APPENDIX A

Interdisciplinary Team Analysis Record Checklist & Resources Considered and Dismissed from Further Analysis

INTERDISCIPLINARY TEAM CHECKLIST

Project Title: Dominion River Bend Unit Infill Project

NEPA Log Number: UT-080-07-772

File/Serial Number:

Project Leader:

DETERMINATION OF STAFF: ***(Choose one of the following abbreviated options for the left column)***

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for relevant impact that need to be analyzed in detail in the EA

NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

Determi-nation	Resource	Rationale for Determination*	Signature	Date
RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)				
PI	Air Quality	Additional compression proposed. Also air quality impacts from equipment associated with the construction, drilling, completion, and production of new wells.	Stephanie Howard	01/06/2012
NP	Areas of Critical Environmental Concern	A review of the GIS layers for the Vernal Record of Decision and Resource Management Plan found that this resource was not present within the proposed project area.	Jason R. West	1-05-2012
NP	BLM Natural Areas	No BLM natural areas exist in the project area.	Jason R. West	1-05-2012
PI	BLM Sensitive Plant Species	Sandy soils in the vicinity of the proposed project may provide suitable habitat for the UT BLM sensitive plant species *Yucca sterilis*.	Aaron Roe	1/9/12

Determi-nation	Resource	Rationale for Determination*	Signature	Date
PI	Cultural Resources	Any area that had not been previously inventoried needs to be inventoried due to the potential for disturbance.	Cameron Cox	01/18/2012
NP	Environmental Justice	No minority or economically disadvantaged communities or populations would not be disproportionately affected by the proposed action or alternatives.	Stephanie Howard	01/06/2012
NP	Farmlands (Prime or Unique)	There are no designated prime or unique farmlands in the Vernal Field Office area.	Stephanie Howard	01/06/2012
PI	Fish and Wildlife Excluding USFWS Designated Species	Roundtail chub, Bluehead sucker, and Flannel mouth sucker habitat within ½ mile of the project area. There are at least 15 Bald eagle roosts within ½ mile of the project area along the Green River. Also Golden eagle, Red-tailed hawk and American kestrel nests found within or within ½ mile of the project area. The proposed area contains White-tailed prairie dog habitat as well as Burrowing owl habitat. The proposed area contains UDWR-designated crucial value and year-long fawning habitat for pronghorn antelope; crucial value and year-long fawning habitat for mule deer; and crucial value and year-long habitat for Rocky Mountain bighorn sheep.	Suzanne Grayson	4 Jan. 2012
PI	Floodplains	Floodplains will be avoided wherever possible. However, when they can't be, mitigation or avoidance measures will be implemented by applying appropriate Best Management Practices (BMPs), Applicant Committed Measures, or as part of Conditions of Approval (COAs). HUD inventoried floodplains are rare within the project area however numerous ephemeral drainages with non-HUD inventoried floodplains are present. Simple explanation for each of the five alternatives should be quantified within Chap. 3 & 4 of the EA for the effected environment and impacted environment.	Stan Olmstead	1/31/2012
NI	Fuels/Fire Management	No planned fuel treatments in the area. The proposed disturbances may increase the chance of invasive species, primarily *Bromus tectorum.,* An increase of *Bromus tectorum* may raise the frequency and rate of spreads of wildfires in the area. The proposed reclamation standards should minimize the potential for additional invasive species.	Blaine Tarbell	01/09/12
NI	Geology / Mineral Resources/Energy Production	Compliance with existing BLM construction restrictions on slopes and construction design will cause the possibility of the project initiating landslides, other mass movements, or flooding to be unlikely. Natural gas, oil, Gilsonite, oil shale, and tar sand are the	Elizabeth Gamber	1/9/2012

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		only mineral resources that could be impacted by the project. Production of natural gas or oil would deplete reserves, but the proposed project allows for the recovery of natural gas and oil per 43 CFR 3162.1(a), under the existing Federal lease. Compliance with "Onshore Oil and Gas Order No. 2, Drilling Operations" will assure that the project will not adversely affect gilsonite, oil shale, or tar sand deposits. Due to the state-of-the-art drilling and well completion techniques, the possibility of adverse degradation of tar sand or oil shale deposits by the proposed action will be negligible. Well completion must be accomplished in compliance with "Onshore Oil and Gas Order No. 2, Drilling Operations". These guidelines specify the following: *"Proposed casing and cementing programs shall be conducted as approved to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use."*		
PI	Greenhouse Gas Emissions	Emissions of Greenhouse Gases are anticipated to occur.	Stephanie Howard	1/9/2012
PI	Hydrologic Conditions (stormwater)	My usual approach to hydrologic conditions is to analyze each of the alternatives for surface water flow pattern changes due to the project. This to understand how water flow patterns impact erosion. Stormwater analysis for Section 402 of the Clean Water Act also needs to be performed however the Energy Policy Act of 2005 exempted much of the stormwater requirements for energy exploration and this should be explained.	Stan Olmstead	1/31/2012
PI	Invasive Plants/Noxious Weeds, Soils, and Vegetation	The proposed project will result in disturbance to the native plant community. Surface disturbance associated with the proposed project will provide suitable habitat for the establishment and spread of non-native plant species. Measures that meet at least the requirements of the Vernal Surface Disturbance Weed Policy need to be incorporated. Potential for increased soil erosion and/or sedimentation from increased surface disturbance.	Aaron Roe	1/9/12

Determi-nation	Resource	Rationale for Determination*	Signature	Date
NI	Lands/Access	The surface ownership in the RBU Project Area consists of BLM land administered by the Vernal Field Office (17,301 acres, Uintah and Ouray Indian reservation administered by the Bureau of Indian Affairs (BIA) (3,847 acres), and State land administered by the School and Institutional Trust Lands Administration (SITLA) (640 acres). The proposed area is located within the Vernal Field Office Resource Management Plan, which allows for oil and gas development with associated road and pipeline rights-of-way. Current land uses, within the area identified in the proposed action and adjacent lands, consist of existing oil and gas development, Gilsonite mining, wildlife habitat, recreational use, and sheep and cattle ranching. No existing land uses would be changed or modified by the implementation of the proposed action; therefore, there would be no impact. If the proposed new construction for roads or pipelines is located outside of the RBU Unit Boundaries, rights-of-way would be required and would only be authorized on BLM Lands.	Margo Roberts	01/10/2012
PI	Lands with Wilderness Characteristics (LWC)	An inventory needs to be completed for this area	Jason R. West	1-9-2012
PI	Livestock Grazing	The loss of vegetation due to the surface disturbances would likely be irretrievable due to the low precipitation and shallow soils. This loss of vegetation would reduce livestock and wildlife forage. The proposed project does lie within a sheep allotment; therefore additional fragmentation from roads and pipelines could also impact the sheep grazing operation.	Dusty Carpenter	1-20-12
PI	Migratory Birds	Migratory birds/habitat will be impacted by the Proposed Action. Part of the analysis area is encompassed by a designated Bird Habitat Conservation Area (BHCA-BCR #10).	Suzanne Grayson	20 January, 2012
PI	Native American Religious Concerns	Consultations will need to be conducted to identify any potential concerns.	Cameron Cox	01/18/2012
PI	Paleontology	A paleontologic survey must be completed for each well site in this project area before any construction on the associated well pad, access road, or pipeline can begin. The recommended mitigation, included in each paleo survey, must be followed to protect existing paleo resources.	Elizabeth Gamber	1/9/2012

