Crescent Point
main / 720.880.3610
fax / 303.292.1562
toll free / 1.888.693.0020
555 17th Street, Suite 1800
Denver, Colorado
USA 80202

November 30, 2017

Director
Air and Toxics Technical Enforcement Program
Office of Enforcement, Compliance and Environmental Justice
Mail Code 8ENF-AT
1595 Wynkoop Street
Denver, CO 80202-1129

RE: OIL AND NATURAL GAS MINOR SOURCE REGISTRATION PART 1
CRESCENT POINT ENERGY U.S. CORP
DEEP CREEK TRIBAL 3-4-4-2E, 4-4-4-2E & 14-33-3-2E

Dear Director:

Crescent Point Energy U.S. Corp (Crescent Point) is submitting Part 1 of the Oil and Natural Gas Minor Source Registration for the Deep Creek Tribal 3-4-4-2E, 4-4-4-2E & 14-33-3-2E production facility, in accordance with the United States (U.S.) Environmental Protection Agency (EPA) Federal Implementation Plan (FIP) for the Indian Country Minor New Source Review Program for the Oil and Natural Gas Industry, §49.151(c)(iii)(B). The attached documents satisfy requirements of §§49.101 through 49.105 under §49.151(c)(iii)(B), prior completion of Endangered Species Act (ESA) and National Historic Preservation Act (NHPA) assessments in connection with the specific oil and natural gas activity.

In accordance with §49.104(a)(1), Crescent Point is providing a copy of the documentation demonstrating that prior ESA and NHPA compliance has been completed by another federal agency to Minnie Grant, Ute Indian Tribe, Energy & Minerals Department, Air Quality.

If you have any questions or need additional information, please do not hesitate to contact me at (303) 308-6285 or by email jmcqueen@crescentpointenergy.com.

Sincerely,

Jennifer McQueen
Air Quality Specialist
Crescent Point Energy U.S. Corp

United States Environmental Protection Agency
http://www.epa.gov/air/tribal/tribalnsr.html

Part 1: Submit 30 Days Prior to Beginning Construction -- General Facility Information

FEDERAL IMPLEMENTATION PLAN FOR TRUE MINOR SOURCES IN INDIAN COUNTRY IN THE OIL AND NATURAL GAS PRODUCTION AND NATURAL GAS PROCESSING SEGMENTS OF THE OIL AND NATURAL GAS SECTOR

Registration for New True Minor Oil and Natural Gas Sources and Minor Modifications at Existing True Minor Oil and Natural Gas Sources

Air Program, Mail Code 8P-AR
US Environmental Protection Agency Region 8
1595 Wynkoop Street
Denver, Colorado 80202

A. GENERAL SOURCE INFORMATION (See Instructions Below)

1. Company Name Crescent Point Energy U.S. Corp	**2. Source Name** Deep Creek Tribal 3-4-4-2E, Deep Creek Tribal 4-4-4-2E, Deep Creek Tribal 14-33-3-2E
3. Type of Oil and Natural Gas Operation Oil Wellsite	**4. New Minor Source?** [X] Yes [ ] No **5. Minor Source Modification?** [ ] Yes [X] No
6. NAICS Code 211111	**7. SIC Code** 1311
8. U.S. Well ID(s) or API Number(s) [if applicable] 43047553390000, 43047553400000, 43047553410000	

9. Area of Indian Country	10. County	11a. Latitude	11b. Longitude
Ute & Ouray Reservation	Uintah	40.16958, 40.16958, 40.16958	-109.78072, -109.78101, -109.78044

B. CONTACT INFORMATION (See Instructions Below)

1. Owner Name Crescent Point Energy U.S. Corp	Title N/A
Mailing Address 555 17th St, Suite 1800 Denver, CO 80202	
Email Address jmcqueen@crescentpointenergy.com	
Telephone Number (720) 880-3610	Facsimile Number (303)292-1562
2. Operator Name (if different from owner) Crescent Point Energy U.S. Corp	Title N/A
Mailing Address 555 17th St, Suite 1800 Denver, CO 80202	
Email Address jmcqueen@crescentpointenergy.com	
Telephone Number (720) 880-3610	Facsimile Number (303)292-1562
3. Source Contact Jennifer McQueen	Title Air Quality Specialist
Mailing Address 555 17th St, Suite 1800 Denver, CO 80202	
Email Address jmcqueen@crescentpointenergy.com	
Telephone Number (303) 308-6285	Facsimile Number (303)292-1562

