ft in northern Utah.

Most Ute ladies'-tresses sites have early- to mid-successional vegetation (well-established grasses and forbs) communities that are maintained by human disturbances such as livestock grazing, mowing, ditch and irrigation maintenance, and prescribed fire (Allison 2001, Fertig et al. 2005). Ute ladies'-tresses may persist for some time in the grassy understory of woody riparian shrublands, but it does not appear to thrive under these conditions (Ward and Naumann 1998).

Nearly all streambank, floodplain, and abandoned ox-bow sites occupied by Ute ladies'-tresses have a high water table (usually within 5 to 18 in of the surface) augmented by seasonal flooding, snowmelt, runoff, and often irrigation (Jennings 1989, Arft 1995, Black et al. 1999, Riedel 2002). Soils must be sufficiently stable and moist in the summer flowering season to support the species (Ward and Naumann 1998). Sites located in springs or sub-irrigated meadows appear to be fed by groundwater rather than surface flows. Less is known about the average depths to groundwater in these locations, but it is reasonable to assume that (as with locations where groundwater depths have been quantified) groundwater must remain relatively close to the surface in order to sustain the moist soils consistently associated with Ute ladies'-tresses.

At the time of listing, we identified habitat loss and modification as the primary threat to the species, but also noted that small population sizes and low reproductive rates rendered Ute ladies'-tresses vulnerable to other threats (USFWS 1992). Our listing rule identified several specific forms of habitat loss and modification as threats to Ute ladies'-tresses, including urbanization, water development and conversion of lands to agriculture, excessive livestock grazing, excessive or inappropriate use of herbicides or other chemicals, and the proliferation of invasive exotic plant species. In addition, we concluded that the species may be subject to over-collection, given its status as an orchid and inquiries from orchid enthusiasts and wildflower collectors.

Today, many of these same threats affect Ute ladies'-tresses at least at the site-specific level (Fertig et al. 2005), and some newer stressors have emerged. For example, whereas over-collection had not materialized as a specific threat to Ute ladies'-tresses, vegetation succession, losses or reductions in pollinators, and changes in hydrology are stressors that were found to be acting on the species after it was listed.

Ute ladies'-tresses is an early- to mid-seral successional species. This means that as natural ecological succession occurs after a disturbance event to the habitat, the vegetative community usually becomes less suitable for Ute ladies'-tresses due to competition, drying of soil, and increased canopy cover. Ute ladies'-tresses requires moderate levels of periodic disturbance to maintain its habitat in a suitable successional stage (Fertig et al. 2005).

Ute ladies'-tresses is dependent on bees for pollination and successful sexual reproduction. Any reduction in the availability of bees (including reductions due to changes in the vegetative community and floral resources) will result in declining recruitment and fewer individuals (Fertig et al. 2005). Declines in the number of suitable pollinators have been documented specifically in Ute ladies'-tresses habitat (Fertig et al. 2005) and overall declines in numbers of native bees in North America have been well documented in recent years, with over half the

known species of native bees (with available data sufficient for trend analysis) experiencing declines (Kopec and Burd 2017).

As a wetland-obligate species, Ute ladies'-tresses is extremely dependent on the hydrology of its habitats. Any changes to the hydrology that would cause either drying or long-term inundation of the habitat can result in unsuitable habitat for the species. Additionally, as moderate periodic disturbance is needed to maintain or create Ute ladies'-tresses habitat, those populations that rely on hydrologic events such as flooding for that disturbance are vulnerable to changes in hydrology. Both decreases and increases in stream flows and flooding events can render the habitat less or no longer suitable for Ute ladies' tresses (Fertig et al. 2005).

In addition to these new stressors, at the time of listing we identified several specific forms of habitat loss and modification as threats to Ute ladies'-tresses, including urbanization, invasive plant species, and water development. Roadways and ground disturbance provide corridors and vectors for the introduction and spread of invasive and non-native species (Forman et al. 2003; Gelbard and Belnap 2003; Watkins et al. 2003; Flory and Clay 2006; Christen and Matlock 2009; Mortensen et al. 2009). Invasive species can affect individuals, populations, and ecosystems through competition, change in community composition, and changes in environmental conditions (Simberloff et al. 2013). The impacts of invasive species usually decline with increasing distance from disturbance (Gelbard and Belnap 2003; Forman et al. 2003).

Common invasive weed species in Duchesne County found within Ute ladies'-tresses habitat include Russian knapweed (*Acroptilon repens*), teasel (*Dipsacusfullonum*), perennial pepperweed (*Lepidium latifolium*), Canada thistle (*Cirsium arvense*), Russian olive, and salt cedar (*Tamarix ramosissima*). Invasive weeds compete with Ute ladies'-tresses for resources via competition for sunlight and space which can then result in displacement of Ute ladies-tresses plants. Since Ute ladies'-tresses is a small stature plant, it requires open riparian patches with low growing herbaceous vegetation that will not block sunlight.

Conversion of irrigation water to municipal use, flood control (includes riverbank stabilization), water development or redevelopment, and restoration projects targeting stream and riparian corridors (includes in-stream and habitat alteration) contribute to altered hydrologic regimes across the species' range. However, Ute ladies'-tresses has proliferated in areas with greatly altered, but stable and predictable hydrology (Fertig et al. 2005). Prominent examples include the Green River along the Colorado-Utah border (Ward and Naumann 1998), Diamond Fork Creek in the Spanish Fork watershed of Utah (Black and Gruwell 2004), the Columbia River in Washington (Cordell-Stine and Pope 2008), and the South Fork Snake River in Idaho (Idaho Conservation Data Center 2007). The species is also frequently encountered along streams and canals and in wet hay pastures in the Uinta Basin of eastern Utah, even though an extensive irrigation canal system was constructed in the early 1900s and natural streams are nearly dry all summer (Fertig et al. 2005, Kendrick 1989). Ute ladies'-tresses has also colonized wetlands left behind when peat was mined, and the species occurs in drainage ditches alongside roads and railroad tracks (Fertig et al. 2005).

In summary, Ute ladies'-tresses occurs in more than 50 populations distributed across eight U.S. states and one Canadian province. These populations collectively contain some 80,000 individuals. Approximately 80 percent of known populations are associated with lands managed for agriculture or recreation, rivers regulated by dams, or other human-modified habitats (Fertig et al. 2005). Research, monitoring, and management activities have demonstrated that ongoing patterns of land use across the range of the species are capable of mimicking or providing the conditions required for the species' persistence.

Critical Habitat Description

Critical habitat has not been proposed or designated for Ute ladies'-tresses.

3.3 Uinta Basin hookless cactus and Pariette cactus

Species Description

Uinta Basin hookless cactus is typically a solitary cactus with rounded (globose to short-cylindric) stems ranging from 1.5 to 7 in tall, with exceptional plants up to 12 in tall, and 1.6 to 4.7 in in diameter (74 FR 47112, September 15, 2009, Holmgren et al. 2012). The stems have typically 12 to 15 ribs with tubercles (small rounded projections along the rib) that are evident. Along the ribs are areoles (tip of tubercle where spines originate) with hooked spines of two types (radial and central) radiating outward. The 6 to 10 radial spines are white or gray to light brown and are 0.24 to 0.8 in long. The one to five central spines (usually three) are 0.5 to 2.0 in long, are generally longer than radial spines, and extend from the center of the areole (Holmgren et al. 2012).

Uinta Basin hookless cactus generally flowers from May through mid-June. The funnel-shaped flowers usually have light pink to dark pink tepals (petals and petal-like sepals) with yellow stamens (the male reproductive organ of the flower) (Holmgren et al. 2012). The fruit is short, barrel-shaped, reddish or reddish-grey when ripe, 0.35 to 1.0 in long and 0.2 to 0.5 in wide (Holmgren et al. 2012). The root structure is composed of a central tap root 6 to 8 in long with many fibrous lateral roots extending an average of 8 to 10 in from the main stem, or even farther for larger individuals (Reisor 2013).

Pariette cactus is separated from other cactus in the genus by a single, small central spine that is strongly hookless with the tip almost touching the surface of the areole (Hochstatter 1989, 74 FR 47112, September 15, 2009). The species also tends to be smaller in size than other species in the *Sclerocactus* genus ranging from 1.0 to 3.1 in tall and 0.7 to 3 in wide (Porter et al. 2007; Holmgren et al. 2012; Welsh et al. 2016). The stems typically have 12 or 13 ribs. Along the ribs are areoles (tip of tubercle where spines originate) with hooked spines of two types (radial and central) (Holmgren et al. 2012). Spines are not overlapping and do not obscure the stem. There are 6 to 9 radial spines located around the margin of the areole, 0.2 in long, appressed, that extend parallel to the body of the plant. The 2 to 3 central spines are 0.3 to 0.4 in long and extend from the center of the areole.

Pariette cactus generally flowers from May through mid-June. The bell-shaped flowers usually have pink tepals and yellow stamens and are 0.8 to 1.4 in long and 0.6 to 1 in wide. The fruit is short, barrel-shaped, reddish or reddish grey when ripe, 0.4 to 0.8 in long and 0.3 to 0.5 in in diameter (Holmgren et al. 2012).

Field identification to distinguish the two cactus species is complicated by the fact that the Uinta Basin hookless cactus and Pariette cactus easily hybridize with each other. Hybridization between the two species makes it difficult to distinguish them morphologically, as there is no clear delineation between their ranges, and both species can exist in close proximity to each other within different microhabitats (71 FR 75216 December 14, 2006, Tepedino et al. 2010).

Life History and Population Dynamics

Both *Sclerocactus* species require pollinators to transport pollen from flowers of other plants in order to produce viable seeds (Tepedino et al. 2010). Flowers typically open in mid-day and close late in the afternoon for three to five days (Tepedino et al. 2010). A broad assemblage of native, ground-nesting bees, mostly from the family Halictidae (Tepedino et al. 2010; BIO-Logic 2015), pollinate the Pariette cactus and Uinta Basin hookless cactus. These bees can travel from 0.2 to 0.6 mi between plants (Tepedino 2010). Other insects, including ants and beetles, may pollinate Uinta Basin hookless cactus (USFWS 1990), though both are predominately pollinated by ground-nesting bees (Tepedino et al. 2010). Bees appear to be sufficiently pollinating the Uinta Basin hookless cactus across the species' range (Tepedino et al. 2010). Under-pollination may be a problem for Pariette cactus, but more studies are needed to confirm this supposition (Tepedino et al. 2010; BIO-Logic 2015). A healthy pollinator population, with high pollinator abundance and species richness, is important for supporting population-level reproduction (Bio-Logic 2015).

Seedlings germinate opportunistically throughout the growing season (Hornbeck 2020, Reisor 2013), though most cacti species germinate in the spring or fall and is linked to precipitation (Godínez-Álvarez et al. 2003, Martínez-Berdeja and Valverde 2008, Arroyo-Cosultchi et al. 2016, Shyrock et al. 2014). Seed germination, growth rate, survival, and overall plant health may be linked to the presence of arbuscular mycorrhizae (symbiotic fungus) in the soil. There are three common genera of arbuscular mycorrhizae associated with the species: *Rhizophagus*, *Glomus*, and *Claroideoglomus* (Harding 2017). Both species can shrink or contract underground during times of drought to conserve water and develop branches or pups as a means of clonal growth (Hornbeck 2020, Salguero-Gómez and Casper 2010). Seed production, seedling recruitment, and survival are strongly and positively associated with the size of adult plants of both species, and survival of the largest individuals is the primary contributor to population growth (Hornbeck 2020).

Status, Distribution, and Threats

Uinta Basin hookless cactus and Pariette cactus were listed as threatened species in 1979 under the Colorado hookless cactus (*Sclerocactus glaucus*) listing. The listing was based on the threats of mineral and energy development, illegal collection, recreational off-road vehicle (ORV) use, and grazing (44 FR 58868, October 11, 1979). In 2009, the Colorado hookless cactus complex was separated into three species (see *Species Description* section above): Uinta Basin hookless cactus (*S. wetlandicus*), Pariette cactus (*S. brevispinus*), and Colorado hookless cactus (*S. glaucus*), with each retaining their threatened status (74 FR 47112, September 15, 2009).

Uinta Basin hookless cactus is found primarily within Uintah County, Utah along the Green and White Rivers and their tributaries, with some individuals occurring in Duchesne and Carbon counties. The range (i.e., potential habitat polygon) of the species is approximately 516,070 ac (208,846 ha), with 53 percent occurring on Federal land, 28 percent on Ute Indian Tribe lands, and the remainder on private or State lands (USFWS 2019b). The total population size estimate is 83,408 to 110,815 individuals. We consider the species to occupy one metapopulation (a regional grouping of connected populations) across its range comprised of 11 core 2 areas (Bonanza, Lower Green, Middle Green, Upper Green, Nine Mile, White River, Duchesne East, Duchesne West, Lower Pariette, Upper Pariette, Myton). Each core 2 area contains core 1 areas of high cactus density and pollinator habitat. We prioritize the conservation of core 1 and core 2 areas to support the needs of the species, its pollinators, and maintain metapopulation processes.

The metapopulation trend of Uinta Basin hookless cactus is just below the stable range (lambda[3] average of 0.943, range 0.724 to 1.077) identified for the species (stable lambda is 0.950 to 1.05) (Hornbeck 2020). This indicates that the metapopulation is declining during the time period evaluated (2013 to 2019); however continued monitoring for a longer timeframe (10 to 20 years) is recommended based on the species' life history. There is a high degree of demographic variability between core 2 areas (Hornbeck 2020). The species appears to be negatively affected by trampling (livestock, wild horses), herbivory, and drought. It is difficult to discern the relative effects of various factors (invasive species, herbivory, drought, habitat loss and fragmentation) due to extensive effects from trampling (livestock, wild horses). However, generalized degradation of the habitat is likely a potential contributor to population behavior (Hornbeck 2020). The threats to the species include mineral and energy development, illegal collection, recreational off-road vehicle (ORV) use, and grazing and are discussed in the listing decision and latest 5-Year Review (USFWS 2020).