Determi-nation	Resource	Rationale for Determination*	Signature	Date
PI	Rangeland Health Standards	Rangeland Health was analyzed in 2006 for the area; however, since then there has been a large increase in oil and gas mineral extraction development. Rangeland Health has not been reevaluated since the oil and gas boom, therefore, it cannot be assumed that the area is still meeting rangeland health. Utah Rangeland Health Standard #1 requires that "upland soils exhibit permeability and infiltration rates that sustain or improve site productivity, considering the soil type, climate and landform". Increased soil erosion and soil compaction could potentially result in a failure to achieve Rangeland Health Standard #1. Further increase in surface disturbance could cause the allotment to not meet Utah Rangeland Health standards #3 (due to increased invasive species due to disturbance which decreases the desired species). See Weeds Section for analysis.	Dusty Carpenter	1/20/2012
PI	Recreation	This area contains a designated open riding area and would remove a 1:1 acre for every acre developed within the open riding area.	Jason West	1-9-2012
PI	Socio-Economics	The Proposed Action would affect the socio-economics of local cities and towns surrounding the project area. Project area work crews would likely increase local revenue through expenditures on lodging, meals, and supplies. In the last 50 years, Uintah County has shifted from an agrarian economy to an oil and gas economy with services to support oil and gas (retail trade, private services, and government services). A single well would have a total drilling and completion cost of approximately $600,000 according to IPAMS. A single well would employ approximately 34 employees over the life of the well (30 initial, 4 long-term). Long-term employment is approximately 15% of total employment for well development, and would be a more significant contributor to the community due to the fact that it would be more likely to draw employees from the local community than the initial employment, which would draw employees from both local and regional bases. Therefore, there is a positive impact to socioeconomics expected.	Stephanie Howard	01/06/2012
PI	Threatened, Endangered or Candidate Animal Species	Razorback sucker, Colorado pikeminnow, Humpback chub, and bonytail habitat within ½ mile of the project area within the Green River. Potential yellow-billed cuckoo habitat within ½ mile of the project area along Cottonwood stands along the Green River. Water depletion will occur. There is no designated brooding or winter habitat for sage grouse.	Suzanne Grayson	4 Jan. 2012
PI	Threatened, Endangered, Proposed or Candidate Plant	Suitable clay reed-mustard habitat appears to be located within 300 feet of the southwest portion of the Proposed	Aaron Roe	1/9/12

Determi-nation	Resource	Rationale for Determination*	Signature	Date
	Species	Project area Much of the proposed project area is located within potential habitat for Uinta Basin hookless cactus. Known occupied habitat for the species is located in the northwest and southeast portions of the project area.		
PI	Visual Resources	VRM Class II and Class IV identified.	Jason R. West	1-9-2012
NI	Wastes (hazardous or solid)	*Hazardous Waste:* No chemicals subject to reporting under SARA Title III in an amount equal to or greater than 10,000 pounds will be used, produced, stored, transported, or disposed of annually in association with the drilling, testing, or completing of this project. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported, or disposed of in association with the drilling, testing, or completing of this project. *Solid Wastes:* Trash would be confined in a covered container and hauled to an approved landfill. Burning of waste or oil would not be done. Human waste would be contained and be disposed of at an approved sewage treatment facility.	Stephanie Howard	01/06/2012
PI	Waters of the U.S.	Willow Creek and a number of unnamed ephemeral drainages occur within the project area. New surface disturbance is minimized by directional drilling; however, construction of new roads and pipelines may impact surface waters. Unavoidable impacts or road maintenance upgrades to surface waters should be coordinated with the U.S. Army Corps of Engineers for possible permitting. Additionally Daren Rasmussen; Stream Alteration Specialist for the Utah Division of Water Rights coordinates with the Corp of Engineers and should be consulted. With guidance by the Corp and Stream Alteration authority from the State, BLM will be more able to review analysis within Chap. 3 & 4 of the EA.	Stan Olmstead	1/31/2012
PI Surface PI Ground	Water Resources/Quality (surface/ground)	*Surface:* Potential impacts to surface waters from sedimentation and contamination (chemical spills) may occur to degrade surface water quality. Analysis of water quality in both Chap. 3 & 4 of the EA should include acres disturbed within each of the alternatives as well as acres disturbed prior to the project proposal. Types of disturbance will have different impacts so analysis for roads, pads and other proposed projects will need independent analysis to show impact to surface water quality and the potential from chemical spills. A spill	Sur: Stan Olmstead	Sur: 2/9/2012

Determi-nation	Resource	Rationale for Determination*	Signature	Date
		prevention plan is necessary. Other Vernal Field Office documents are being prepared and are requiring water sample monitoring by the proponents. Analysis for this proposal should review these monitoring plans and determine if the River Bend project should have an independent monitoring plan or if other water monitoring plans within the Field Office are adequate. *Ground*: Compliance with State Rule R649-3-8, Casing Program, should assure that the project will not adversely affect groundwater quality. Due to the standard for casing design and state-of-the-art drilling techniques, the possibility of adverse degradation of groundwater quality by the proposed action will likely be negligible. The well casing design standard specifies the following: "*The casing program adopted must be planned to protect any potential oil or gas horizons penetrated during drilling from infiltration of waters from other sources and to prevent the migration of oil, gas, or water from one horizon to another.*" However, there is always the potential for various types of leaks or spills over the life of an oil and gas field. Upgradient and downgradient groundwater monitoring may be beneficial.	Gr: Elizabeth Gamber	Gr: 3/09/2012
PI	Wetlands/Riparian Zones	There are no riparian areas on BLM managed lands within the proposed project area (see Vernal Field Office GIS database). Riparian habitat is located along Willow Creek on Tribal lands. Also there is riparian habitat outside the project area and analysis of indirect impacts may want to have brief comments within Chap. 3 & 4 associated with U.S. Army Corp of Engineer requirements. This may not be a large write up or lengthy explanation.	Stan Olmstead	1/31/2012
PI	Wild and Scenic Rivers	The Lower Green river suitable WSR section boundary overlaps the proposed project boundary. However, no new surface disturbance will occur in those areas.	Jason R. West	11-05-2012
NP	Wild Horses and Burros	Not within an existing wild horse herd unit.		
NP	Wilderness/WSA	A review of the GIS layers for the Vernal Record of Decision and Resource Management Plan found that this resource was not present within the proposed project area.	Jason R. West	1-05-2012

Determi-nation	Resource	Rationale for Determination*	Signature	Date
NP	Woodland / Forestry	None present. Per review of GIS data.	David Palmer	01/10/2012

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments
Environmental Coordinator			
Authorized Officer			

APPENDIX B

Conservation Measures for Special Status Plant Species

Clay reed-mustard (*Schoencrambe argillacea*)

In order to minimize effects to the federally threatened clay reed-mustard, the BLM in coordination with the U.S. Fish and Wildlife Service (USFWS) developed the following avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the Endangered Species Act (ESA). The following avoidance and minimization measures should be included in the Plan of Development (POD):

1. Pre-project habitat assessments will be completed across 100 percent of the project disturbance area within potential habitat[1] prior to any ground disturbing activities to determine if suitable clay reed-mustard habitat is present.