4. Compliance Contact Jennifer McQueen	Title Air Quality Specialist
Mailing Address 555 17th St, Suite 1800 Denver, CO 80202	
Email Address jmcqueen@crescentpointenergy.com	
Telephone Number (303) 308-6285	Facsimile Number (303)292-1562

C. ATTACHMENTS

Include all of the following information as attachments to this form:

[X] Narrative description of the operations.

[X] Identification and description of all emission units and air pollution generating activities (with the exception of the exempt emissions units and activities listed in §49.153(c).

[X] Identification and description of any air pollution control equipment and compliance monitoring devices or activities that are expected to be used at the facility.

[X] Estimated operating schedules.

[X] If satisfying the requirements under §49.104(a)(1), documentation that another federal agency has complied with its requirements under the Endangered Species Act (ESA) and the National Historic Preservation Act (NHPA) when authorizing the activities for the facility/activity covered under this registration. The appropriate documents shall clearly show that the other federal agency had met its obligations under both the ESA and NHPA. A simple reference to a Record of Decision or other final decision document will not be acceptable. Examples of acceptable documentation would be a letter from the U.S. Fish and Wildlife Service field office (for ESA) or a historic preservation office (for NHPA) stating they agree with the assessment conducted by the other federal agency for the subject project and that the requirements of those statutes have been met. The documentation shall be submitted within the Part 1 registration.

[ ] If satisfying the requirements under §49.104(a)(2), the letter provided by the Reviewing Authority indicating satisfactory completion of the specified screening procedures to address threatened and endangered species and historic properties. The documentation shall be submitted under the Part 1 registration. (The procedures are contained in the following document: "Procedures to Address Threatened and Endangered Species and Historic Properties for the Federal Implementation Plan for True Minor Sources in Indian Country in the Oil and Natural Gas Production and Natural Gas Processing Segments of the Oil and Natural Gas Sector," http://www.epa.gov/air/tribal/tribalnsr.html).

[ ] Other.

Crescent Point Energy U.S. Corp
Deep Creek Tribal 3-4-4-2E, Deep Creek Tribal 4-4-4-2E & Deep Creek Tribal 14-33-3-2E

Narrative Description

Hydrocarbons are pumped from the three heavy crude oil wells at the Deep Creek Tribal 3-4-4-2E, Deep Creek Tribal 4-4-4-2E, and Deep Creek Tribal 14-33-3-2E production facility. Hydrocarbon extraction is assisted by up to three engines. The produced fluids are routed to heater-treaters. The well heater-treaters operate at an average temperature and pressure of 158 degrees Fahrenheit and 40 psi.

From the dedicated heater-treaters, the oil phase is directed to up to nine 1,000-bbl atmospheric aboveground storage tanks. The water phase is piped to up to three 1,000-bbl atmospheric aboveground storage tanks. Hydrocarbon vapors are vented from the oil storage tanks to the combustor(s) when required by Federal, State or local regulation; combustor may be removed at such time as oil production and resultant tank emissions allow. Crude oil and produced water are transferred from the storage tanks to tanker trucks for transportation from the site.

Identification and Description of All Emission Units and Air Pollution Generating Activities

	Description	Unique ID
1)	9 1,000-bbl Crude Oil Tanks	T1-T9
2)	3 1,000-bbl Produced Water Tank(s)	PW-1, PW-2, PW-3
3)	1.25 MMBtu/hr Heater/treater	HT-1, HT-2, HT-3
4)	16 Tank Heaters (0.75 MMBtu/hr each)	HEAT-1 - HEAT-16
5)	Oil Tank Truck Loading	OL
6)	Fugitive Emissions	FUG
7)	Engine(s)	ENGINE(S)
8)	55-gallon glycol drum tank	GT1
9)	55-gallon methanol drum tank	MT1
10)	Up to 2,000 gallons of miscellaneous chemicals stored onsite and used for various downhole applications	MISC1
11)	Combustor(s)	COMBUSTOR

Crescent Point Energy U.S. Corp
Deep Creek Tribal 3-4-4-2E, Deep Creek Tribal 4-4-4-2E & Deep Creek Tribal 14-33-3-2E

Identification and description of any air pollution control equipment and compliance monitoring devices or activities that are expected to be used at the facility.