Pariette cactus is endemic to the Uinta Basin region of northeastern Utah, which is part of the Colorado Plateau ecoregion. The species is found primarily within Uintah and Duchesne Counties, Utah with individuals occurring west of the Duchesne River, in the upper reaches of Pariette Wash, and Castle Peak Draw. The range (i.e., potential habitat polygon) of the species is approximately 111,092 ac, with 29 percent occurring on Federal land, 32 percent on Ute Indian Tribe lands, 35 percent on private, and the remainder on State lands (USFWS 2019b). The total population size estimate is 30,500 to 42,281 individuals. We consider the species to occupy one metapopulation (a regional grouping of connected populations) across its range comprised of four core 2 areas (Duchesne West, Lower Pariette, Upper Pariette, Myton). Uinta Basin hookless

[3] The rate of population growth.

cactus also occurs within the four core 2 areas. Each core 2 area contains core 1 areas of high cactus density and pollinator habitat. We prioritize the conservation of core 1 and core 2 areas to support the needs of the species, its pollinators, and maintain metapopulation processes.

The metapopulation trend of Pariette cactus is just below the stable range (lambda average of 0.947, range 0.825 to 1.02) identified for the species (stable lambda is 0.950 to 1.05) (Hornbeck 2020). This indicates that the metapopulation is declining during the time period evaluated (2013 to 2019); however continued monitoring for a longer timeframe (10 to 20 years) is recommended based on the species' life history. There is some degree of demographic variability between core 2 areas (Hornbeck 2020). The species appears to be negatively affected by trampling (livestock, wild horses), herbivory, and drought. It is difficult to discern the relative effects of various factors (invasive species, herbivory, drought, habitat loss and fragmentation) due to extensive effects from trampling (livestock, wild horses). However, generalized degradation of the habitat is likely a potential contributor to population behavior (Hornbeck 2020). The threats to the species include mineral and energy development, illegal collection, recreational off-road vehicle (ORV) use, and grazing and are discussed in the listing decision and latest 5-Year Review (USFWS 2020).

Critical Habitat Description

Critical habitat has not been proposed or designated for Uinta Basin hookless cactus and Pariette cactus.

3.4 Colorado River Fishes

3.4.1 Colorado Pikeminnow

The Colorado pikeminnow is a large minnow native to the Colorado River system of the western United States and northern Mexico. The current range of the Colorado pikeminnow is reduced due to flow regulation, habitat loss, migration barriers (i.e., dams), and the introduction of nonnative fishes. The species now exists only in the Upper Colorado River system. We discuss specific information on Colorado pikeminnow populations in the Environmental Baseline (section 4.1.4) below.

Adult Colorado pikeminnow prefer medium to large rivers, where they occur in habitats ranging from deep, turbid rapids to flooded lowlands. Slow-moving backwaters serve as nursery areas for young pikeminnow (USFWS 2002a). The Colorado pikeminnow primarily eats fish and minnows, but smaller individuals will also feed on insects and other invertebrates.
We designated six reaches of the Colorado River System as critical habitat, including portions of the Colorado, Green, Yampa, White, and San Juan rivers, totaling 1,148 mi of critical habitat for the species (59 FR 13374). In Utah, we designated 726 mi of critical habitat in portions of the Green, Colorado, White, and San Juan rivers and their associated 100-year floodplains. We developed a recovery plan for the Colorado pikeminnow in 1991 and subsequently revised the plan in 2002 (USFWS 2002a).

3.4.2 Razorback Sucker

The largest native sucker to the western United States, the razorback sucker is a river catostomid endemic to the Colorado River Basin (USFWS 2002b). The species feeds primarily on algae, aquatic insects, and other aquatic macroinvertebrates. We listed razorback sucker as an endangered species in 1991. The current range of the species is reduced due to flow regulation, habitat loss, migration barriers, and the introduction of nonnative fishes. We discuss specific information on razorback sucker populations in the Environmental Baseline (section 4.1.4) below.

Historically, the razorback sucker occupied the mainstem Colorado River and many of its tributaries from northern Mexico through Arizona and Utah into Wyoming, Colorado, and New Mexico. Populations of this species in the Upper Colorado River Basin occur in the Green, Upper Colorado, and San Juan rivers (USFWS 2002b). Habitat occupied by the sucker appears to be seasonal, and they prefer warm water rivers.

Designated critical habitat occurs in portions of the Green, Colorado, Duchesne, White, and San Juan Rivers (59 FR 13374). In Utah, we designated 688 river miles and the associated 100-year floodplain as critical habitat. We finalized the recovery plan for the species in 2002 (USFWS 2002b).

3.4.3 Humpback Chub

The humpback chub is a medium-sized freshwater fish of the minnow family endemic to the Colorado River Basin. Humpback chub mainly occur in river canyons where they use 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 2002c). We discuss specific information on humpback chub populations in the Environmental Baseline (section 4.1.4) below.

Humpback chub occur in portions of the main-stem Colorado River and two tributaries, the Green and Little Colorado Rivers. Its habitat preferences are not well understood, but are associated with a variety of habitats, including pools ranging from 3.3 to 49.2 ft in depth with turbulent to no current. Substrates of occupied habitat include silt, sand, boulder, and bedrock (USFWS 2011b).

Currently, there are five known self-sustaining populations of humpback chub. Four occur in the Upper Colorado Basin Recovery Unit and one occurs in the Lower Colorado Basin Recovery Unit. In Utah, Desolation and Gray canyons of the Green River hold one of three abundant populations of this species (USFWS 2002c) in the Upper Basin.

We designated 139 river miles and adjacent 100-year floodplain in Utah as critical habitat for the humpback chub in portions of the Green and Colorado Rivers (59 FR 13374). We finalized the latest recovery plan for the species in 2002 (USFWS 2002c).

3.4.4 Bonytail Chub

Bonytail chub is a minnow species native to the Colorado River Basin. Bonytail distribution and population has declined significantly over the last century. This species was one of the first fish species to reflect the changes that occurred to the Colorado River system from construction of Hoover Dam, which caused an alteration to the natural flow regime of the river. Other causes for the near extinction of this fish include habitat loss/alteration and competition with nonnative fishes in the Colorado River (USFWS 2002d). We discuss specific information on bonytail chub populations in the Environmental Baseline (section 4.1.4) below.

We know little about the specific food and habitat of the bonytail because the species was extirpated from most of its historic range prior to extensive surveys, but we believe it is adapted to mainstem rivers. The species resides in pools and eddies and its primary food sources are terrestrial and aquatic insects (USFWS 2002d). In Utah, the bonytail occurs in the Green River and Colorado River.

We designated 139 river miles and the adjacent 100-year floodplain in Utah as critical habitat for the bonytail chub in these rivers (59 FR 13374). We finalized the latest recovery plan for the species in 2002 (USFWS 2002d).

4 ENVIRONMENTAL BASELINE

Regulations implementing the ESA (50 CFR 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the Proposed Action. The environmental baseline includes the past and present effects of all Federal, state, or private actions and other human activities in the action area, the anticipated effects of all proposed Federal projects in the action that have already undergone formal or early section 7 consultation, and the effects of state or private actions that are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

4.1 Status of the Species in the Action Area

4.1.1 Barneby ridge-cress

The Project bisects the Indian Canyon population and this is the only population directly affected. As described in the Status of the Species (section 3.1), we do not have information on population trend or specific biological needs of the species. Project specific surveys identified 239 ac (less than one percent of the potential habitat) of suitable habitat within the action area, with 170 ac on private lands and 69 on Ute Indian Tribe lands (HDR Inc 2021a) to date. Species level clearance surveys are not complete and have not yet been completed on 15 ac of private lands in the action area. Based on the preliminary survey information and our definition of occupied habitat (300 ft around known plants), there are 130 ac of occupied habitat (13 percent) for Barneby ridge-cress in the action area, including approximately 52 ac (five percent) of

occupied habitat within the Project footprint that will directly impacted (Table 3; USFWS 2021b, HDR Inc. 2021a).

Currently, there are approximately 2,212 known individuals (22 percent of the total population; 26 percent of the Indian Canyon population) of Barneby ridge-cress in the action area (Table 2) (HDR Inc 2021a, USFWS 2021b). 269 (2.8 percent of the total population; 3 percent of the Indian Canyon population) of those individuals are also within the Project footprint and may be directly lost due to the Project construction. Species level clearance surveys are ongoing and have not yet been completed on 15 ac of private lands in the action area; therefore, we do not know the exact number of individuals present in the Project footprint and action area. Clearance surveys will continue in 2022 for the species. Without clearance surveys throughout the entire suitable habitat area for Barneby ridge-cress, the STB and applicants acknowledge the inability to document all Barneby ridge-cress individuals and the extent of occupied habitat within the action area prior to our issuance of the BO (see section 4.2.1, below).

Table 3. The status of Barneby ridge-cress within the action area based on survey results to-date.

Evaluation Area	Number of Plants	Occupied Habitat (acres)	Suitable Habitat (acres)
Project Footprint	269	52	Not applicable
Action Area	2,212	130	239

The acres of habitat evaluated for this BO differ from the acres of habitat presented in the BA for two reasons: 1) we used the 2021 potential habitat polygon for our analyses which was updated after the BA was written, therefore the BA used the older polygon; and 2) we defined the action area to include the Project footprint plus a 300 ft buffer which is larger than the Project footprint that was used for the analysis area in the BA.

4.1.2 Ute ladies'-tresses

There are no records of Ute ladies'-tresses within the action area, and first year (2021) surveys did not locate any individuals (Table 4; HDR Inc. 2021b). Without three consecutive years of clearance surveys in suitable habitat area for Ute ladies'-tresses, the STB and applicants acknowledge the inability to document all Ute ladies'-tresses individuals and the extent of occupied habitat within the action area prior to our issuance of the BO (see section 4.1.2, below).

Habitat assessments performed for the Project identified approximately 11.39 ac of Ute ladies'-tresses suitable habitat in the action area with 4 of those acres within the project footprint (Table 4, HDR Inc. 2021b, USFWS 2021b). The acres of habitat evaluated in this BO differ from the acres of habitat discussed in the BA due to our use of an updated potential habitat polygon (Juliusson 2020) and our definition of the action area (see section 2).

The majority of suitable Ute ladies'-tresses habitat within the action area occurs on wetland terraces adjacent to Indian Canyon Creek and wet meadow wetlands that rely on Indian Canyon Creek as a primary source of hydrology. These terraces and wet meadows often exhibit moderately dense vegetation and non-saline conditions, which provide suitable habitat for the

species. Common plant species found in areas identified as suitable Ute ladies'-tresses habitat include mountain rush (*Juncus arcticus* ssp. *littoralis*), foxtail barley (*Hordeum jubatum*), alkali buttercup (*Ranunculus cymbalaria*), and willow species (*Salix* species) (BA, section 4.3.7.).

Table 4. The status of Ute ladies'-tresses within the action area based on survey results to-date (HDR Inc. 2021b, USFWS 2021b)**.**

Evaluation Area	Number of Plants	Occupied Habitat (acres)	Suitable Habitat (acres)
Project Footprint	Unknown	Unknown	4
Action Area	Unknown	Unknown	11.39

4.1.3 Uinta Basin hookless cactus and Pariette cactus

For Uinta Basin hookless cactus, there are 1,203 total acres of potential habitat (less than one percent of the total potential habitat) in the action area (Table 5). Nested within the potential habitat are 309 ac of Myton core 2 habitat (excluding Core 1 habitat, is less than one percent of the total core 2 habitat) and 56 ac of core 1 habitat (less than one percent of the total core 1 habitat) also within the action area (Table 5). Currently, there are 365 known individuals (one percent of the total population; five percent of the Myton core 2 area) of Uinta Basin hookless cactus in the action area (Table 5). This analysis is based on pre-existing information from the USFWS species database and does not include survey information for this Project. Clearance surveys have not yet been completed for this Project; therefore, the STB and applicants acknowledge the inability to document all Uinta Basin hookless cactus individuals and the extent of occupied habitat within the action area prior to our issuance of the BO (see section 4.1.3, below). Clearance surveys will be conducted in 2022 for the species.

Table 5. The status of Uinta Basin hookless cactus within the action area to-date.

Evaluation Area	Number of Plants	Core 2 Area (acres)	Core 1 Area (acres)	Potential Habitat (acres)	Total Habitat (acres)
Project Footprint	56	127	56	321	504
Action Area	365	309	182	712	1,203

For Pariette cactus, there are 1,203 ac of potential habitat (one percent of the total potential habitat) and 491 ac of the Myton core 2 habitat (less than one percent of the total core 2 habitat) in the action area (Table 6). Within the Myton core 2 area, there is approximately 183 ac of core 1 habitat (less than one percent of the total core 1 habitat) in the action area (Table 6). Currently, there are 324 known individuals (one percent of the total population; seven percent of the Myton core 2 area) of Pariette cactus in the action area (Table 6). Clearance surveys have not yet been completed for this Project; therefore, the STB and applicants acknowledge the inability to document all Uinta Basin hookless cactus individuals and the extent of occupied habitat within

the action area prior to our issuance of the BO (see section 4.2.3, below). Clearance surveys will be conducted in 2022 for the species.

Table 6. The status of Pariette cactus within the action area to-date.

Evaluation Area	Number of Plants	Core 2 Area (acres)	Core 1 Area (acres)	Potential Habitat (acres)	Total Habitat (acres)
Project Footprint	206	127	56	321	504
Action Area	324	309	182	712	1,203

4.1.4 Colorado River Fishes

The Project occurs within the hydrographic sub-basin for the mainstem Green River in Utah. For all four endangered fish species, the Project occurs within the Upper Colorado River Basin Recovery Unit. Within this Recovery Unit, we established specific recovery criteria for the Green River sub-basin for all four species, including population demographics. Self-sustaining and stable populations of these species in the Green River sub-basin are required for species recovery (USFWS 2002a, 2002b, 2002c, 2002d).