2. Site inventories will be conducted within suitable habitat[2] to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, "avoidance areas"); in such cases, in general, 300-foot buffers will be maintained between surface disturbance and avoidance areas. However, site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Where conditions allow, inventories:
    a. Must be conducted by qualified individual(s) and according to BLM and USFWS accepted survey protocols,
    b. Will be conducted in suitable and occupied[3] habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually May 1st to June 5th, in the Uintah Basin; however, surveyors should verify that the plant is flowering by contacting a BLM or a USFWS botanist or demonstrating that the nearest known population is in flower),
    c. Will occur within 300 feet from the centerline of the proposed right-of-way (ROW) for surface pipelines or roads; and within 300 feet from the perimeter of disturbance for the proposed well pad including the well pad,
    d. Will include, but not be limited to, plant species lists and habitat characteristics, and
    e. Will be valid until May 1st the following year.

[1] *Potential habitat* comprises areas that satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.

[2] *Suitable habitat* comprises areas that contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain clay reed-mustard; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <http://www.fws.gov/endangered/wildlife.html>.

[3] *Occupied habitat* is defined as any area within 300 feet of a listed plant individual.

3. Design project infrastructure to minimize impacts within suitable habitat[2]:

    a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300-foot buffers, in general; however, site specific distances will need to be approved by USFWS and BLM when disturbance will occur upslope of habitat,
    b. Reduce well pad size to the minimum needed, without compromising safety,
    c. Limit new access routes created by the project,
    d. Roads and utilities should share common right-of-ways where possible,
    e. Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
    f. Place signing to limit off-road travel in sensitive areas, and
    g. Stay on designated routes and other cleared/approved areas.

4. Within occupied habitat[3], project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:
    a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300-foot buffers, in general; however, site-specific distances will need to be approved by USFWS and BLM when disturbance will occur upslope of habitat,
    b. Follow the above recommendations (#3) for project design within suitable habitats,
    c. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged,
    d. Construction of roads will occur such that the edge of the right-of-way is at least 300 feet from any plant and 300 feet from avoidance areas,
    e. Roads will be graveled within occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from May 1st to June 5th (flowering period), dust abatement applications will be comprised of water only.
    f. The edge of the well pad should be located at least 300 feet away from plants and avoidance areas, in general; however, site-specific distances will need to be approved by USFWS and BLM when disturbance will occur upslope of habitat,
    g. Surface pipelines will be laid such that a 300-foot buffer exists between the edge of the right-of-way and plants and 300 feet between the edge of ROW and avoidance areas; use stabilizing and anchoring techniques when the pipeline crosses suitable habitat to ensure pipelines don't move towards the population; site-specific distances will need to be approved by USFWS and BLM when disturbance will occur upslope of habitat,
    h. Construction activities will not occur from May 1st through June 5th within occupied habitat,
    i. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
    j. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
    k. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
    l. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied clay reed-mustard habitats within 300 feet of the edge of the surface pipelines' ROWs, 300 feet of the edge of the roads' ROWs, and 300 feet from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the USFWS. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the USFWS.

6. Reinitiation of section 7 consultation with the USFWS will be sought immediately if any loss of plants or occupied habitat for the shrubby reed-mustard is anticipated as a result of project activities.

Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the USFWS to ensure continued compliance with the ESA.

Uinta Basin hookless cactus (*Sclerocactus wetlandicus*)

In order to minimize effects to the federally threatened Uinta Basin hookless cactus, the BLM in coordination with the USFWS, developed avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the ESA. The following avoidance and minimization measures would be included in the POD:

1. Pre-project habitat assessments will be completed across 100 percent of the project disturbance area within potential habitat[4] prior to any ground disturbing activities to determine if suitable Uinta Basin hookless cactus habitat is present.

2. Within suitable habitat[5], site inventories will be conducted to determine occupancy.

Inventories:

   a. Must be conducted by qualified individual(s) and according to BLM and USFWS accepted survey protocols,

   b. Will be conducted in suitable and occupied[6] habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected, and during appropriate flowering periods. For this species, surveys can be done any time of the year, provided there is no snow cover,

   c. Will occur within 300 feet from the edge of the proposed ROW for surface pipelines or roads; and within 300 feet from the perimeter of disturbance for the proposed well pad including the well pad,

   d. Will include, but not be limited to, plant species lists and habitat characteristics, and

   e. Will be valid until one year from the survey date.

3. Design project infrastructure to minimize impacts within suitable habitat[5]:

   a. Reduce well pad size to the minimum needed, without compromising safety,

   b. Limit new access routes created by the project,

   c. Roads and utilities should share common ROWs where possible,

   d. Reduce width of ROWs and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,

[4] *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.

[5] *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Uinta Basin hookless cactus. Habitat descriptions can be found in the U.S. Fish and Wildlife Service's 1990 Recovery Plan and Federal Register Notices for the Uinta Basin hookless cactus (http://www.fws.gov/endangered/wildlife.html).

[6] *Occupied habitat* is defined as areas currently or historically known to support Uinta Basin hookless cactus; synonymous with "known habitat."

e. Place signing to limit off-road travel in sensitive areas,

f. Stay on designated routes and other cleared/approved areas, and

g. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.

4. Within occupied habitat[6], project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants when and where practicable:

   a. Follow the above (#3) recommendations for project design within suitable habitats,

   b. Buffers of 300 feet minimum between the edge of the ROW (roads and surface pipelines) or surface disturbance (well pads) and plants and populations will be incorporated,

   c. Surface pipelines will be laid such that a 300-foot buffer exists between the edge of the right-of-way and the plants, use stabilizing and anchoring techniques when the pipeline crosses the habitat to ensure the pipelines don't move towards the population,

   d. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,

   e. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,

   f. Designs will avoid concentrating water flows or sediments into occupied habitat,

   g. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and

   h. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied Uinta Basin hookless cactus habitats within 300 feet of the edge of the surface pipelines' ROWs, 300 feet of the edge of the roads' ROWs, and 300 feet from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the USFWS. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the USFWS.

6. Reinitiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the Uinta Basin hookless cactus is anticipated as a result of project activities.

Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the USFWS to ensure continued compliance with the ESA.

APPENDIX C

Soils

Appendix C. Characteristics of Soil Units in the RBU Project Area

Map Complex Name and Number	Acreage in RBU Project Area	Soil Unit Name	Soil Texture	Parent Material	Landforms	Percent of Soil Unit	Slope	Depth Class	Drainage Class	Salinity Class	Sodium Class	RSMR[1]	Runoff Speed	Water Erosion Potential (Kw)
Badland-Rock outcrop complex (12)	59	Badland	--	Shale and siltstone of the Green River and Uinta Formations	Erosional remnants, hills, and ridges	50	1 to 75%	Very shallow	Somewhat excessively drained	Strongly saline	Strongly sodic	Poor	Very high	0.1
		Rock outcrop	--	Sandstone and shale bedrock	Cliffs, escarpments, ledges, erosional remnants	35	1 to 100%	Very shallow	--	--	--	--	Very high	0.1
Cadrina extremely stony loam-Rock outcrop complex (36)	1,257	Cadrina	Extremely stony loam	Slope alluvium and colluvium over residuum derived from shale and sandstone	Hills	65	25 to 50%	Shallow	Well drained	Very slightly saline	Slightly sodic	Poor	Very high	0.05
		Rock outcrop	--	--	Cliffs, escarpments, ledges, erosional remnants	20	25 to 50%	--	--	--	--	--	Very high	0.1
Cadrina-Badland-Rock outcrop complex (37)	539	Cadrina	Extremely channery loam	Slope alluvium and colluvium over residuum derived from shale and sandstone	Hills	65	25 to 50%	Shallow	Well drained	Very slightly saline	Slightly sodic	Poor	Very high	0.05
		Badland	--	--	Erosional remnants, hills, and ridges	20	25 to 50%	Shallow	Somewhat excessively drained	Strongly saline	Strongly sodic	Poor	Very high	0.1
		Rock outcrop	--	--	Cliffs, escarpments, ledges, erosional remnants	10	25 to 50%	--	--	--	--	--	Very high	0.1
Crustown-Motto complex (62)	85	Crustown	Sand, loamy sand	Eolian deposits over residuum derived from calcareous sandstone	Hills	50	2 to 8%	Shallow	Somewhat excessively drained	Non-saline	Non-sodic	Poor	High	0.17
		Motto	Clay loam	Slope alluvium over residuum derived from shale and sandstone	Benches, hills	35	2 to 25%	Shallow	Well drained	Slightly saline	Strongly sodic	Poor	Very high	0.15
Casmos-Cadrina-Badland complex (42)	532	Casmos	Very channery loam, channery loam	Slope alluvium over residuum derived from sandstone, siltstone, and shale	Hills	35	4 to 25%	Very shallow	Well drained	Very slightly saline	Slightly sodic	Poor	Very high	0.15

Map Complex Name and Number	Acreage in RBU Project Area	Soil Unit Name	Soil Texture	Parent Material	Landforms	Percent of Soil Unit	Slope	Depth Class	Drainage Class	Salinity Class	Sodium Class	RSMR[1]	Runoff Speed	Water Erosion Potential (Kw)
		Cadrina	Extremely channery loam	Slope alluvium over residuum derived from shale and sandstone	Hills	30	4 to 25%	Shallow	Well drained	Very slightly saline	Slightly sodic	Poor	Very high	0.05
		Badland	--	--	Erosional remnants, hills, and ridges	20	4 to 25%	Very shallow	Somewhat excessively drained	Strongly saline	Strongly sodic	Poor	Very high	0.1
Motto-Casmos complex (152)	7,111	Motto	Clay loam	Slope alluvium over residuum derived from shale and sandstone	Benches, hills	55	2 to 25%	Shallow	Well drained	Slightly saline	Strongly sodic	Poor	Very high	0.15
		Casmos	Channery loam	Slope alluvium over residuum derived from sandstone, siltstone and shale	Hills	30	4 to 25%	Very shallow	Well drained	Very slightly saline	Slightly sodic	Poor	Very high	0.15
Motto-Rock outcrop complex (154)	3,105	Motto	Very flaggy clay loam, clay loam, extremely channery clay loam	Slope alluvium over residuum derived from shale and sandstone	Benches, hills	75	2 to 25%	Shallow	Well drained	Slightly saline	Strongly sodic	Poor	Very high	0.15
		Rock outcrop	--	--	Cliffs, escarpments, ledges, erosional remnants	10	2 to 25%	--	--	--	--	--	Very high	0.1
Turzo loam (242)	15	Turzo	Loam, silty clay loam	Alluvium derived from quartzite, sandstone, limestone and shale	Alluvial flats	85	0 to 4%	Deep	Well drained	Mod. saline	Mod. sodic	Fair	Medium	0.37

[1]Reclamation Source Material Rating

Sources: USDA-NRCS 2003

APPENDIX D

Cultural Resource Inventories

Appendix D. Known Archaeological Sites within the RBU Project Area.

Site Number	Site Type	NRHP Assessment	State of Utah Project Number
42UN874	Dual Component, Prehistoric Rock Art, Lithic Scatter, Historic Artifact Scatter	Eligible	U-80-UB-0465b
42UN875	Temporary Camp	Not Eligible	U-80-AF-0505bi
42UN876	Temporary Camp	Not Eligible	U-80-AF-0505bi
42UN878	Lithic Scatter	Not Eligible	U-80-AF-0505bi
42UN897	Rock Shelter	Not Eligible	U-80-AF-0507b
42UN840	Rock panel	Eligible	U-81-UT-280
42UN1093	Chipping/reshafting station	Eligible	U-81-GC-501b
42UN994	Petroglyph panels	Not Evaluated	U-81-AF-0672b
42UN881	Rock Art	Eligible	U-85-SJ-0641bi
42UN1564	Rock Shelters, Lithic Scatter	Eligible	U-85-AF-664b
42UN842	Lithic scatter and rock art panel	Eligible	U-85-AF-664b
42UN1652	Open Camp	Eligible	U-87-WK-764b
42UN1777	Lithic Scatter	Eligible	Archaeological Evaluations in the Northern Colorado Plateau Cultural Area
42UN1863	Rock shelter/lithic scatter	Eligible	U-91-AF-146i
42UN1894	Open campsite	Eligible	U-91-54937
42UN1944	Open campsite	Eligible	U-91-54937
42UN1951	Lithic scatter	Eligible	U-91-54937
42UN1952	Open Occupation	Eligible	U-91-54937
42UN1960	Lithic Scatter	Eligible	U-92-AF-54b
42UN1961	Rock Shelter Occupation	Eligible	U-92-AF-54b
42UN1974	Open Occupation	Not Eligible	U-92-AF-82bi
42UN1979	Lithic Scatter	Eligible	U-92-54937