Air Pollution Control Equipment Installed Onsite

Combustor(s), when required by Federal, State or local regulation

Engine(s) Catalyst(s), when required by Federal, State or local regulation

Compliance Monitoring Devices or Activities

Emission sources will comply with all of the applicable provisions of the standard as written at the time Crescent Point Energy U.S. Corp begins construction on the new true minor source or on the minor modification at an existing true minor source. Crescent Point Energy U.S. Corp will comply with any true minor oil and gas sources and associated equipment subject to applicable provisions under 40 CFR Parts 60 and 63.

When applicable, tank combustor(s) will be installed, operated, and maintained according to the requirements of NSPS Part 60 Subpart OOOO or Subpart OOOOa. Storage tanks and well site fugitive emissions will be monitored and managed as per the requirements of NSPS Subpart OOOOa.

When applicable, any operated engines (compressors, pumpjacks, and/or generators) will be installed, operated, and maintained according to the requirements of NSPS Part 60 Subpart JJJJ or MACT Part 63 Subpart ZZZZ.

Estimated Operating Schedule

24 hours per day, 7 days per week, 52 weeks per year

Procedures to Address Threatened and Endangered Species and Historic Properties for the Federal Implementation Plan for True Minor Sources in Indian Country in the Oil and Natural Gas Production and Natural Gas Processing Segments of the Oil and Natural Gas Sector

Section 1: Contact Information

Business name: Crescent Point Energy U.S. Corp	Site address: Deep Creek Tribal 3-4-4-2E, Deep Creek Tribal 4-4-4-2E & Deep Creek Tribal 14-33-3-2E NWNW Sec 4 T4S-R2E
Send all correspondence regarding this evaluation to (mailing address): 555 17th St, Suite 1800 Denver, CO 80202	Contact for this notification: Name: Jennifer McQueen Phone: (303) 308-6285 Email: jmcqueen@crescentpointenergy.com

Section 2: Evaluation of Threatened and Endangered Species and Historic Properties

1. Threatened or Endangered Species

Please indicate under which criterion in Appendix A you satisfy after evaluating the effects on threatened or endangered species as a result of your construction, modification or operation of your new or modified minor source of air pollutants. Be sure to include all documentation identified in Appendix A with this evaluation.

☐ A ☐ B ☐ C ☒ D ☐ E

2. Historic Properties

Please indicate under which criterion in Appendix B you satisfy after evaluating the effects to historic properties as a result of your construction, modification or operation of your new or modified minor source of air pollutants? Be sure to include all documentation identified in Appendix B with this evaluation.

☒ No historic properties affected ☐ No adverse effects ☐ Adverse effects

Section 3: Signature

Name: _____ (Signature) Name: Jennifer McQueen (Print or Type)

Title: Air Quality Specialist Date: 11/30/2017

Crescent Point
main / 720.880.3610
fax / 303.292.1562
toll free / 1.888.693.0020
555 17th Street, Suite 1800
Denver, Colorado
USA 80202

Endangered Species Act (ESA) Compliance

The proposed location is located in Uintah County, Utah. Measures have been taken to ensure that no adverse impacts will occur to species listed under the Endangered Species Act as a result of this action. Crescent Point and the Bureau of Indian Affairs (BIA) completed a programmatic section 7 consultation with the U.S. Fish & Wildlife Service (USFWS) for all lands within the boundary of CPE's Randlett Exploration Development Agreement (EDA) area. The project area included in the programmatic consultation and subsequent Biological Opinion (BO) consisted of approximately 53,380 acres including Township (T) 3 South (S), Range (R) 1 East (E); T3S, R2E; part of T4S, R2E; and part of T4S, R3E. Surface ownership is a combination of Tribal, Federal, State and Private surface owners. Through this programmatic consultation/BO, USFWS concurred with BIA's determination that the proposed action will not adversely affectthe continued existence of known listed species, or their associated critical habitat, in the project area. Please refer to the enclosed Randlett EDA Programmatic Biological Opinion for full documentation/reference.