We designated the Green River and its 100-year floodplains between the Yampa River confluence and the Colorado River confluence as critical habitat for at least one of the species (59 FR 13374).

Currently, the Project action area includes:

- a wild population of Colorado pikeminnow;
- one of two primary Colorado pikeminnow nursery habitats;
- known, active migratory routes for spawning Colorado pikeminnow and razorback sucker; and
- known occupied habitat for Colorado pikeminnow, razorback sucker, humpback chub, and bonytail.

Colorado Pikeminnow

The largest, most productive, and most robust population of Colorado pikeminnow in the upper Colorado River Basin occurs in the mainstem Green River (combining the lower Green River, Desolation and Gray Canyon, White River, Yampa River, and middle Green River populations). Higher abundance of Colorado pikeminnow juveniles and recruits in the 2006 to 2008 sampling period is attributed to a relatively strong year class of age-0 Colorado pikeminnow produced in the lower Green River in 2000 (Bestgen et al. 2010). Length frequency histograms, especially in the Desolation-Gray Canyon and lower Green River reaches, indicate that abundance of Colorado pikeminnow recruits was much higher in the period from 2006 to 2008, than from 2000 to 2003 (Bestgen et al. 2010).

Colorado pikeminnow spawn in two principal sites: Gray Canyon in the lower Green River and the lower Yampa River (USFWS 2002a). The importance of the lower Green River Colorado pikeminnow population is evidenced by increased abundance of adult Colorado pikeminnow in the White River and middle Green River through 2008. This phenomenon is almost certainly the result of upstream movement (high transition rates) of large numbers of juvenile and recruit-sized Colorado pikeminnow that originated in downstream reaches of the Green River in 2006 and 2007 (Bestgen et al. 2010). In recent years, Colorado pikeminnow populations have declined and the most recent population estimate in the Green River sub-basin numbers around 2,000 adult pikeminnow (Bestgen et al. 2018).

Razorback Sucker

Since 2000, over 560,000 subadult razorback suckers have been stocked in the Green and upper Colorado River subbasins. From 2004 to 2007 approximately 96,400 fish were stocked and 1,511 recapture events from 1,470 unique individuals were encountered from 2005 to 2008. In 2012, tag-reading antennae were placed on a spawning bar in the middle Green River near Dinosaur National Monument in northeast Utah. Fifty-two unique razorback sucker stocked between 2004 and 2010 were detected, 88 percent of which were not seen since stocking. During sampling for Colorado pikeminnow estimates, 938 and 765 razorback sucker were captured in 2011 and 2012, respectively, in the Ouray to Green River, Utah reach of the main channel of the Green River. In a monitoring plan (Bestgen et al. 2012), estimates of large juvenile to adult razorback sucker in three reaches of the Green River ranged from 474 to over 5,000 within a reach. Although these estimates are highly imprecise, they provide further confirmation that stocked fish are surviving in the wild. Razorback sucker abundance increased in all reaches of the Green River in recent years, largely from increased survival of stocked fish (Zelasko et al. 2018). Because of the successes in razorback sucker recovery, we published a 5-year review in 2018 proposing to reclassify razorback sucker from endangered to threatened status (USFWS 2018a).

Known spawning sites for razorback sucker are located in the lower Yampa River and in the Green River near Escalante Ranch, but other, less-used sites are probable, such as Desolation Canyon (USFWS 2002b). The species is a migratory spawner whose young emerge as larval fish from spawning locations and drift downstream. Because razorback sucker spawning locations occur upstream of the Project action area and known populations occur downstream of the Project action area, adults and larval razorback sucker must pass through the Project action area during reproductive cycles.

Humpback Chub

Four wild populations of humpback chub inhabit canyon-bound sections of the Colorado and Green Rivers: Desolation and Gray Canyons; Cataract Canyon; Black Rocks; and Westwater Canyon. Although humpback chub are primarily resident fish, some movement between populations is expected. The Project action area is upstream of the Desolation and Gray Canyons humpback chub population.

We estimated the Desolation/Gray Canyons population of wild adults at 1,300 in 2001, 2,200 in 2002, and 940 in 2003 (Jackson and Hudson 2005). Sampling in 2001 and 2002 was conducted in summer, whereas beginning in 2003, sampling was shifted to fall to avoid capturing Colorado pikeminnow that use Desolation Canyon for spawning. A report on 2006 to 2007 population estimates for humpback chub indicated that this population was trending downward (Badame 2012). The report linked declining catch of humpback chub in the upper portions of Desolation Canyon in the 2006 to 2007 estimates with increasing densities of nonnative smallmouth bass (*Micropterus dolomieu*). However, the most recent population estimate showed recent increases and stability with estimates of 1,863 humpback chub in 2014 and 1,672 in 2015 (Howard and Caldwell 2018). Because of the successes in humpback chub recovery, we published a 5-year review in 2018 proposing to reclassify humpback chub from endangered to threatened status (USFWS 2018b).

Bonytail Chub

Bonytail are so rare that it is currently not possible to conduct population estimates. In response to the low abundance of individuals, the Recovery Program implemented a stocking program to reestablish populations in the Upper Basin (Upper Colorado River Endangered Fish Recovery Program and San Juan River Basin Recovery Implementation Program 2010). Since 1996, over 600,000 tagged bonytail subadults were stocked in the Green and Upper Colorado River subbasins.

To date, stocked bonytail do not appear to be surviving as well as stocked razorback sucker. Researchers continue to experiment with pre-release conditioning and exploring alternative release sites to improve their survival. Since 2009, an increasing number of bonytail were detected at several locations throughout the Upper Colorado River Basin where stationary tag-reading antennas are used. During high spring flows in 2011, more than 1,100 bonytail (16.6 percent of the 6,804 stocked in early April of that year) were detected by antenna arrays in the breach of the Stirrup floodplain on the Green River. In 2015 and 2016, researchers documented natural bonytail reproduction for the first time since listing (Bestgen et al. 2017). Recent recaptures of bonytail in the Green River a year after stocking provide promising results that individuals are surviving.

To augment natural populations, the Recovery Program produces genetically diverse fish in hatcheries and stocks them in the river system. The stocking program is guided by an integrated stocking plan and utilizes at least seven fish hatcheries for propagation. In most years, the Recovery Program was successful at meeting stocking goals. In addition, the Recovery Program is working on research projects to improve the survivorship of stocked fish. Bonytail are stocked into the Green River, both upstream and downstream of the Project action area.

4.2 Status of Critical Habitat in The Action Area

4.2.1 Colorado River Fishes

The Project action area includes critical habitat units identified as essential for the species' recovery (USFWS 2002a, 2002b, 2002c, 2002d). This section of the Green and White Rivers are within designated critical habitat for the Colorado pikeminnow and razorback sucker and downstream portions of the action area include designated critical habitat for bonytail and humpback chub.

We identified water, physical habitat, and the biological environment as the physical or biological features of critical habitat for listed Colorado River fish species (59 FR 13374-13400). All four ESA-listed species evolved in desert river hydrology, relying on high spring flows and stable base flows for habitat conditions essential to their survival. In addition to main channel migration corridors, Colorado pikeminnow, bonytail, and razorback sucker rely on floodplain and backwater habitats for various stages of their life history. High spring flows also act as spawning queues (USFWS 2002a, 2002b, 2002d). In contrast, humpback chub rely more on canyon-bound reaches with swift currents and white water (USFWS 2002c). The physical and biological features for critical habitat are present within the action area, although sometimes affected by human activities as described below.

Physical or biological feature – water

Water includes a quantity of water of sufficient quality delivered to a specific location in accordance with a hydrologic regime required for the particular life stage for each species. Past projects have resulted in depletions and changes in flows that have affected the endangered Colorado River fishes. These native fishes are adversely affected by depletions to water flow at sensitive life-stages (Muth et al. 2000). Depletions may reduce high spring flows, resulting in changes to food supply and productivity. Reductions in water flows can reduce spawning habitat availability and adversely affect backwater habitats, resulting in lower habitat quality. Water depletions may also contribute to flow changes that favor nonnative fish species. Competition with nonnative fish species is a factor in the decline of the endangered Colorado River fishes and nonnative fishes are known to occupy the same backwaters that are very important for young Colorado pikeminnow and razorback sucker (Recovery Program 2014).

Physical or biological feature – physical habitat

The physical habitat includes areas of the Colorado River system that are inhabited or potentially habitable for use in spawning and feeding, as a nursery, or serve as corridors between these areas. In addition, oxbows, backwaters, and other areas in the 100-year floodplain, when inundated, provide access to spawning, nursery, feeding, and rearing habitats.

The completion of Flaming Gorge Dam created a fish passage barrier. Native Colorado pikeminnow, razorback sucker, humpback chub, and bonytail can no longer migrate into Wyoming from the Green River. Fish barriers isolate populations, decreasing the ability of individuals to interact, and hinder the transfer of genetic material.

The quantity and timing of flows influence how channel and various habitats are formed and maintained. Channel narrowing is a problem because as the channel width decreases, water velocity increases, and the amount of low velocity habitats, important to the early life stages of the fish, decreases. Habitat below Flaming Gorge Dam has historically been shaped by an artificial flow regime, which resulted in decreased low flow habitats, disrupted vegetative communities, and altered channel morphology (Muth et al. 2000). However, recent operation changes have made this flow regime better match natural conditions. These changes have also improved temperature, channel morphology, and habitat conditions.

Physical or biological feature – biological environment

Food supply, predation, and competition are important elements of the biological environment (59 FR 13374-13400). The biological environment in the action area is impaired by the presence of nonnative fishes that are now common in the Green River. Nonnative fishes occupy the same backwaters that are very important for young Colorado pikeminnow and razorback sucker. Specifically, smallmouth bass, walleye (*Sander vitreus*), northern pike (*Esox lucius*), and channel catfish (*Ictalurus punctatus*) are present in this system and predate upon juvenile native fish. Programs are ongoing to remove bass, walleye, and northern pike from this system.

Other nonnatives found in the Green River include centrarchids (sunfishes) and nonnative cyprinids (minnows and carps). Reduction in flows contributes to further habitat alterations that support nonnative fish species, such as increased temperatures, reduced habitat availability, and reduced turbidity (Recovery Program 2014).

4.3 Factors Affecting Species within the Action Area

4.3.1 Barneby ridge-cress

The same threats, energy development and OHV use, as described above (see section 3.1, Status, Distribution, and Threats), are present in the action area with potential habitat for Barneby ridge-cress. This portion of the action area contains Ute Indian Tribe and private lands and has an existing highway (Highway 191), and unpaved access roads. Currently, there are no oil and gas wellpads where the species occurs in the action area. However, four wellpads are located in potential habitat within the action area. Oil and gas development and associated infrastructure (e.g., an access road crossing of the rail line) may continue to expand in the narrow area between the project footprint and the edge of the action area (300-ft). Future oil and gas exploration would result in increased road construction and road use and effects to the species from loss of plants and occupied habitat, habitat fragmentation, weeds, and dust generation, as discussed in more detail below (section 5.2, Effects to the Species).

OHV use occurs in this portion of the action area on unpaved access roads and undeveloped terrain. This portion of the action area is remote and difficult to regularly patrol and enforce illegal cross-country OHV use. Therefore, we anticipate OHV use and illegal OHV use will continue to occur. OHV use would result in effects to the species from plant damage and

mortality, habitat degradation, soil compaction, erosion, weed invasion and fugitive dust generation, as discussed in more detail below (section 5.2, Effects to the Species).

The existing Highway 191 supports approximately 2,200 vehicles per day within the action area (UDOT 2021). Some of this traffic may support oil and gas development and recreation including OHV use within other parts of the action area. The Highway 191 is paved and most of the access roads appear to be unpaved. Paved and unpaved roads may contribute to nonnative plant invasions from vehicle transport of plant parts and soil disturbances, as discussed in more detail below (section 5.2, Effects to the Species). We do not have information on the presence and extent of invasive or noxious weeds in Barneby ridge-cress habitat the action area.

Unpaved roads are large sources of fugitive dust. Dust accumulation within nearby habitat can negatively affect the growth and physiology of ESA-listed plants, as discussed in more detail below (section 5.2, Effects to the Species).

We do not have grazing information for the Ute Indian Tribe and private lands within the action area. We also do not have information regarding the palatability or extent of grazing by other herbivores (small mammals) to Barneby ridge-cress. Livestock grazing may negatively affect Barneby ridge-cress directly by crushing or uprooting individual plants or indirectly by spreading or introducing weeds into the habitat resulting in smaller or fewer plants.

4.3.2 Ute ladies'-tresses

Factors affecting Ute ladies'-tresses in the action area include habitat loss, modification of hydrology, invasive species, OHV use, and possibly livestock grazing, as described in the Status of the Species. This portion of the action area contains Ute Indian Tribe and private lands and has an existing highway (Highway 191), and unpaved access roads. Currently, there are no existing wellpads located in suitable habitat within the action area. The possibility of future oil and gas development and associated infrastructure (e.g., an access road crossing of the rail line) within the narrow area between the project footprint and the edge of the action area (300-ft) does exist, however is unlikely due to the narrow width of the area. Future oil and gas exploration would result in increased road construction and road use and effects to the species from loss of plants and occupied habitat, habitat fragmentation, weeds, and dust generation, as discussed in more detail below (section 5.3, Effects to the Species).