Site Number	Site Type	NRHP Assessment	State of Utah Project Number
42UN1990	Open Occupation	Eligible	U-92-AF-192b
42UN2013	Lithic Scatter	Eligible	U-92-AF-226b
42UN2014	Lithic Scatter	Eligible	U-92-AF-226b
42UN2016	Lithic Scatter	Eligible	U-92-AF-226b
42UN2023	Cairn and low rock alignment	Not Evaluated	N/A
42UN2107	Rock Shelters and Lithic Scatter	Eligible	U-92-AF-326b
42UN2457	Dual Component, Prehistoric and Historic Rock Art	Eligible	U-97-AFO-250i
42UN1571	Campsite	Eligible	U-00-AF-00-460b
42UN3190	Stone tool/debitage scatter	Not Eligible	U-03-AY-0198b
42UN3251	Stone Circle	Not Eligible	U-03-AY-0628i
42UN4529	Temporary ranch camp	Not Eligible	U-04-AY-884b
42UN4780	Rock cairn	Not Eligible	U-04-AY-896b
42UN4754	Rock cairn	Not Eligible	U-04-AY-956b
42UN5024	Gilsonite Mine	Not Eligible	U-04-AY-972bi
42UN4847	Gilsonite Mine	Eligible	U-04-AY-976bi
42UN4568	Cairn	Not Eligible	U-04-MQ-1424bi
42UN4569	Cairn	Not Eligible	U-04-MQ-1424bi
42UN4570	Cairns	Not Eligible	U-04-MQ-1424bi
42UN4571	Historic Rock Art	Eligible	U-04-MQ-1424bi
42UN4572	Historic Rock Art	Eligible	U-04-MQ-1424bi
42UN4573	Historic Rock Art	Not Eligible	U-04-MQ-1424bi
42UN4574	Gilsonite Mine Loading Ramp	Not Eligible	U-04-MQ-1424bi
42UN4575	Cairn	Not Eligible	U-04-MQ-1424bi
42UN4576	Lithic Scatter	Eligible	U-04-MQ-1424bi

Site Number	Site Type	NRHP Assessment	State of Utah Project Number
42UN3218	Rock Art	Eligible	U-03-AY-0240i U-05-AY-536i
42UN3219	Rock Art	Eligible	U-05-AY-536i
42UN3241	Lithic scatter/campsite	Eligible	U-05-AY-0622bs
42UN3236	Lithic Scatter	Eligible	U-06-AY-1319b
42UN3240	Rock Cairn	Not Eligible	U-06-AY-1319b

APPENDIX E

Summary of Potential Special Status Species

SUMMARY OF POTENTIAL OCCURRENCE OF

SPECIAL STATUS PLANT AND WILDLIFE SPECIES FOR

XTO'S RIVER BEND UNIT PROJECT

Species	Status[1]	Habitat (county: location; formation; community; elevation; notes)	Potential for Occurrence Within the Proposed RBU Project Area and Cumulative Effects Area	Eliminated From Detailed Analysis? (Yes/No)
Plants				
Arabis vivariensis Park rock cress	S	Uintah: Weber Formation sandstone & limestone outcrops; mixed desert shrub or pinyon juniper communities; 5,000-6,000 feet; flowers May.	None - No potential habitat. The geological formation and soils associated with this species do not occur in the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Astragalus equisolensis Horseshoe milkvetch	S	Uintah: East of Green River, Horseshoe Bend; Duchesne River Formation soils; mixed desert shrub communities; 4,790-5,185 feet.; flowers May-early June.	None - No populations, potential or suitable habitat occurs for this species in this area. Known populations occur along the upper Green River; outside of the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Astragalus hamiltonii Hamilton milkvetch	S	Uintah: Duchesne River, Mowry, Dakota & Wasatch Formations; mixed desert shrub or pinyon juniper communities; 5,240-5,800 feet; flowers May-June.	None - No populations, potential or suitable habitat occurs for this species in this area. Known populations occur near Vernal; outside of the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Cirsium ownbeyi Ownbey thistle	S	Daggett, north east Uintah: Uinta Mountain canyons; pinyon-juniper, mixed desert shrub or riparian communities; 5,500-6,200 feet; flowers late May-August.	None - No potetnial habitat. The geological formation and soils associated with this species do not occur in the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Cleomella palmeriana var. *goodrichii* Goodrich stinkweed	S	Uintah: Morrison Formation, heavy clay; mat-salt-bush, Cicsco woody aster, salt desert shrub community; 4,000-6,000 feet; flowers May.	None - No potential habitat. The geological formation and soils associated with this species do not occur in the RBU Project Area.	Yes. otential habitat for this species does not occur within the RBU Project Area.
Cryptantha barnebyi	S	Uintah: Green River Formation; oil shale; gently sloping white shale barrens; shadscale-saltbush or Pinyon-juniper communities;	None - No populations, potential or suitable habitat occurs for this species in this area.	Yes. Potential habitat for this species does not occur within

Species	Status[1]	Habitat (county: location; formation; community; elevation; notes)	Potential for Occurrence Within the Proposed RBU Project Area and Cumulative Effects Area	Eliminated From Detailed Analysis? (Yes/No)
Barneby's catseye		5,600-7,200 feet.	Known populations occur east and outside of the RBU Project Area.	the RBU Project Area.
Cryptantha grahamii Graham's catseye	S	Uintah: Green River Shale in mixed desert shrub, sagebrush, pinyon-juniper, and mountain brush communities; 5,000-7,400 feet.	Low. Formation and associated soils may occur in the RBU Project Area. However, there is little known about the species' exact habitat requirements.	Yes. This species is not known to occur within the RBU Project Area.
Erigeron untermannii Untermann fleabane	S	Duchesne, Uintah: West Tavaputs Plateau; Green River, Uinta Formation; ridges; dry calcereaous shales and sandstones; pinyon juniper or mountain brush communities; 7,000-7,800 feet. Flowers May–June.	None - No populations, potential or suitable habitat occurs for this species in this area. Species occurs at higher elevation than the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Habenaria zothecina Alcove bog orchid	S	Uintah: unconsolidated Quaternary alluvium; seeps, hanging gardens, riparian areas in mixed desert shrub, pinyon juniper, or oak brush communities; 4,360-8,690 feet.; flowers late July-August.	Low - Potential habitat occurs for this species in hydric soils associated with the Green River. However, due to high levels of siltation in the Green River, the probability of this species to occur in the RBU Project Area is very low.	Yes. Potential habitat for this species does not occur within the RBU Project Area..
Hymenoxys lapidicola Rock bitterweed	S	Uintah: Blue Mountain; Weber Formation, sandy ledges & crevices; pinyon juniper or ponderosa-manzanita communities; 5,700-8,100 feet; flowers June.	None - No potential habitat. The geological formation and soils associated with this species do not occur in the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Lepidium barnebyanum Barnaby's pepper plant	E	Tribal in Duchesne: Tavaputs Plateau; Uinta Formation; white shale ridgecrests; pinyon juniper community; 6,200-6,500 feet.; flowers May - June.	None - No potential habitat. Known populations occur outside of Uintah County; therefore outside of the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Lepidium huberi Huber's pepperplant	S	Uintah: Uinta Mountian foothills, Book Cliffs; Chinle, Park City, Weber Formation; eroding cliffs, alluvium; black sage or mountain brush communities; 5,000-9,700 feet.; flowers June-August.	None - No potential habitat. The geological formation and soils associated with this species do not occur in the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.