Modification of hydrology may have occurred as a result of constructing Highway 191, and water depletions associated with energy development in the action area. As noted in the survey report for Ute ladies'-tresses (HDR Inc. 2021b), numerous private property owners also divert water from Indian Canyon Creek for agricultural purposes, which further influences the unpredictable nature in the amount and timing of water flow throughout the canyon. Potential changes to hydrology may impact water flow, or surface or groundwater availability as compared to current conditions (Fertig et al. 2005). Hydrologic modification may result in plant mortality, habitat loss, and habitat degradation.

As discussed above in factors affecting Barneby ridge-cress within the Action Area, the use of OHVs continues to occur within the area and it is difficult to enforce against illegal use. This activity results in effects to the species from plant damage and mortality, habitat degradation, soil compaction, erosion, weed invasion and fugitive dust generation, as discussed in more detail below (section 5.3, Effects to the Species).

Paved and unpaved roads may also contribute to nonnative plant invasions from vehicle transport of plant parts and soil disturbances, as discussed in more detail below (section 5.3, Effects to the Species). Surveyors found areas of suitable habitat in the action area to be heavily invaded by invasive weeds (HDR Inc. 2021b).

We do not have grazing information for the Ute Indian Tribe and private lands within the action area. Livestock grazing may negatively affect Ute ladies'-tresses directly by crushing or uprooting individual plants or indirectly by spreading or introducing weeds into the habitat resulting in smaller or fewer plants. Livestock grazing may positively affect Ute ladies'-tresses indirectly be reducing weed and other vegetation cover in the habitat resulting in more favorable habitat conditions for the species.

4.3.3 Uinta Basin hookless cactus and Pariette cactus

The threats, energy development and livestock grazing, and possibly OHV use and illegal collection, as described above (section 3.3, Status, Distribution, and Threats), are present in the action area with potential habitat for Uinta Basin hookless cactus and Pariette cactus. This portion of the action area contains Tribal and private lands with relatively undeveloped habitat; a few unpaved access roads to wellpads and adjacent, agricultural lands; and four wellpads and three evaporation ponds associated with energy development. Additional oil and gas development could occur in the future in a narrow area between the project footprint and the edge of the action area (300-ft) that contains cactus plants and potential habitat. Existing and future oil and gas exploration would result in increased road construction and road use and effects to the species from loss of plants and occupied habitat, habitat fragmentation, weeds, and dust generation, as discussed in more detail below (section 5.4, Effects to the Species).

Livestock grazing and possibly feral horses occur on Ute Indian Tribe lands within this portion of the action area in undeveloped habitat. We do not have grazing information for the private lands within the action area. Livestock and feral horses directly affect Uinta Basin hookless cactus and Pariette cactus individuals and cause mortality or harm by trampling, kicking, scraping, and damaging the cactus stem, roots, or seeds. Severe damage may occur in heavily traveled areas such as watering areas, lambing areas, fences, and along trails (Clark et al. 2015). For cactus that survive initial damage, trampling can induce a survival response of producing branches, which has been extensively observed in Uinta Basin hookless cactus (Hornbeck 2020). Damage from trampling and induced branching reduces the overall viability of the cactus individual by depleting stored resources.

We do not know if OHV use and illegal collection occur within this portion of the action area. OHV use by energy companies or by recreationists accessing the area use can crush cacti and cause soil compaction, erosion, and sedimentation (USFWS 1990, BLM 2005). Injured or damaged cactus plants may persist for several years with reduced reproductive potential before recovering or succumbing to their injuries (Clark and Clark 2008, Clark et al. 2015). Increased access for humans can also result in increased illegal cactus collection and the direct mortality of individual cacti (USFWS 1990, BLM 2005).

4.3.4 Colorado River Fishes

As described in the introduction section of this biological opinion (see Upper Colorado River Recovery Program section above), we established the Upper Colorado River Endangered Fish Recovery Program in 1988 to help recover the four endangered fish species. The Recovery Program implements management actions within seven Program elements, as dictated from species' recovery goals, with the focus of down-listing and de-listing the species. Five of these actions affect the species in the action area: instream flow identification and protection; habitat restoration; non-native fish management; propagation and stocking; and research and monitoring.

Current management actions performed by the Recovery Program in the Project action area include, but are not limited to:

- Overseeing non-native fish removal activities in the Upper Colorado River basin. Nonnative fishes of immediate primary concern and currently explicitly targeted for management are northern pike (Esox lucius), smallmouth bass (Micropterus dolomieu), and channel catfish (Ictalurus punctatus). These nonnative fish species pose significant threats to the endangered fishes because of their high or increasing abundance and range expansion, their habitat and resource requirements overlap with those of the endangered fish species, and they are known fish predators;

- Stocking of bonytail and razorback sucker into various locations in the Upper Colorado River Basin;

- Restoring instream and off-channel habitats for larval and juvenile fishes;

- Coordinating research projects, such as habitat use studies, population monitoring, and observing reproduction timing; and

- Participating in the workgroups for mainstem dams, such as Flaming Gorge Dam and the Aspinall Unit, to provide instream flows to benefit endangered fish species while meeting other legal purposes.

Nonnative Species

There are a number of nonnative species within the Colorado River basin that threaten native fish. Since the late 1800's, humans have introduced over 60 nonnative fish species (either as intentional stocking efforts or accidentally) into the Upper Colorado basin (Bezzerides and Bestgen 2002; Modde and Keleher 2003). Nonnative fishes threaten native species through predation (Tyus and Beard 1990; Bezzerides and Bestgen 2002) and competition (Osmundson 1999; Bezzerides and Bestgen 2002).

Nonnative fishes are common throughout the Colorado River basin. Nonnative fishes occupy the same backwaters that provide important habitat for young Colorado pikeminnow and razorback sucker. Largemouth bass (*Micropterus salmoides*) and green sunfish (*Lepomis cyanellus*) are the most common large-bodied fishes that occupy backwater habitats year-round (Osmundson 2003). The three most common small-bodies fishes found in backwaters are fathead minnow, sand shiner, and red shiner, comprising 80 to 100 percent of the fish found in Colorado River backwaters (McAda 2003). Programs are ongoing to remove bass, walleye, and northern pike from this system. Other non-natives found in the Colorado River include sunfishes, carp, and other non-native minnows. Reduction in flows contributes to further habitat alterations that support nonnative fish species, such as increased temperatures, reduced habitat availability, and reduced turbidity.

Endangered Fish Stocking

Each year tens of thousands of bonytail and razorback sucker are stocked into the main stem Green River. Two primary stocking locations are in the middle Green River near Ouray NWR and in the lower Green River at Green River State Park. Stocking these fish in the main stem river is designed to supplement the population and eventually create a self-sustaining population.

Water Development

Water development within the Colorado River basin has two primary impacts on the listed fish species. First, water withdrawals reduce habitat quantity and quality. Second, diversion structures create a barrier to fish movement. Water depletions reduce aquatic habitat quality. We analyzed the impact of water depletion to the Colorado River habitat in our 1999 programmatic biological opinion for the upper Colorado River above the confluence with the Gunnison River and our 2009 programmatic biological opinion for the Gunnison River to address Colorado River basin water operations (USFWS 1999; USFWS 2009). In those biological opinions, we noted that reduced flows caused by water development dramatically changed the Colorado River in several ways:

1. Removing water from the river system changes the natural hydrological regime that creates and maintains important fish habitats, such as spawning habitats, and reduces the frequency and duration of availability of these habitats of the four endangered fish;

2. Reduction in flow rates lessens the ability of the river to inundate bottomland, a source of nutrient supply for fish productivity and important nursery habitat for razorback sucker;

3. Water depletions move flow and temperature regimes toward conditions that favor nonnative fish, thus adding to pressures of competition and predation by these nonnative fishes as discussed above.

From of these hydrologic alterations, the Colorado River has a reduced ability to maintain native fish populations (USFWS 1999; USFWS 2009).

Water development can also create a barrier to fish movement (USFWS 1999; USFWS 2009). Diversion structures can present a complete barrier to fish movement. For less common native species, this can result in extirpation of the species along entire sections of the river. Additionally, these diversion structures may separate native fish from higher quality habitat. Upstream of the action area, several barriers have historically been a barrier to fish movement (Muth et al. 2000). We have worked with diversion operators to include fish passage structures on many of these water diversion structures in recent years and have documented nearly immediate use of upstream habitat after initial operation of fish passage structures (USFWS 2015).

In summary, water development has drastically altered the Colorado River system. Due to reduced flows, the river has a reduced ability to maintain native aquatic fish species. Further, diversion structures create a barrier to fish movement, thus isolating populations and preventing native fish from recolonizing sections of river where they have been extirpated Muth et al. 2000).

Water Quality

Water withdrawal, agricultural and municipal effluents, and habitat modification affects the water quality in the Colorado River. Water withdrawals reduce the ability of the river to effectively transport sediments and other materials from the river channel (USFWS 1999; USFWS 2009). Extensive colonization by aquatic plants and algae occurs in the warmer temperature, reducing flow in the river channel and creating extreme daily dissolved oxygen fluctuations that are harmful to fish species. Agricultural and municipal effluents enrich production of aquatic vegetation, further affecting daily dissolved oxygen levels (USFWS 2002a; 2002b; 2002c; 2002d). These effluents can cause fish kills if significant runoff from agricultural and municipal properties occurs during low flow periods.

Runoff from agricultural pesticides and herbicides can also degrade water quality and affect Colorado River fishes. Pesticides and herbicide runoff can cause direct toxic effects on aquatic environments, including mortality of fish species or their food (USFWS 2002a; 2002b; 2002c; 2002d). Changes in water quality from agricultural runoff also alters habitat and may cause covered species to seek less preferred habitats. Habitat modification, including channelization, reduces habitat complexity and decreases the river's natural ability to cleanse pollutants. Reduction in riparian canopy above the river allows for increased daily river temperatures, forcing fish to seek thermal refugia (USFWS 2002a; 2002b; 2002c; 2002d).

Altered water quality during spawning periods can limit Colorado River fishes spawning success in remaining habitat in the Colorado River. Warmer river temperatures occur after spring runoff due to increased agricultural diversions. As these depletions occasionally reduce flows to critically low levels, increased river temperature and extremely low dissolved oxygen levels can occur and affect spawning success. Low dissolved oxygen levels, created by reduced river flows, may also cause mortality in eggs or larval fishes (USFWS 2002a; 2002b; 2002c; 2002d).

5 EFFECTS OF THE ACTION

In accordance with 50 CFR 402.02, effects of the action are all consequences to listed species or critical habitat that are caused by the Proposed Action, including the consequences of other activities that are caused by the Proposed Action. A consequence is caused by the Proposed Action if it would not occur but for the Proposed Action, and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17).

In this section, we first summarize potential effects that are common to all four ESA-listed plant species from Project activities. In subsequent subsections, we evaluate the effects to each plant species.

5.1 Effects Similar to all Plants

Effects of the action to ESA-listed plants includes plant mortality and permanent loss of occupied habitat and suitable habitat within the project footprint; soil compaction, erosion, and habitat degradation from construction and maintenance activities in occupied and suitable habitat; habitat fragmentation from the construction of additional access roads; effects to plant growth and reproduction from fugitive dust generation; the potential for encroachment of nonnative weeds from disturbance areas to occupied and suitable habitat; effects to pollinators and seed dispersers; and pesticide and herbicide use that affect plants, habitat and pollinators (Eller 1977; Everett 1980; Spatt and Miller 1981; McCrea 1984; Thompson et al. 1984; Santelmann and Gorham 1988; Farmer 1993; Sharifi et al. 1997; Trombulak and Frissell 2000; Hobbs 2001; Mustajarvi et al. 2001; Veranth et al. 2003; Etyemezian et al. 2004; Silver 2007; BLM 2008; Lewis 2013; Lewis 2016). There is potential for these effects to occur during all three phases of the Proposed Action, including the pre-construction, construction, and post-construction operation and maintenance phases.

The construction phase will involve clearing, excavating, and filling within the project footprint, which will result in the permanent loss or alteration of ESA-listed plants and their occupied and suitable habitat. The movement of heavy equipment and supplies during construction will compact the soil, which can affect plant germination and growth within the project footprint. Soil compaction can prevent seeds from germinating and make it difficult for roots to penetrate the soil surface. Vegetation removal and soil compaction would expose soil to erosion caused by rain and overland stormwater runoff, which could reduce soil quality and negatively affect vegetation and ESA-listed plants within and beyond the project footprint.

Construction and post-construction maintenance activities may introduce noxious and invasive weeds by bringing in materials from outside sources such as with dirt or gravel fill material, using seed mixtures contaminated with weed seeds, and on construction equipment. Construction can disturb existing weed seedbanks allowing them to germinate and flourish in areas cleared of other vegetation. Noxious and invasive weeds introduced during construction activities would compete with native vegetation, including ESA-listed plants. Noxious and invasive weeds that encroach beyond the project footprint could out-compete ESA-listed plants and result in altered vegetation structure, a reduction in plant species richness, and overall disruption of the habitat (Forman and Alexander 1998; Gelbard and Belnap 2003). Establishment and spread of noxious and invasive weeds can increase competition for water, space, and nutrients, resulting in the decreased reproductive success of ESA-listed plants (Forman and Alexander 1998; Forman 2000; Gelbard and Belnap 2003).

The operation of construction equipment will generate fugitive dust from loose soil. Accumulation of fugitive dust on ESA-listed plants in or near the project footprint can affect plant growth by inhibiting photosynthesis and reducing plant density and plant diversity. Dust production is only anticipated during the construction phase of the Project and until areas cleared of vegetation are revegetated or otherwise stable and is not expected to continue during the operation of the rail line. Unpaved roads and surfaces are large sources of fugitive dust. Dust accumulation within nearby habitat can negatively affect the growth and physiology of ESA-listed plants (Eller 1977; Spatt and Miller 1981; Thompson et al. 1984; Farmer 1993; Sharifi et al 1997; Trombulak and Frissell 2000; Hobbs 2001). The distance from a road at which dust can affect vegetation varies (Everett 1980; Spatt and Miller 1981; McCrea 1984; Walker and Everett 1987; Santelmann and Gorham 1988; Myers-Smith et al. 2006), but negative effects to plant growth and reproduction may occur up to 300 ft away from dust sources during the growing and flowering season (Environmental Protection Agency (EPA) 1995; Veranth et al. 2003; Etyemezian et al. 2004; Padgett et al. 2007; Wijayratne et al. 2009; Lewis 2013, 2016; Waser 2017).

Operation of the rail line may release pollutants that negatively affect ESA-listed plant species. The two most important types of pollutants are polycyclic aromatic hydrocarbons (PAHs) and heavy metals (Wilkomirski et al. 2011). These substances occur naturally in the environment, but they are also found in manufactured substances such as asphalt, oil, coal, and creosote (Agency for Toxic Substances and Disease Registry 1995). The main sources of PAHs around rail lines are substances used for rolling stock use, such as machine grease, fuel oils, and transformer oils (Wilkomirski et al. 2011). Heavy metals in emissions and rail car materials can build up on plants and in soil near rail lines (Wilkomirski et al. 2011). Stormwater discharges from the railbed and access roads could convey low concentrations of these pollutants to vegetated areas. Some plant species accumulate and tolerate PAHs (BA pp. 6-13, Liu et al. 2009). However, PAHs can also stunt plant growth and affect root physiology (Liu et al. 2009). Heavy metals may inhibit growth, but some plants have resistance mechanisms against toxic effects (Cheng 2003). Any releases of PAHs and heavy metals associated with rail operations would be localized and could result in negative effects to plant growth and habitat degradation.

Operation of the rail line may contribute to wildfires by providing an ignition source. The two most common ignition sources associated with railroads are exhaust sparks (carbon particles, such as chunks or flakes) emitted from the locomotive engine and hot brake shoe fragments (California Department of Forestry and Fire Protection 1999). Effect to ESA-listed plants may vary, depending on terrain, vegetation type, weather conditions at the time of the wildfire, and the prevention and suppression efforts. The probability of a train-induced wildfire will be very low for several reasons, including improvements in locomotive technology and the fact that trains make up a small percentage of fire starts (STB 2021, Table 6-2). Additionally, the fire risk in most of the action area is very low, low, or moderate (STB 2021).

Habitat fragmentation associated with the construction of the project has the potential to negatively affect ESA-listed plants. Increased habitat fragmentation and reduced habitat connectivity can negatively affect plant density, genetic variability, and population viability (Gilpin and Soule 1986; Mustajarvi et al. 2001) and has the potential to exert a cascading effect through a plant community by modifying plant-pollinator interactions and exacerbating edge-effects (Ellstrand and Elam 1993; Young et al 1999; Debinski and Holt 2000; Mustajarvi et al. 2001).

Erosion and runoff from surface disturbing activities can have direct effects to individual plants from burial or direct loss. Erosion and runoff can be natural events but can be worsened by human activities associated with construction of the rail line such as vegetation removal and alteration of stream courses, making these events more frequent.

Induced growth and development associated with the railroad may negatively affect ESA-listed plants that occur outside of the action area. Growth inducing effects and other effects are related to changes in the pattern of land use, the density or growth rate of that land use, and related effects on air and water and other natural systems, including ecosystems (as defined under NEPA, 40 CFR 1508.8). These effects can also result from incremental changes in land uses attributable to a transportation project that, for example results in population growth (including rate or pattern) and development in a manner that would not have otherwise occurred (Tidd et al. 2013). The Project would provide a viable means of freight transport (crude oil, mineral and agricultural products) to and from the Uinta Basin as an alternative to the existing but limited road network (Uinta Basin Railway Final EIS Chapter 1 2021). The Project may support an increased growth rate of oil and gas commercial development in the Uinta Basin and shorten the time to reach full field development within delineated oil and gas fields than with the existing road network (Utah Geological Survey 2018). Energy development has the potential to negatively affect ESA-listed plant species as a result of plant and habitat loss, habitat fragmentation, increased fugitive dust generation, and weed invasions. Where there is a Federal nexus, we will have the opportunity to consult on future energy development and effects to ESA-listed plants.

The Project may reduce one constraint (transportation costs) associated with the profitability of the oil shale and tar sands industries, but additional constraints remain (e.g., water availability to support production) as well as the uncertainties involved in predicting profitability of commercial operations (e.g., estimating the threshold or hurdle price of crude oil given the high capital costs) (Bartis et al. 2005; Institute for Clean and Secure Energy 2013; Spinti et al. 2013;

BLM 2017). Unlike commercial oil and gas development, there are no commercial operations of oil shale and tar sands currently in the Uinta Basin and we do not have reasonable certainty that this Project may induce growth and development of these industries.

5.2 Barneby ridge-cress

Based on Project designs identified in the BA and the survey results to-date (HDR Inc 2021a), the Project footprint may result in the loss of 269 Barneby ridge-cress known plants and 52 ac of occupied habitat. There are some data gaps regarding the total number and location of Barneby ridge-cress plants on private lands in the action area. To address the data limitations of the Proposed Action, we evaluated a reasonable upper bound estimate of effects to 78 additional plants within the 15 unsurveyed acres of the Project footprint. This estimate is based on the known plant density of occupied habitat within the Project footprint (5.17 plants per acre) which totals 78 plants (5.17 plants x 15 ac = 78) (HDR, 2021a, USFWS 2021b). Therefore, the Project footprint may result in the maximum loss of 347 Barneby ridge-cress plants (269 + 78). This number represents 3.6 percent of the total Barneby ridge-cress population and approximately four percent of the Indian Canyon population. We anticipate this reasonable upper bound of Barneby ridge-cress plant loss will be greater than the actual plant loss. The total number of Barneby ridge-cress mortalities from the Proposed Action will be documented and reported prior to construction.

We expect the conservation measures implemented by STB and the Project applicants will reduce the permanent loss of Barneby ridge-cress plants, occupied habitat, and potential habitat, and minimize the effects of fugitive dust, weeds, and erosion outside of the Project footprint and within the 300 ft survey buffer of the action area.

5.3 Ute ladies-tresses

In addition to the effects common to all ESA-listed plants described above, Ute ladies'-tresses may also be vulnerable to additional disturbances resulting from Project related effects to the hydrology of streams and seeps. Potential changes to hydrology may affect water flow, or surface or groundwater availability as compared to current conditions (Fertig et al. 2005). Hydrologic modification may result in permanent loss of Ute ladies'-tresses plants and habitat. Decreases in groundwater and stream flows can render the habitat too dry for Ute ladies'-tress and decreases in the frequency and magnitude of floods can both decrease water availability and fail to maintain habitat in an appropriate successional stage. Increases in groundwater and stream flows can cause sites to become too saturated to support Ute ladies'-tresses. High flows and increased frequency and magnitude of flooding events can also destroy habitat and wash away individuals (Fertig et al. 2005). The STB and Project applicants committed to avoid altering site hydrology and concentrating water flows or sediments into Ute ladies'-tresses occupied habitat to the extent practicable.

As detailed in the Ute ladies'-tresses Survey Report (HDR Inc. 2021b), there were locations within the survey area that no longer contain the characteristics of suitable habitat for the species. Surveyors noted the invasion of upland species in multiple locations, several dry reaches of Indian Canyon Creek, and numerous private property water diversions from Indian Canyon Creek for agricultural purposes. Based on these observations from the first year of Ute ladies'-tresses surveys (2021), the habitat is likely marginally suitable and may possibly be unsuitable for the species.

Based on Project designs identified in the BA and the survey results to-date (HDR Inc. 2021b), the Project footprint may possibly result in no loss of Ute ladies'-tresses plants or occupied habitat. However, there are some data gaps because three consecutive years of surveys have not been performed to-date. To address the data limitations of the Proposed Action, we evaluated a reasonable upper bound estimate of plant effects to individuals within the suitable habitat in the Project footprint. This analysis is based on a comparison of a 2013 survey at a nearby occupied site for the species and the results of the preliminary survey report (HDR Inc. 2021b). The HDR survey report shows 11.39 ac of suitable habitat within the action area with approximately 4 ac within the Project footprint. This suitable habitat for Ute ladies'-tresses within the Project footprint is along approximately 1.2 mi (2 linear kilometers[km]) of river. The nearest Ute ladies'-tresses site for which we can verify occupancy within the last ten years is approximately 1.37 mi (2.2 km) north of Duchesne along the Duchesne River and is 6.8 mi (11 km) from the Ute ladies'-tresses habitat within the Project footprint. At this Duchesne location, in 2013, 29 bloom stems of Ute ladies'-tresses were recorded at six points along 0.43 mi (0.7 km) of the Duchesne River, or an occurrence rate of 67.4 plants per mile (41.4 stems per km) of linear riparian habitat. Therefore, we estimate the potential impacts within the Project footprint may result in the destruction of approximately 81 plants (1.2 linear mi at 67.4 stems per mile or 2 linear kms at 41.4 stems per km) which represent less than one percent of the range-wide population. We anticipate this reasonable upper bound of Ute ladies'-tresses mortalities will be greater than the actual number of Ute ladies'-tresses that are destroyed. The total number of Ute ladies'-tresses mortalities that result from the Proposed Action will be documented and reported prior to construction.

We expect the conservation measures implemented by STB and the Project applicants will likely avoid or limit the destruction of Ute ladies'-tresses occupied and suitable habitat and minimize the effects of fugitive dust, weeds, and erosion outside of the Project footprint and within the action area.

5.4 Pariette and Uinta Basin hookless cactus

Based on Project designs identified in the BA and our database information, the Project footprint will result in 56 Uinta Basin hookless cactus mortalities and the destruction of 504 ac of habitat (56 ac Core 1 habitat + 127 ac Core 2 habitat + 321 suitable habitat). There are some data gaps regarding the total number and location of Uinta Basin hookless cactus in the action area since clearance surveys have not been performed. To address the data limitations of the Proposed Action, we evaluated a reasonable upper bound estimate based on the density of Uinta Basin hookless cactus in the Myton core 1 and core 2 area and the acres affected. Based on the average density within the Myton core 1 and core 2 area (0.52 cacti per acre), the average density in the

suitable habitat (0.006 cacti per acre), and the number of known individuals present, it is reasonable to estimate an upper bound of 153 (95 + 2 + 56 known cacti) Uinta Basin hookless cactus mortalities within the Project footprint (USFWS 2021b). Therefore, the Project footprint may result in the destruction of 153 Uinta Basin hookless cactus which represents less than one percent of the total population. We anticipate this reasonable upper bound of plant loss will be greater than the actual number of Uinta Basin hookless cactus destroyed. The total number of Uinta Basin hookless cactus mortalities that result from the Proposed Action will be documented and reported prior to construction.

Based on Project designs identified in the BA and our database information, the Project footprint will result in 206 Pariette cactus mortalities and the destruction of 504 ac of habitat (56 ac Core 1 + 127 ac Core 2 + 321 suitable habitat). There are some data gaps regarding the total number and location of Pariette cactus in the action area since clearance surveys have not been performed. To address the data limitations of the Proposed Action, we evaluated a reasonable upper bound estimate based on the density of Pariette cactus in the Myton core 1 and core 2 area and the acres affected. Based on the average density within the Myton core 1 and core 2 area (0.35 cacti per acre), the average density within the suitable habitat area (0.018 cacti per acre), and the number of known individuals present, it is reasonable to estimate an upper bound of 276 (64 + 6 + 206 known cacti) Pariette cactus mortalities within the Project footprint (USFWS 2021b). Therefore, the Project footprint may result in the destruction of 276 plants, which represents less than one percent of the total population. We anticipate this reasonable upper bound of plant loss will be greater than the actual number of Pariette cactus destroyed. The total number of Pariette cactus mortalities that result from the Proposed Action will be documented and reported prior to construction.

For both cactus species, the Project will result in a one percent increase in disturbance within the Myton core 1 and core 2 habitat. We expect the conservation measures implemented by STB and the Project applicants will minimize the loss of plants, occupied habitat, and potential habitat, and minimize the effects of fugitive dust, weeds, and erosion outside of the Project footprint and in the 300 ft survey buffer of the action area.

5.5 Colorado River Fishes

The Project footprint and the water depletion associated with the Project occurs outside of the occupied range of the four Colorado River fishes. The only effects from the Project are the water depletion effects to the four Colorado River fishes. Therefore, we are only considering the effects of the water depletion to the four Colorado River fishes for this Project.

Reductions in water availability can increase the likelihood of water quality issues, increasing fish vulnerability to predation, and reducing breeding opportunities by shrinking the amount of breeding habitat within their range. Depletions may affect water quality in the action area by increasing concentrations of heavy metals, selenium, salts, pesticides, and other contaminants. Increases in water depletions cause associated reductions in dilution potential for any contaminants that enter the river. Increased contaminant concentrations in the river may result in an increase in the bioaccumulation of these contaminants in the food chain, with negative effects to the endangered fishes, particularly the predatory Colorado pikeminnow.

Selenium is of particular concern due to its effects on fish reproduction and its tendency to concentrate in low velocity areas that are important habitats for Colorado pikeminnow and razorback suckers (Hamilton et al. 2005).

Reduced flows from water depletions can also result in habitat alteration in river systems that affect endangered Colorado River fishes. Depletions can reduce high spring flows, resulting in reductions to food supply and productivity. Reductions in flows also reduce spawning habitat availability and adversely affect low-velocity backwater habitats important for juvenile fishes (Muth et al. 2000), as the quantity and timing of flows influence how the channel and various habitats are formed and maintained. Reductions in spring peak flows and summer base flows caused by water depletions allow vegetation to encroach the river channel, which harden the riverbanks and cause channel narrowing. Channel narrowing negatively affects Colorado River fishes habitats, because as the channel width decreases, water velocity increases, and the amount of low velocity habitats important to the early life stages of the fish decreases (Muth et al. 2000).