Species	Status[1]	Habitat (county: location; formation; community; elevation; notes)	Potential for Occurrence Within the Proposed RBU Project Area and Cumulative Effects Area	Eliminated From Detailed Analysis? (Yes/No)
Mentzelia goodrichii Goodrich's blazingstar	S	Duchesne: Green River Formation; escarpments of Willow & Argyle Canyons; steep white calciferous shale cliffs; open mountain brush communities; 8,100-8,800 feet.; flowers July - August.	None - No potential habitat. Known populations occur outside of Uintah County; therefore outside of the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Penstemon goodrichii Goodrich's penstemon	S	Duchesne, Uintah: near Lapoint, Tridell, Whiterocks; Duchesne River Formation; clay badlands; desert shrub, shadscale, pinyon juniper or mountain brush communities; 5,590 to 6,215 feet.; flowers late May - June.	None - No potential habitat. Known populations occur in northern Uintah County; outside of the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Penstemon grahamii Graham's beardtongue (Graham's penstemon)	P	Uintah, Duchesne: Green River Formation; oil shale or white shale knolls & talus; semi-barren mixed desert shrub or pinyon juniper communities; 4,600-6,700 feet; flowers from late May - mid-June.	None - No potential habitat. Known populations occur south and outside of the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Penstemon scariosus var. *albifluvis* White River beardtongue (White River) penstemon	C	Uintah: Green River Formation; se of Bonanza; shale slopes; semi-barren mixed desert shrub or pinyon juniper communities; 5,000-6,000 feet.; flowers late May-June.	None - No populations, potential or suitable habitat occurs for this species in this area. Known populations occur in the upper White River; outside of the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Schoenocrambe argillacea Clay thelopody (clay reed-mustard)	T	Uintah: Book Cliffs; contact zone of upper Uinta and lower Green River Formations; mixed desert shrub, Indian ricegrass & pygmy sagebrush communities; 5,000-5,650 feet.; flowers May-early June.	High - Potential habitat occurs within RBU Project Area. Known populations occur in the southwestern portion of the RBU Project Area.	**No.**
Schoencrambe suffrutescens Shrubby reed-mustard	E	Duchesne, Uintah: Green River Formation; Badlands Cliffs, Gray Knolls, Little Rock Pack Mountain; calcareous shale; mixed desert shrub, pinyon juniper or mountain brush communities; 5,400-6,000 feet.; flowers late May - mid-August.	None - No potential habitat. Known populations occur south and outside of the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.

Species	Status[1]	Habitat (county: location; formation; community; elevation; notes)	Potential for Occurrence Within the Proposed RBU Project Area and Cumulative Effects Area	Eliminated From Detailed Analysis? (Yes/No)
Sclerocactus brevispinus Pariette cactus	T	Duchesne: Pariette Bench south of Myton; Uinta Formation (Wagonhound Member), fine alkaline clay; shadscale, mat-saltbush community; 4,700-5,400 feet.	None - No potential habitat. Known populations occur outside of Uintah County; therefore outside of the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Sclerocactus glaucus (Sclerocactus wetlandicus) Uinta Basin hookless cactus	T	Duchesne, Uintah: alluvial benches of Green River watershed from Ouray to Carbon County line; cold desert shrub communities; 4,700-6,000 feet.	Moderate - Potential habitat occurs within RBU Project Area. Known populations occur in the vicinity of the RBU Project Area.	**No.**
Spiranthes diluvialis Ute ladies'-tresses	T	Daggett, Duchesne, Uintah: Green River tributaries, Uinta Mountains, Browns Park, Book Cliffs; unconsolidated alluvium; wetland meadow communities; 4,400-6,810 feet.; flowers late July - September	None - Potential habitat occurs west of the RBU Project Area along the Green River. Known populations occur outside of and approximately 40 miles north of the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Thelesperma caespitosum Green River greenhead	S	Duchesne: Uinta Mountains, Tavaputs Plateau; Bishop Conglomerate Formation; cushion plant community on rim crests above mountain brush; 7,500-9,000 feet.; flowers May - June.	None - No potential habitat. Known populations occur outside of Uintah County; therefore outside of the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Yucca sterilis Spanish bayonet	S	Uintah: Salt and mixed desert shrub communities growing in sandy soils, 4,800-5,800 feet.	Moderate – Potential habitat occurs within the RBU Project Area.	**No.**
Birds				
Accipiter gentilis Northern goshawk	S	Mature mountain forest and riparian zone habitats. The northern goshawk is a neotropical migrant that occurs across the northern regions of North America in scattered populations primarily in mature mountain forest and valley cottonwood habitats.	None. There is no suitable habitat for this species in the project area. Populations of northern goshawk have been identified in the mid elevations of the VPA in the Uinta Mountains and the Book Cliffs.	Yes. Potential habitat for this species does not occur within the RBU Project Area.

Species	Status[1]	Habitat (county: location; formation; community; elevation; notes)	Potential for Occurrence Within the Proposed RBU Project Area and Cumulative Effects Area	Eliminated From Detailed Analysis? (Yes/No)
Aquilla chysaetos Golden eagle	BGEPA	Found in mountainous areas, canyons, shrublands, and grasslands, and in shrub-steppe habitats in the winter.	High. Nesting and foraging habitat is found throughout the area. This species is known to nest within the RBU Project Area.	**No.**
Asio flammeus Short-eared owl	S	Inhabits arid grasslands, agricultural areas, marshes, and occasionally open woodlands. In Utah, cold desert shrub and sagebrush-rabbit brush habitats also are utilized. Typically a ground nester. Typical breeding season: April 10 through June 15.	Low. The species breeds in northern Utah and occurs as a migrant potentially throughout the state. Known to occur in Uintah County, with occurrence probable in Duchesne County. Low potential for this species to occur.	Yes. Limited potential habitat for this species occurs within the RBU Project Area.
Athene cunicularia Burrowing owl	S	Inhabits desert, semi-desert shrubland, grasslands, and agricultural areas. Nesting habitat primarily consists of flat, dry, and relatively open terrain; short vegetation; and abandoned mammal burrows for nesting and shelter. Breeding season: April through July 15.	Moderate to High. Scattered prairie dog colonies are located within the RBU Project Area which this species may utilize for nesting.	**No.**
Buteo regalis Ferruginous hawk	S	In Utah, this species resides mainly in lowland open desert terrain characterized by barren cliffs and bluffs, pinyon-juniper woodlands, sagebrush-rabbit brush, and cold desert shrub. Nesting habitat includes promontory points and rocky outcrops.	Moderate to High. Suitable foraging and nesting habitat for this species does may occur in the RBU Project Area.	Yes. Limited potential habitat for this species occurs within the RBU Project Area.
Centrocercus urophasianus Greater sage-grouse	C	Inhabits upland sagebrush habitat in rolling hills and benches. Breeding occurs on open leks (or strutting grounds) and nesting and brooding occurs in upland areas and meadows in proximity to water and generally within a 1-mile radius of the lek. During winter, sagebrush habitats at sub-montane elevations commonly are used. Breeding season: March 1 through June 30.	Low. The species is widespread, but declining, in Utah, with extant populations in Uintah and Duchesne counties. No designated habitats have been identified within the RBU Project Area.	**No.**