Reduced flows and habitat alteration from water depletions also contribute to an increase in nonnative fish populations. Reduction in flows contributes to further habitat alterations that support nonnative fish species, such as increased temperatures, reduced habitat availability, and reduced turbidity (Recovery Program 2014). Endangered fishes within the action area may experience increased competition and predation as a result.

The Project will affect Colorado River fishes by reducing the amount of water in the river system upon which they depend by up to 875 acre-feet per year. Over the last ten years, the average annual flow of the Green River closest to the project area (Jensen, Utah) was approximately 2,706,000 acre-feet of water (USGS 2021). Therefore, the 875 acre-feet per year represents approximately 0.032 percent of annual flow in the action area. Because of the small depletion amount relative to the annual flow in the action area, we do not expect any noticeable changes to water quantity or quality from the Project itself.

6 CUMULATIVE EFFECTS

Cumulative effects "…are those effects of future state, or private activities, not involving Federal activities that are reasonably certain to occur in the action area of the Federal action subject to consultation" (50 CFR section 402.02). We do not consider future federal actions that are unrelated to the Proposed Action in this section because they require separate consultation pursuant to section 7 of the ESA.

6.1 Plant Species

Cumulative effects to the ESA-listed plants would include, but are not limited to, the following broad types of impacts:

- Increased recreational and economic use of the area as a result of increased travel access.
- Changes in land use patterns or practices that adversely affect a species' occupied and suitable habitat, including encroachment of human development into those habitats.

- Management actions by some, or all, of the following groups, on lands adjoining or upstream of the Project:

    - State of Utah
    - County governments in Utah
    - Local governments in Utah
    - Private landholders in Utah

ESA-listed plants are susceptible to effects from activities on State and private lands. Many of these activities, such as oil and gas development, livestock grazing, human population expansion and associated infrastructure (increased trails and roads) development, and recreation activities (including OHV use and any activities that increase human presence), are expected to continue on State and private lands within these species' ranges. All of these activities have the potential to affect the ESA-listed plant species by increasing mortalities, injuring plants, and further adversely impacting occupied and suitable habitat.

6.2 Colorado River Fishes

Declines in the abundance or range of Colorado River fishes and their critical habitats are attributed to various human activities on federal, state, and private lands, such as the following:

- human population expansion and associated infrastructure development;
- water retention, diversion, or dewatering of springs, wetlands, or streams;
- recreation, including off-road vehicle activity; and
- introductions of nonnative plants, wildlife, or fish or other aquatic species, which can alter native habitats, out-compete, or prey upon native species.

We expect many of these activities will continue on state and private lands and could contribute to cumulative effects to the species within the Project action area.

Other reasonably foreseeable future activities include land development, fire management, irrigation, and recreational activities. Implementation of these projects will likely affect the environment through several mechanisms including water quality, water rights, and wildlife resources.

Cumulative effects to Colorado River fishes include the following types of effects:

- changes in land use patterns that further fragment, modify, or destroy potential spawning sites, breeding sites, occupied habitat and designated critical habitat;
- shoreline recreational activities and encroachment of human development that remove upland or riparian/wetland vegetation and potentially degrade water quality;
- competition with, and predation by, nonnative fish species introduced by anglers or other sources; and
- additional water depletions reducing habitat quality and quantity.

As described in the Environmental Baseline section above, the Recovery Program has implemented various actions to offset many of the impacts associated with these types of projects. Such actions include securing instream flows, improving fish passage around fish barriers, reducing entrainment from diversions, removing nonnative fishes, and stocking of razorback sucker and bonytail chub to increase populations. We expect the implementation of Recovery Program actions will continue to offset adverse effects to Colorado River fishes associated with these types of projects.

7 CONCLUSION

7.1 Barneby ridge-cress

After reviewing the current status of Barneby ridge-cress, the environmental baseline for the action area, the effects of the Proposed Action, and the cumulative effects, it is our biological opinion that the Project is not likely to jeopardize the continued existence of Barneby ridge-cress.

We base our conclusion on the following:

- We estimate the Project will result in a maximum of 347 Barneby ridge-cress mortalities in the Indian Canyon population, which represents 3.6 percent of the known range-wide population (9,768 plants).
- A maximum of 67 ac (52 ac known occupied plus 15 ac unsurveyed habitat) (6.8 percent) of occupied habitat will be directly affected by the Project footprint;
- We estimate the Project will indirectly affect approximately 1,974 Barneby ridge-cress plants in the 300 ft survey buffer of the action area through fugitive dust deposition, weed encroachment, erosion, and habitat fragmentation. This represents 20 percent of the known range-wide population.
- The Project will not affect the remaining 8,651 plants in the Indian Canyon population and the other two populations (27 and 1,090 individuals), comprising approximately 9,768 plants (88.5 percent of the known range-wide population). The remaining relatively large number of plants would continue to persist in relatively intact habitat and contribute to the recovery of Barneby ridge-cress.
- Site specific species surveys will be conducted and provided to our office prior to Project construction.
- Commitments by the STB and the Project applicants to implement species specific avoidance, minimization, and conservation measures.
- Commitments by the STB and the Project applicants to offset effects to Barneby ridge-cress by providing a combination of permanent habitat protections, habitat improvements, recovery oriented research, and voluntary funding for conservation actions.

7.2 Ute ladies'-tresses

After reviewing the current status of Ute ladies'-tresses, the environmental baseline for the action area, the effects of the Proposed Action, and the cumulative effects, it is our biological opinion that the Project is not likely to jeopardize the continued existence Ute ladies'-tresses.

We base our conclusion on the following:

- We estimate the Project will result in approximately 81 Ute ladies'-tresses mortalities, which represents less than one percent of the known range-wide population.
- The Project will not affect the remaining approximately 83,246 individual plants in the estimated 53 populations across the range of the species (Fertig et al. 2005). The remaining relatively large number of plants would continue to persist and contribute to the recovery of Ute ladies'-tresses. Site specific species surveys will be conducted and provided to our office prior to Project construction.
- Commitments by the STB the Project applicants to implement species specific avoidance, minimization, and conservation measures.
- Commitments by the STB the Project applicants to mitigate effects to Ute ladies'-tresses by providing a combination of permanent habitat protections, habitat improvements, recovery oriented research, and voluntary funding for conservation actions.

7.3 Uinta Basin hookless cactus and Pariette cactus

After reviewing the current status of Uinta Basin hookless cactus and Pariette cactus, the environmental baseline for the action area, the effects of the Proposed Action, and the cumulative effects, it is our biological opinion that the Project is not likely to jeopardize the continued existence of Uinta Basin hookless cactus and Pariette cactus.

We base our conclusion on the following:

- We estimate the Project will result in approximately 153 Uinta Basin hookless cactus mortalities, which represents less than one percent of the known range-wide population.
- We estimate the Project will result in approximately 276 Pariette cactus mortalities, which represents less than one percent of the known range-wide population.
- We estimate that the Project will result in the destruction of 504 ac of habitat, which represents less than one percent of the range-wide habitat for the Uinta Basin hookless cactus and less than one percent of the range-wide habitat for Pariette cactus.
- Commitments by the STB the Project applicants to implement species specific avoidance, minimization, and conservation measures identified in Appendix A of this BO.
- Commitments by the STB and the Project applicants to mitigate effects to Uinta Basin hookless and Pariette cactus by either implementing successful habitat restoration or providing a voluntary contribution to the Sclerocactus Conservation fund, as specified in the USFWS "2014 Ecological Restoration Mitigation Calculation Guidelines for impacts to *Sclerocactus wetlandicus* and *Sclerocactus brevispinus*."
- Commitments by the STB and the Project applicants to mitigate effects to Uinta Basin hookless and Pariette cactus by either implementing successful habitat restoration or providing a voluntary contribution to the Tribal Sclerocactus Conservation Fund, as specified in the 2015 Ute Indian Tribe's *Sclerocactus* Management Plan for the Uintah and Ouray Indian Reservation (Ute Indian Tribe 2015).
- Commitment to coordinate with our office and the Ute Indian Tribe on the final restoration or payment amount after species surveys are completed.

7.4 Colorado River Fishes

After reviewing the current status of the four Colorado River fishes, the environmental baseline for the action area, the effects of the Proposed Action, and the cumulative effects, it is our biological opinion that the Project is not likely to jeopardize the continued existence of Colorado River fishes or result in destruction or adverse modification of designated critical habitat from the depletion of 875 acre-feet of water per year from the upper Colorado River basin. This water depletion represents approximately 0.032 percent of annual flow in the action area, it is a small depletion amount relative to the annual flow in the action area, and thus we do not expect any noticeable changes to water quantity or quality from the Project itself. In addition, the Recovery Program serves as an appropriate conservation measure and adequately addresses any effects to the species. Therefore, no additional conservation measures are necessary to reduce effects from the Proposed Action.

8 INCIDENTAL TAKE STATEMENT

8.1 Plants

Sections 7(b)(4) and 7(o)(2) of the ESA generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the ESA prohibits the removal and reduction to possession of ESA-listed plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

8.2 Colorado River Fishes

Estimating the number of individuals of Colorado River fishes that would be taken as a result of water depletions is difficult to quantify for the following reasons: (1) determining whether an individual forwent breeding as a result of water depletions versus natural causes would be extremely difficult to determine; (2) finding a dead or injured listed fish would be difficult, due to the large size of the action area and because carcasses are subject to scavenging; (3) natural fluctuations in river flows and species abundance may mask depletion effects, and (4) effects that reduce fecundity are difficult to quantify. However, we believe the level of take of these species can be monitored by tracking the level of water reduction and adherence to the Recovery Program recovery activities. Specifically, if the Recovery Program (and relevant RIPRAP measures) is not implemented, or if the current anticipated level of water depletion is exceeded, we fully expect the level of incidental take to increase as well. Therefore, we exempt all take in the form of harm that would occur from the removal of 875 acre-feet of water per year. Water depletions above the amount addressed in this biological opinion would exceed the anticipated level of incidental take and are not exempt from the prohibitions of section 9 of the Act.

The implementation of the Recovery Program is intended to minimize impacts of water depletions, therefore, support of Recovery Program activities by the STB as described in the Proposed Action exempts the STB, other action agencies, and the Project applicants from the prohibitions of section 9 of the ESA. The STB is responsible for reporting to us if the amount of average annual depletion is exceeded.

Effect of the Take

As described in the Conclusion (section 7), we determined the Project is not likely to jeopardize the continued existence of Colorado River fishes and does not result in destruction or adverse modification of designated critical habitat for Colorado River fishes.

Reporting Requirements

If any Barneby ridge-cress, Ute ladies' tresses, or Uinta Basin hookless cactus, Pariette cactus, or Colorado River fishes are injured, damaged, or killed during construction activities, STB or the other action agencies must immediately notify our Utah Ecological Services Field Office at (801) 975-3330. Pertinent information including the date, time, and location shall be recorded and provided to us.

9 RE-INITIATION NOTICE – CLOSING STATEMENT

This concludes formal consultation on the proposed Uinta Basin Railway Project. As provided in 50 CFR section 402.16, reinitiation of formal consultation "…is required and shall be requested by the Federal agency or the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law" and:

1. If the amount or extent of taking specified in the Incidental Take Statement is exceeded.
2. If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
3. If the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the biological opinion.
4. If a new species is listed or critical habitat designated that may be affected by the identified action.

To reinitiate section 7 consultation, STB should immediately notify our office by phone or email if any of the four reinitiation clauses are triggered.

Thank you for your coordination in preparing the biological assessment and your interest in conserving threatened and endangered species. If we can be of further assistance, please contact Rita Reisor at (385) 285-7923.

Sincerely,

YVETTE CONVERSE Digitally signed by YVETTE CONVERSE
Date: 2021.09.20 12:18:07 -06'00'

Utah Field Office Supervisor

cc: Jason Gibson, Utah /Nevada Regulatory Section Chief, US Army Corps of Engineers, Bountiful, UT
Kristy Groves, District Ranger, Duchesne/Roosevelt Ranger District, US Forest Service Ashley National Forest, Duchesne, UT
Shered Mullins, Acting Lands and Realty Branch Chief, Bureau of Land Management Utah State Office, Salt Lake City, UT
Lance Porter, District Manager, Bureau of Land Management Green River District, Vernal, UT,
Chip Lewis, Regional Environmental Protection Officer, Bureau of Indian Affairs-Western Region, Phoenix, AZ]
Tom Chart, Upper Colorado River Endangered Fish Recovery Program, Lakewood, CO
Kevin McAbee, Upper Colorado River Endangered Fish Recovery Program, Lakewood, CO

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Appendix A

PROJECT CONSERVATION MEASURES

Acronyms

BRC – Barneby ridge-cress
MM – mandatory measure
MSO – Mexican Spotted Owl
OEA – Office of Environmental Analysis, a division of the Surface Transportation Board
SCL – Sclerocactus, Uinta Basin hookless cactus and Pariette cactus
ULT – Ute ladies'- tresses
CRF – Colorado River fishes
VM – Voluntary Measure

A.1 General Measures

- MM-1. The Coalition shall conduct preconstruction surveys of ESA-listed plants (Barneby ridge-cress, Pariette cactus, Uinta Basin hookless cactus, and Ute ladies'-tresses) along the Action Alternative licensed by the Board and after final engineering of that Action Alternative is complete. These preconstruction surveys should be conducted by a qualified botanist and should follow the USFWS Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of ESA-listed, Proposed, and Candidate Plants (USFWS 2011c). Qualified botanists must attend the annual USFWS Uinta Basin Rare Plant Workshop every four years (training is good for three years). OEA notes that the USFWS is currently evaluating the Barneby ridge-cress range and suitable habitat requirements. This could alter the amount of suitable habitat affected by the proposed project. Preconstruction surveys would take into account the best available USFWS information on the species' range and habitat requirements in conducting those surveys.
- MM-2. The Coalition shall consult with OEA and USFWS regarding appropriate compensatory mitigation for impacts on ESA-listed plants that are identified in suitable habitat areas during preconstruction surveys and shall implement the compensatory mitigation that OEA and USFWS approve.
- MM-3. The Coalition shall implement measures to reduce collision risks from project-related power communications towers. The Coalition shall incorporate the design recommendations in the USFWS Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning (USFWS 2018) to avoid or minimize the risk of bird mortality at communications towers.
- MM-4. During project-related construction, the Coalition shall minimize, to the extent practicable, soil compaction and related effects (e.g., increase runoff and erosion), and provide surface treatments to minimize soil compaction (e.g., break up compacted soils during reclamation to promote infiltration) and shall take actions to promote vegetation regrowth after facilities (e.g., temporary staging areas) are no longer needed to support construction.

- MM-5. The Coalition shall develop and implement a wildfire management plan in consultation with appropriate state and local agencies, including local fire departments. The plan shall incorporate specific information about operation, equipment, and personnel on the rail line that might be of use in case a fire occurs and shall evaluate and include as appropriate site-specific techniques for fire prevention and suppression.
- MM-6. The Coalition will finalize all plans for mitigating species specific effects described below (i.e., identifying lands for permanent protections, payments to conservation funds, funding surveys) with our office prior to initiating construction. The Coalition will finalize and provide proof of payment for any payments to species specific conservation funds or recovery programs prior to construction.
- MM-7. The Coalition shall share the results of all threatened and endangered species surveys with the USFWS, the State of Utah, and all action agencies except for surveys occurring on Ute Indian Tribal land. For data from surveys on Ute Indian Tribal land, the Coalition shall seek the permission of the Ute Indian Tribe before sharing the survey results with the USFWS, the State of Utah, and all action agencies.

A.2 **Species-Specific Measures**

A.2.1 **Barneby Ridge-Cress (Suitable Habitat Areas)**

- BRC-1. The Coalition shall design project infrastructure to minimize effects within suitable habitat, to the extent practicable.
- BRC-2. The Coalition shall place signing to limit off-road travel in sensitive areas.
- BRC-3. The Coalition shall stay on designated routes and other cleared/approved areas.
- BRC-4. The Coalition shall minimize and clearly define ingress and egress access within suitable habitat.
- BRC-5. Prior to construction, the Coalition's project personnel shall be educated about the sensitive nature of the habitat, instructed to stay within the project disturbance area, and instructed on the specific avoidance and minimization measures implemented.
- BRC-6. Except during freezing temperatures, the Coalition shall use only water (i.e., no chemicals, reclaimed production water, oil field brine) for dust abatement within suitable habitat during construction. During freezing temperatures, sodium chloride solution may be used for dust abatement within suitable habitat to reduce the risk of ice formation.
- BRC-7. To reduce the risk of spreading seeds from noxious and invasive species into suitable habitat, the Coalition shall (1) power wash off-road earthmoving equipment that will be used in areas of suitable habitat within the project right-of-way prior to mobilization of that equipment to the project area, (2) power wash off-road earthmoving equipment being used in areas of suitable habitat within the project right-of-way on a monthly basis when night-time temperatures are above freezing (approximately April 1 through September 30), and (3) restrict off-road earthmoving equipment used within areas infested with noxious and invasive species from use within areas of suitable habitat within the project right-of-way without prior power-washing.

A.2.2. Barneby Ridge-Cress (Occupied Habitat Areas)

- BRC-8. All conservations measures listed for suitable habitat areas shall also apply to occupied habitat areas.

- BRC-9. Before and during construction, the Coalition shall have a qualified biologist identify areas of avoidance in the field (e.g., flagging, temporary fencing, rebar).
- BRC-10. The Coalition shall have a qualified botanist on site during construction to monitor the surface disturbance activity and assist with implementation of applicable conservation measures.
- BRC-11. Within occupied habitat, the Coalition shall design project infrastructure to avoid direct disturbance and minimize indirect impacts to populations and individual plants:
    - The Coalition shall design project infrastructure to minimize impacts within occupied habitat, to the extent practicable.
    - The Coalition shall conduct ground disturbing activities that require removal of vegetation to be located a minimum distance of 300 feet from individual plants and/or populations, to the extent practicable.
    - The Coalition shall incorporate into the project design measures, such as silt fences, hay bales, and similar structures or practices, to avoid water flow and/or sedimentation into occupied habitat and avoidance areas.
- BRC-12. The Coalition shall not conduct construction activities from May 1 through June 30 (flowering period) within occupied habitat unless, during the flowering period:
    - The Coalition establishes and implements a dust monitoring and dust control program to prevent significant dust accumulation on Barneby Ridge-Cress in occupied habitat within the project earthmoving footprint (defined as the farthest extent of earthmoving activities, plus 25 feet) and a 300-foot buffer zone measured from the project footprint;
    - The Coalition restricts or reduces, to the greatest extent practical, earthmoving activities (excavation, transportation, and placement) or transportation in occupied habitat within the project footprint and the 300-foot buffer zone;
    - Dust accumulation on Barneby Ridge-cress is monitored by a qualified botanist on a daily basis. If the qualified botanist identifies significant dust accumulation, construction activities that cause or have significant potential to cause dust accumulation within occupied habitat will cease until either (1) a dust-control measure that prevents any new significant dust accumulation from occurring is implemented, or (2) the flowering period (May 1 through June 30) has ended. The Coalition will report within 24 hours any finding of significant dust accumulation to OEA and USFWS;
    - The Coalition reports weekly to OEA and USFWS the results of its dust monitoring and dust control program.
- BRC-13. The Coalition shall use only water (i.e., no chemicals, reclaimed production water, oil field brine) for dust abatement within occupied habitat during construction.
- BRC-14. The Coalition shall obey a 15-mile-per-hour speed limit on dirt roads within occupied habitat during construction in order to reduce fugitive dust during the time of the year when species, pollinators, and associated habitat are most vulnerable to dust related impacts (April 1 through July 31). Speed limit signs shall be posted in restricted areas for project personnel.
- BRC-15. The Coalition shall re-vegetate all temporarily disturbed areas with native species comprised of species native to the area and non-native species or seed mixtures approved by USFWS. Seed mixtures may include approved non-native species that are

not likely to invade other areas or persist long-term in the habitat. If appropriate for the site, biological soil crusts are recommended to be incorporated into the reclamation process in addition to native seeds.

- BRC-16. If ground-disturbing activities within 300 feet of Barneby ridge-cress plants or populations (i.e., occupied habitat) would be unavoidable, the Coalition shall develop a project-specific plan in consultation with USFWS, OEA, and any appropriate land-management agencies to offset impacts and monitor individuals or populations. The plan shall incorporate the following requirements.
    - The Coalition shall fund the permanent protection of occupied habitat at a 5:1 ratio, where one acre of occupied habitat lost would be replaced by five acres of occupied habitat of equal or better condition for Barneby ridge-cress. If Barneby ridge-cress mitigation is needed, the Coalition will prioritize the Utah Division of Wildlife Resources' (UDWR) Cottonwood Wildlife Management Area for permanent protection of occupied Barneby ridge-cress habitat in consultation with the USFWS and UDWR. If insufficient acreage of documented habitat is available for permanent protection, the Coalition may fund survey efforts to identify currently undocumented habitat for permanent protection at a 5:1 ratio.
    - If permanent protection of occupied habitat cannot be achieved at a 5:1 ratio, the Coalition shall establish permanent protections to the extent possible and shall also fund and implement, in coordination with the USFWS, the restoration or enhancement of Barneby ridge-cress habitat at a 5:1 ratio. Habitat restoration or enhancement activities, including maintenance and monitoring activities, shall be conducted in accordance with protocols developed in consultation with and agreed to by USFWS.
    - If neither the permanent protection of occupied habitat nor the restoration or enhancement of habitat can be implemented at the agreed upon ratios, the Coalition shall fund and ensure the implementation of specific reasonable research or other activities for the conservation of Barneby ridge-cress identified in consultation with and agreed to by USFWS.
    - If any Barneby ridge-cress individuals would be crushed or killed by project activities, the Coalition shall collect seeds from the plants prior to construction, if possible. Seeds will be collected by a qualified botanist and stored according to USFWS and Center for Plant Conservation guidelines. The Coalition shall deliver any collected seeds to USFWS or designee.
    - If construction activities would crush or kill Barneby ridge-cress individuals on public lands, the Coalition shall consult with the appropriate land-management agency and USFWS prior to undertaking activities that would crush or kill individual Barneby ridge-cress and shall relocate individual plants if requested by the land-management agency. A post-transplant monitoring plan would be developed in agreement with USFWS, and individuals would be monitored for 5 years post-transplant.

A.2.3. Ute Ladies'-Tresses (Suitable Habitat Areas)

- ULT-1. The Coalition shall design project infrastructure to minimize impacts within suitable habitat, to the extent practicable.

- ULT-2. During construction, the Coalition shall avoid soil compaction that would impact Ute ladies' tresses habitat, to the extent practicable.
- ULT-3. The Coalition shall avoid altering site hydrology and concentrating water flows or sediments into occupied habitat, to the extent practicable.
- ULT-4. The Coalition shall place signing to limit off-road travel in sensitive areas.
- ULT-5. The Coalition shall stay on designated routes and other cleared/approved areas.
- ULT-6. The Coalition shall use geotextile matting to protect vegetation and soils from damage and compaction for equipment operating within suitable habitat. Temporary fencing may be used in place of geotextile matting around areas of suitable habitat not beneath embankment and excavation areas.
- ULT-7. Prior to construction, the Coalition's project personnel shall be educated about the sensitive nature of the habitat, instructed to stay within the project disturbance area, and instructed on the specific avoidance and minimization measures implemented.
- ULT-8. Except during freezing temperatures, the Coalition shall use only water (i.e., no chemicals, reclaimed production water, oil field brine) for dust abatement within suitable habitat during construction. During freezing temperatures, sodium chloride solution may be used for dust abatement within suitable habitat to reduce risk of ice formation.
- ULT-9. To reduce the risk of spreading seeds from noxious and invasive species into suitable habitat, the Coalition shall (1) power wash off-road earthmoving equipment that will be used in areas of suitable habitat within the project right-of-way prior to mobilization of that equipment to the project area, (2) power wash off-road earthmoving equipment being used in areas of suitable habitat within the project right-of-way on a monthly basis when night-time temperatures are above freezing (approximately April 1 through September 30), and (3) restrict off-road earthmoving equipment used within areas infested with noxious and invasive species from use within areas of suitable habitat within the project right-of-way without prior power-washing.

A.2.4. Ute Ladies'-Tresses (Occupied Habitat Areas)

- ULT-10. All conservation measures listed for suitable habitat areas shall also apply to occupied habitat areas.
- ULT-11. Before and during construction, the Coalition shall have a qualified biologist identify areas of avoidance in the field (e.g., flagging, temporary fencing, rebar).
- ULT-12. The Coalition shall not conduct construction activities during the flowing period (typically August through September, depending on location) unless, during the flowering period:
    - The Coalition establishes and implements a dust monitoring and dust control program to prevent significant dust accumulation on Ute Ladies'-tress in occupied habitat within the project earthmoving footprint (defined as the farthest extent of earthmoving activities, plus 25 feet) and a 300-foot buffer zone measured from the project footprint;
    - The Coalition restricts or reduces, to the greatest extent practical, earthmoving activities (excavation, transportation, and placement) or transportation in occupied habitat within the project footprint and the 300-foot buffer zone;
    - Dust accumulation on Ute Ladies'-tresses is monitored by a qualified botanist on a daily basis. If the qualified botanist identifies significant dust accumulation, construction activities that cause or have significant potential to cause dust

accumulation within occupied habitat will cease until either (1) a dust-control measure that prevents any new significant dust accumulation from occurring is implemented, or (2) the flowering period (August through September) has ended. The Coalition will report within 24 hours any finding of significant dust accumulation to OEA and USFWS;
    - The Coalition reports weekly to OEA and USFWS the results of its dust monitoring and dust control program.
- ULT-13. Within occupied habitat, the Coalition shall design project infrastructure to avoid direct disturbance and minimize indirect impacts to populations and individual plants:
    - The Coalition shall design project infrastructure to minimize impacts within occupied habitat, to the extent practicable.
    - The Coalition shall conduct ground disturbing activities that require removal of vegetation to be located a minimum distance of 300 feet from individual plants and/or populations, to the extent practicable.
    - The Coalition shall incorporate into the project design measures, such as silt fences, hay bales, and similar structures or practices, to avoid water flow and/or sedimentation into occupied habitat and avoidance areas.
- ULT-14. The Coalition shall not conduct construction activities during the flowering period (typically August through September, depending on location) within occupied habitat.
- ULT-15. The Coalition shall obey a 15 mile per hour speed limit on dirt roads within occupied habitat during construction in order to reduce fugitive dust during the time of the year when species, pollinators, and associated habitat are most vulnerable to dust related impacts (July 1 through September 31). Speed limit signs shall be posted in restricted areas for project personnel.
- ULT-16. The Coalition shall re-vegetate all temporarily disturbed areas with native species comprised of species native to the area and non-native species or seed mixtures approved by USFWS. Seed mixtures may include approved non-native species that are not likely to invade other areas or persist long-term in the habitat.
- ULT-17. If ground-disturbing activities within 300 feet of Ute ladies'-tresses plants or populations (i.e., occupied habitat) would be unavoidable, the Coalition shall develop a project-specific plan in consultation with USFWS, OEA, and appropriate land-management agencies to offset impacts and monitor individuals or populations. The plan shall incorporate the following requirements.
    - The Coalition shall fund the permanent protection of occupied habitat at a 3:1 ratio, where one acre of habitat lost would be replaced by three acres of protected habitat of equal or better condition for Ute ladies'-tresses. If insufficient acreage of documented occupied habitat is available for permanent protection, the Coalition may fund survey efforts to identify currently undocumented habitat for permanent protection at a 3:1 ratio.
    - If permanent protection of occupied habitat cannot be achieved at a 3:1 ratio the Coalition shall establish permanent protections to the extent possible and shall also fund and implement, in coordination with the USFWS, the restoration or enhancement of Ute ladies'-tresses habitat at a 5:1 ratio, where one acre of habitat lost would be replaced by five acres of restored habitat. Appropriate habitat

enhancements may include, but are not limited to, removal of invasive woody vegetation [e.g., Russian olive (*Elaeagnus angustifolia*) or tamarisk (*Tamarix ramosissima*)], removal of native woody vegetation [e.g., Willow (*Salix* spp.)], suitable habitat reconnection, and reestablishment of native herbaceous communities in riparian areas. Habitat enhancements, including maintenance and monitoring of enhancements, shall be conducted in accordance with protocols developed in consultation with and agreed to by USFWS.