Species	Status[1]	Habitat (county: location; formation; community; elevation; notes)	Potential for Occurrence Within the Proposed RBU Project Area and Cumulative Effects Area	Eliminated From Detailed Analysis? (Yes/No)
Charadrius montanus Mountain plover	S	One known breeding population exists in Utah, and is located on Myton Bench. The Utah population breeds in shrub-steppe habitat among white-tailed prairie dogs and near roadways or oil well pads.	Low. The breeding population on Myton Bench is suspected to have drastically declined in recent years. There have been no new breeding bird sightings since 2002.	Yes. Limited potential habitat for this species occurs within the RBU Project Area.
Coccyzus americanus occidentalis Western yellow-billed cuckoo	C	This species is considered to be a riparian obligate and usually occurs in large tracts of cottonwood/willow habitats. However, this species also has been documented in lowland deciduous woodlands, alder thickets, deserted farmlands, and orchards. Breeding season: late June through July.	Low to Moderate Potential. Small patches of potential habitat occur immediately west of the RBU Project Area.	**No.**
Cypseloides niger Black swift	S	This species requires waterfalls for nesting; typically the falls are permanent. Coniferous forests, often mixed conifer or spruce-fir forests, typically surround nesting sites, but this varies depending on elevation and aspect, and nest sites may include mountain shrub, aspen, or even alpine components. Streams that create the waterfalls are typically mountain riparian habitats.	None. Suitable habitat for this species does not exist in the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Dolichonyx oryzivorus Bobolink	S	Inhabits mesic and irrigated meadows, riparian woodlands, and subalpine marshes at lower elevations (2,800–5,500 feet). Suitable breeding habitat includes tall grass, flooded meadows, prairies, and agricultural fields; forbs and perch sites also are required.	Low. The species breeds in isolated areas of Utah, primarily in the northern half of the state. No breeding by this species has been documented within the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Haliaeetus leucocephalus Bald eagle	S	In Utah, breeding occurrences are limited to eight locations within four counties (Daggett, Davis, Grand, Duchesne, Emery, Grand, and Wayne counties). Winter habitat typically includes areas of open water, adequate food sources, and sufficient diurnal perches and night roosts.	Moderate. Bald eagle winter roosting habitat occurs immediately west of the RBU Project Area within the Green River riparian corridor.	**No.**

Species	Status[1]	Habitat (county: location; formation; community; elevation; notes)	Potential for Occurrence Within the Proposed RBU Project Area and Cumulative Effects Area	Eliminated From Detailed Analysis? (Yes/No)
Melanerpes lewis Lewis' woodpecker	S	Inhabits open habitats including pine forests, riparian areas, and piñon-juniper woodlands. Breeding habitat typically includes ponderosa pines and cottonwoods in stream bottoms and farm areas. In Utah, the species inhabits agricultural lands and urban parks, montane and desert riparian woodlands, and submontane shrub habitats. Breeding season: mid-May through mid-August.	Low. In Utah, the species is widespread, but is an uncommon nester along the Green River. Breeding by this species has been observed in Ouray and Uintah counties, and along Pariette Wash.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Numenius americanus Long-billed curlew	S	Inhabits shortgrass prairies, alpine meadows, riparian woodlands, and reservoir habitats. Breeding habitat includes upland areas of shortgrass prairie or grassy meadows with bare ground components, usually near water.	Low. Widespread migrant in Utah. Breeding birds are fairly common but localized, primarily in central and northwestern Utah. Potential nesting has been reported in Uintah County, but has not been confirmed.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Pelecanus erythrorhynchos American white pelican	S	Inhabits areas of open water including large rivers, lakes, ponds, and reservoirs with surrounding habitats ranging from barren to heavily vegetated sites. Typically nests on isolated islands in lakes or reservoirs.	Low. In Utah, the species is known to nest on islands associated with Great Salt and Utah lakes.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Strix occidentalis lucida Mexican spotted owl	T	This species is found primarily in canyons with mixed conifer forests, pine-oak woodlands and riparian areas. This species nests on platforms and large cavities in trees, on ledges, and in caves. Breeding and nesting season: approximately March through August.	None. No Mexican spotted owl suitable habitat or nests have been identified within the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Fish				
Catostomus discobolus Bluehead sucker	S	Occupies a wide range of aquatic habitats ranging from cold, clear mountain streams to warm, turbid rivers. This species occurs in the lower portion of Pariette Draw and in the Green River below the Pariette Draw confluence. Fast flowing streams have been identified as important habitat for this species.	Moderate. Suitable habitat for this species occurs in the RBU Project Area.	**No.**

Species	Status[1]	Habitat (county: location; formation; community; elevation; notes)	Potential for Occurrence Within the Proposed RBU Project Area and Cumulative Effects Area	Eliminated From Detailed Analysis? (Yes/No)
Catostomus latipinnis Flannelmouth sucker	S	Adults occur in riffles, runs, and pools in streams and large rivers, with the highest densities usually in pool habitat. Young live in slow to moderately swift waters near the shoreline areas.	Moderate. This species occurs in the main-stem Colorado and its large tributaries.	**No.**
Gila cypha Humpback chub	E	Suitable habitat for this species is characterized by a wide variety of riverine habitats, especially canyon areas with fast currents, deep pools, and boulder habitat. This species originally inhabited the main stem of the Colorado River from what is now Lake Mead to the canyon areas of the Green and Yampa River Basins. Currently, it appears restricted to the Colorado River at Black Rocks and Westwater Canyon of the Green River, and Yampa Canyon of the Yampa River. Suitable habitat and critical habitat has been designated for this species in the Green River in Uintah County.	Moderate. Designated Critical Habitat for this species occurs along the segment of Green River located approximately 20 miles downstream of the Project Area.	**No.**
Gila elegans Bonytail	E	This species is endemic to the Colorado River system and currently is restricted to the Green River in Utah. They use main channels of large rivers and favor swift currents.	Moderate. Designated Critical Habitat for this species occurs at the segment of the Green River located approximately 20 miles downstream of the Project Area.	**No.**
Gila robusta Roundtail chub	S	Adults inhabit low to high flow areas in the Green River; young occur in shallow areas with minimal flow.	Moderate. Known distribution of this species includes portions of the Green River west of the RBU Project Area.	**No.**
Ptychocheilus lucius Colorado pikeminnow	E	The range of the Colorado pikeminnow is restricted to the Upper Colorado River basin, upstream of Glen Canyon Dam. Adult Colorado pikeminnow use a variety of habitat types, depending on time of year, but mainly utilize shoreline runs, eddies, backwater habitats, seasonally flooded bottoms, and side canyons. They are most abundant in the upper Green River (between the mouth of the Yampa River and head of Desolation Canyon) and lower Green River (between the Price and San Rafael Rivers). Other	Moderate. Critical habitat for this species is located along portions of the Green River that flow west of the RBU Project Area.	**No.**