- If neither the permanent protection of occupied habitat nor the restoration or enhancement of habitat can be implemented at the agreed upon ratios, the Coalition shall fund and ensure the implementation of specific reasonable research or other activities for the conservation of Ute ladies'-tresses identified in consultation with and agreed to by USFWS.
- If any Ute ladies'-tresses individuals would be directly killed by project activities, the Coalition shall fund the collection, transplantation, and monitoring of those individuals. Plants shall be moved to suitable habitat within the same 10-digit hydrologic unit, if possible. If transplantation within the same 10-digit hydrologic unit is not possible because suitable habitat is unavailable or other considerations, plants may be placed in another hydrologic unit identified through consultation with USFWS. Transplanting and monitoring activities shall be conducted in accordance with protocols agreed to by USFWS.

A.2.5 Uinta Basin Hookless Cactus and Pariette Cactus (Suitable Habitat Areas)

- SCL-1. The Coalition shall conduct ground disturbing activities that require removal of vegetation to be located a minimum distance of 300 feet from individual Sclerocactus plants and/or populations, to the extent practicable.
- SCL-2. The Coalition shall design project infrastructure to minimize impacts within suitable habitat, to the extent practicable.
- SCL-3. The Coalition shall use only water (i.e., no chemicals, reclaimed production water, oil field brine) for dust abatement within the Sclerocactus Habitat Polygon during construction.
- SCL-4. The Coalition shall implement erosion control measures (e.g., silt fencing) to minimize sedimentation or concentrating water flow to Sclerocactus plants and populations located down slope of proposed surface disturbance activities. Such measures should only be installed within the area proposed for disturbance.
- SCL-5. The Coalition shall reclaim all temporarily disturbed areas with plant species native to the region, or seed mixtures approved by USFWS.
- SCL-6. The Coalition shall power wash construction vehicles and equipment prior to entering suitable habitat or when moving between infested areas in order to prevent spreading seeds from noxious and invasive species.

A.2.6 Uinta Basin Hookless Cactus and Pariette Cactus (Core Conservation Area 2)

- SCL-7. All conservations measures listed for suitable habitat areas shall also apply to Core Conservation Area habitat.

- SCL-8. The Coalition shall conduct ground disturbing activities outside of the reproductive period, April 1 through June 30, or as determined by a qualified botanist.
- SCL-9. The Coalition shall minimize surface disturbance to minimize impacts to Sclerocactus and suitable habitat, to the extent practicable.
- SCL-10. If surface disturbance would occur within 300 feet of Sclerocactus or if surface disturbance would exceed USFWS' target threshold for any Core Conservation Area, the Coalition shall implement additional conservation to offset impacts to habitat and individuals (USFWS 2014). Offsets will be based on the USFWS 2014 Ecological Restoration Mitigation Calculation Guidelines for Impacts to Sclerocactus wetlandicus and Sclerocactus brevispinus Habitat or most recent guidelines.

A.2.7. Uinta Basin Hookless Cactus and Pariette Cactus (Occupied Habitat Areas)

- SCL-11. All conservations measures listed for suitable habitat areas and Core Conservation Area habitat shall also apply to occupied habitat areas.
- SCL-12. The Coalition shall conduct ground disturbance activities outside of the reproductive period, (defined as April 1 through June 30 or as determined by a qualified botanist), when within 300 feet of individual Sclerocactus plants and/or populations.
- SCL-13. The Coalition shall have a qualified biologist flag Sclerocactus avoidance areas (within 25 feet of disturbance edge). Flagging shall be immediately removed following construction activity.
- SCL-14. The Coalition shall obey a 15-mile-per-hour speed limit on dirt roads within occupied Sclerocactus habitat during construction in order to reduce fugitive dust during the time of the year when Sclerocactus species, pollinators, and associated habitat are most vulnerable to dust related impacts (March 1 to August 31). Speed limit signs shall be posted in restricted areas for project personnel and signing shall be posted to limit off-road travel in sensitive areas.
- SCL-15. The Coalition shall use only water (i.e., no chemicals, reclaimed production water, oil field brine) for dust abatement within occupied habitat during construction.
- SCL-16. The Coalition shall have a qualified botanist on site during construction to monitor the surface disturbance activity and assist with implementation of applicable conservation measures.
- SCL-17. If new surface disturbance occurs within occupied habitat, the Coalition shall either implement ecological restoration activities to be developed in consultation with and with the agreement of USFWS or may contribute to the Sclerocactus Conservation Fund. Proof of payment shall be provided to the STB prior to construction. The payment shall be calculated based on acres of disturbance using the USFWS "2014 Ecological Restoration Mitigation Calculation Guidelines for impacts to Sclerocactus wetlandicus and Sclerocactus brevispinus Habitat." Funds shall be paid to:

  Sclerocactus Conservation Fund - BLM
  Impact-Directed Environmental Accounts National Fish and Wildlife Foundation
  1133 Fifteenth Street NW, Suite 1100
  Washington, DC 20005

- SLC-18. If new surface disturbance occurs within occupied habitat on Tribal lands, the Coalition shall abide by the requirements of the 2015 Ute Indian Tribe's Sclerocactus Management Plan for the Uintah and Ouray Indian Reservation, Uinta Basin Utah (Ute Indian Tribe 2015) for mitigation of project-related activities on Tribal lands. Proof of payment shall be provided to the STB prior to construction. The payment shall be calculated based on acres of disturbance from the results of pre-construction surveys. The Coalition shall work with our office and the Ute Indian Tribe to calculate the mitigation as described in the Tribe's Sclerocactus Management Plan. Funds shall be deposited to the Tribal Sclerocactus Conservation Fund, as directed by the Ute Indian Tribe.

A.2.8. Mexican Spotted Owl

- MSO-1. The Coalition shall conduct Mexican spotted owl surveys in the moderate-quality habitat along the Wells Draw Alternative should the STB license the Wells Draw Alternative and the Coalition choose to construct the Wells Draw Alternative. The survey method shall be determined in consultation with USFWS.

A.2.9 Colorado River Fishes

- CFR-1. As the project's average annual new depletion of 875 acre-feet is below the current sufficient progress threshold of 4,500 acre-feet, the Recovery Program will serve as conservation measures to minimize adverse effects to the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail, and destruction or adverse modification of critical habitat caused by the project's new depletion.

- CFR-2. With respect to the depletion contribution, the Project applicants will make a one-time payment which has been calculated by multiplying the Project's average annual depletion (acre-feet) by the depletion charge in effect at the time payment is made. The fiscal year 2022 fee for water depletion projects is $22.84 per acre-foot. Therefore, for the Uinta Basin Railway Project, the Project applicants owe $19,985.00. Ten percent of the total is due upon issuance of approvals from the STB and other action agencies. The remainder is due when construction of the project commences. However, full payment of the fee is acceptable prior to project initiation if that is easier for the Project applicants.

  Please note that the fee rate changes each September 1st based on inflation and your office is responsible for paying the rate in place at time of the writing of the check. Therefore, the rate may change subsequent to the writing of this letter, and the rate may change between the initial 10 percent payment and the payment of the remaining fee. Please check with George Weekley with the U.S. Fish and Wildlife Service Utah Field Office at (385) 285-7929 to ensure the Project applicants pay the correct amount.

  Funds are not received by the U.S. Fish and Wildlife Service but are rather deposited into an account held by our partners at the National Fish and Wildlife Foundation (NFWF). Courtney Kwiatkowski is the account manager and can be reached at

Courtney.Kwiatkowski@nfwf.org or (202) 857-0166. The Tax ID for NFWF is 52 1384139. To correctly submit the payments to NFWF please follow the directions below.

Payments can be made via check or secure Electronic Fund Transfer (EFT), although the preferred option of payment is EFT. Please contact NFWF to receive instructions for secure EFT payment. Payments made by check should be mailed to the address below. The check should include the following notation: "Upper Colorado Fish Recovery Program (IM.A131)."

National Fish and Wildlife Foundation
Attn: Chief Financial Officer
1133 15th Street, NW
Suite 1000
Washington, DC 20005

All payments should be accompanied by a cover letter (either mailed or emailed) that identifies the project title noted above, the amount of the payment, the check number (if applicable), the name and address of the payor (Project applicants), the name and address of the Federal Agency responsible for authorizing the project (STB), the USFWS office issuing the biological opinion (Utah ES office), and a note that the payment pertains to the "Upper Colorado Fish Recovery Program." This information will be used by NFWF to notify the Recovery Program within 5 working days that payment was received.

The payment will be accompanied by a cover letter that identifies the project and biological opinion number (06E23000-2020-F-0871) that requires the payment, the amount of payment enclosed, check number, and the following notation on the check – "Upper Colorado Fish Recovery Program, NA.1104". The cover letter also shall identify the name and address of the payor, the name and address of the Federal Agency responsible for authorizing the project, and the address of the USFWS office issuing the biological opinion. This information will be used by the Foundation to notify the STB and the USFWS that payment has been received. The Foundation is to send notices of receipt to these entities within 5 working days of its receipt of payment.

A.2.10. Additional Coalition Voluntary Measures

- VM-1. Prior to initiating any project-related construction activities, the Coalition will develop a spill prevention, control, and countermeasures plan in consultation with Federal, Tribal, State, and local governments. The plan shall specify measures to prevent the release of petroleum products or other hazardous materials during construction activities and contain such discharges if they occur. In the event of a spill over the applicable reportable quantity, the Coalition will comply with its spill prevention, control, and countermeasures plan and applicable federal, state, local, and Tribal regulations pertaining to spill containment, appropriate clean-up, and notifications.
- VM-2. The Coalition will ensure that gasoline, diesel fuel, oil, lubricants, and other petroleum products are handled and stored to reduce the risk of spills contaminating soils or surface waters. If a petroleum spill occurs in the project area as a result of rail

construction, operations, or maintenance and exceeds specific quantities or enters a water body, the Coalition (or its agents) will be responsible for promptly cleaning up the spill and notifying responsible agencies in accordance with Federal, State, and Tribal regulations.

- VM-3. The Coalition will prepare a hazardous materials emergency response plan to address potential derailments or spills. This plan will address the requirements of the Pipeline and Hazardous Materials Safety Administration and FRA requirements for comprehensive oil spill response plans. The Coalition will distribute the plan to Federal, State, local, and Tribal emergency response agencies. This plan shall include a roster of agencies and people to be contacted for specific types of emergencies during rail construction, operation and maintenance activities, procedures to be followed by particular rail employees, emergency routes for vehicles, and the location of emergency equipment.
- VM-4. In the event of a reportable hazardous materials release, the Coalition will notify appropriate Federal, State, and Tribal environmental agencies as required under Federal, State, and Tribal law.
- VM-5. The Coalition will limit ground disturbance to only the areas necessary for project-related construction activities.
- VM-6. The Coalition will submit a notice of intent to request permit coverage under Utah Pollutant Discharge Elimination System Construction General Permit UTRC00000 for construction stormwater management. The Coalition will submit an application for coverage under the NPDES stormwater construction permits pursuant to Section 402 of the Clean Water Act for construction stormwater management on Tribal land. The Coalition will develop a stormwater pollution prevention plan, which will include construction best management practices to control erosion and reduce the amount of sediment and pollutants entering surface waters, groundwater, and waters of the U.S. The Coalition will require its construction contractor(s) to follow all water quality control conditions identified in all permits, including the Section 404 permit from the Corps and the Section 401 Water Quality Certification from the UDEQ and the U.S. Environmental Protection Agency.
- VM-7. The Coalition will revegetate disturbed areas, where practical and in consultation with the Ute Indian Tribe as applicable, when construction is completed. The goal of reclamation will be the rapid and permanent re-establishment of native ground cover on disturbed areas to prevent soil erosion, where feasible. If weather or seasonal conditions prevent vegetation from being quickly re-established, the Coalition will use measures such as mulching, erosion-control blankets, or dust-control palliatives to prevent erosion until vegetative cover is established. The Coalition will monitor reclaimed areas for three years. For areas where efforts to establish vegetative cover have been unsuccessful after one year, the Coalition will reseed annually for up to three years as needed.
- VM-8. The Coalition will comply with any conditions and mitigation commitments contained in a biological opinion for sensitive species that could potentially be impacted by the project.
- VM-9. The Coalition will prepare a noxious and invasive weed control plan in consultation with the Ute Indian Tribe where applicable. Where practical, the Coalition will include the policies and strategies in Utah's Strategic Plan for Managing Noxious and Invasive Weeds when designing response strategies for noxious and invasive weeds.

- VM-10. The Coalition will comply with any conditions and mitigation commitments contained in a biological opinion for ESA-listed plant species that could potentially be affected by the Project.