Species	Status[1]	Habitat (county: location; formation; community; elevation; notes)	Potential for Occurrence Within the Proposed RBU Project Area and Cumulative Effects Area	Eliminated From Detailed Analysis? (Yes/No)
		concentration areas include the Yampa River, the lower 21 miles of the White River, and the Ruby and Horsethief Canyon area between Westwater, Utah, and Loma, Colorado .		
Xyrauchen texanus Razorback sucker	E	This fish species is found in a variety of habitats including quiet eddies, pools, and mid-channel runs. They are usually found over sand or silt substrate, but occur over gravel and cobble bars. The largest population is known to occur in the upper Green River between the confluence of the Yampa River and the confluence of the Duchesne River. Adults also occur in the Colorado River near Grand Junction, Colorado, although numbers are very low. Critical habitat has been designated for this species in the Green River in Carbon, Duchesne, Emery, Uintah and Grand Counties.	Moderate. Critical habitat for this species is located along portions of the Green River that flow west of the RBU Project Area.	**No.**
Mammals				
Corynorhinus townsendii Townsend's big-eared bat	S	Inhabits a wide range of habitats from semi desert shrublands and piñon-juniper woodlands to open montane forests. Roosting occurs in mines and caves, in abandoned buildings, on rock cliffs, and occasionally in tree cavities. Foraging occurs well after dark over water, along margins of vegetation, and over sagebrush.	Low. The species occurs throughout much of Utah including Duchesne and Uintah counties. Relative to the project area, one individual was collected at the Ouray National Wildlife Refuge in 1980.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Cynomys leucurus White-tailed prairie dog	S	White-tailed prairie dogs are typically found in open shrublands, semi-desert grasslands, and mountain valleys, where they occur in loosely organized colonies that may occupy hundreds of acres on favorable sites. Similar to other prairie dogs, white-tailed prairie dogs spend much of their time in underground burrows, often hibernating during the winter.	Moderate. Suitable habitat for this species occurs in the project area.	**No.**

Species	Status[1]	Habitat (county: location; formation; community; elevation; notes)	Potential for Occurrence Within the Proposed RBU Project Area and Cumulative Effects Area	Eliminated From Detailed Analysis? (Yes/No)
Euderma maculatum Spotted bat	S	Inhabits desert shrub, sagebrush-rabbitbrush, Pinyon-juniper woodland, and ponderosa pine and montane forest habitats. In Utah, the species also uses lowland riparian and montane grassland habitats. Suitable cliff habitat typically appears to be necessary for roosts/hibernacula. Spotted bats typically do not migrate and use hibernacula that maintain a constant temperature above freezing from September through May. Hibernation (in caves) and winter activity have been documented in southwestern Utah.	Low. The species potentially occurs throughout Utah; however, no occurrence records exist for the extreme northern or western parts of the state. Known occurrences have been reported in northeastern Uintah County.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Lynx canadensis Canada lynx	E	Primarily occurs in Douglas-fir, spruce-fir, and subalpine forests at elevations above 7,800 feet. The lynx uses large woody debris such as downed logs and windfalls to provide denning sites for protection and thermal cover for kittens.	None. If extant in Utah, this species most likely occurs in montane forests in the Uinta Mountains.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Mustela nigripes Black-footed ferret	E	This species inhabits semi-arid grasslands and mountain basins. It is found primarily in association with active prairie dog colonies that contain suitable burrow densities and colonies that are of sufficient size.	None. Suitable habitat is not present.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Myotis thysanodes Fringed myotis	S	A small bat that occurs in most of the western United States, as well as in much of Mexico and part of southwestern Canada. The species is widely distributed throughout Utah, but is not very common in the state. The fringed myotis inhabits caves, mines, and buildings, most often in desert and woodland areas.	None. Suitable habitat for this species does not exist in the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Nyctinomops macrotis Big free-tailed bat	S	The species is rare in Utah, occurring primarily in the southern half of the state, although individuals may rarely occur in northern Utah. Prefers rocky and woodland habitats, where roosting occurs in caves, mines, old buildings, and rock crevices.	None. High cliffs that bats may use for roosting do not occur in the RBU Project Area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.

Species	Status[1]	Habitat (county: location; formation; community; elevation; notes)	Potential for Occurrence Within the Proposed RBU Project Area and Cumulative Effects Area	Eliminated From Detailed Analysis? (Yes/No)
Vulpes macrotis Kit fox	S	Native to much of the western United States and northern Mexico. Although the species is not overly abundant in Utah, it does occur in the western, east-central, and southeastern areas of the state. The kit fox opportunistically eats small mammals (primarily rabbits and hares), small birds, invertebrates, and plant matter. The species is primarily nocturnal, but individuals may be found outside of their dens during the day. The species most often occurs in open prairie, plains, and desert habitats.	None. Suitable habitat for this species does not exist in the project area.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Reptiles				
Elaphe guttata Cornsnake	S	An isolated population occurs in western Colorado and eastern Utah. Usually found near streams, or in rocky or forest habitats. This species is typically more active at night.	None. This species is not known in Uintah County.	Yes. Potential habitat for this species does not occur within the RBU Project Area.
Opheodrys vernalis Smooth greensnake	S	Typically inhabits meadows, grassy marshes, and moist grassy fields along forest edges. Its distribution ranges from northeastern Utah into central Colorado and northern New Mexico, and into the Northern Plains from the Canadian border south to Kansas and Missouri.	None. No moist meadows or marshes are present.	Yes. Potential habitat for this species does not occur within the RBU Project Area.

[1]Status: E = Federally-listed as endangered; T = Federally-listed as threatened; C = Federal candidate species; P = Federal proposed species; S = Special Status Species Vernal Field Office; BGEPA = Bald and Golden Eagle Protection Act

Source: adapted from BLM Vernal office Special Status Plant Species List, 2011.

Source for location information: UNHP-UDWR 2007, UNPS 2007, and Goodrich and Neese 1986.