National Historic Preservation Act (NHPA) Compliance

A desktop search of cultural resources within and adjacent to the proposed facility footprint has been completed. The results of the National Register of Historic Places records search shows there are no historic properties and therefore no historic properties will be affected by the construction and operation of the proposed location. (https://www.nps.gov/nr/research/)

United States Department of the Interior
FISH AND WILDLIFE SERVICE
UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

September 26, 2016

RECEIVED
OCT 03 2016
UINTAH AND OURAY AGENCY
Superintendent

In Reply Refer To:
FWS/R6
ES/UT
06E23000-2015-F-0252

Memorandum

To: Superintendent, Bureau of Indian Affairs, Uintah and Ouray Agency, Fort Duchesne, Utah

From: Utah Field Supervisor, Ecological Services, U.S. Fish and Wildlife Service, West Valley City, Utah

Subject: Conclusion of formal section 7 programmatic consultation for Crescent Point Energy's Randlett EDA Area 271 Well Project

In accordance with section 7 of the Endangered Species Act (Act) 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 Crescent Point Energy's (CPE) proposed Randlett Exploration and Development Agreement (EDA) Area Project (hereafter, Project) and its effects on Uinta Basin hookless cactus (*Sclerocactus wetlandicus*) and Pariette cactus (*Sclerocactus brevispinus*) (hereafter, refered to as *Sclerocactus*). This BO is based on information provided in your May 2016 request for formal consultation, Biological Assessment (BA), and subsequent email and letter correspondence (see Consultation History, below).

The Project is also likely to adversely affect the bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), and humpback chub (*Gila cypha*) due to water depletions associated with energy development operations (see Description of the Proposed Action, below). However, as described below (see section 1.2.1, Colorado River Endangered Fishes), ongoing conservation efforts of the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (hereafter, Recovery Program) offset impacts associated with water depletions. In addition, CPE has committed to payment of a depletion fee for this project (see section 1.2.1, Four Endangered Upper-Colorado River Fish). Therefore, these species are not considered further in this BO.

Ute ladies'-tresses (*Spiranthes diluvialis*) and western yellow-billed cuckoo (*Coccyzus americanus*) were analyzed as part of the BA and we concur with your determination of "may affect, not likely to adversely affect" for both species. The Project does not impact proposed critical habitat for the western yellow-billed cuckoo. Our concurrence is based on the agreement by CPE and the Bureau of Indian Affairs (BIA) to implement the specific conservation measures for Ute ladies'-tresses and

ED_004016P_00013422-00009

Western yellow-billed cuckoo as stated in the BA and this BO (see Applicant Committed Conservation Measures, below).

COLORADO RIVER ENDANGERED FISH

On January 21-22, 1988, the Secretary of the Department of the Interior; the Governors of Wyoming, Colorado, and Utah; and the Administrator of the Western Area Power Administration signed a Cooperative Agreement to implement the "Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin" (U.S. Fish and Wildlife Service (USFWS) 1987). In 2001, the Recovery Program was extended until September 30, 2013. 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.

In order to further define and clarify processes outlined in sections 4.1.5, 4.1.6, and 5.3.4 of the Recovery Program, a section 7 Agreement (Agreement) and a Recovery Implementation Program Recovery Action Plan (RIPRAP) was developed (USFWS 1993). The Agreement establishes a framework for conducting all future section 7 consultations on depletion impacts related to new projects and all impacts associated with historic projects in the Upper Basin. Procedures outlined in the Agreement are used to determine if sufficient progress is being accomplished in the recovery of the endangered fishes to enable the Recovery Program to serve as a reasonable and prudent alternative (RPA) to avoid jeopardy. The RIPRAP was finalized on October 15, 1993, and has been reviewed and updated annually.

In accordance with the 1993 Agreement, the USFWS annually assesses progress of the implementation of recovery actions to determine if progress toward recovery has been sufficient for the Recovery Program to serve as a RPA for projects that deplete water from the Colorado River. In the last review the USFWS determined that the Program has made sufficient progress to offset water depletions from individual projects up to 4,500 acre-feet/year. Therefore, it is appropriate for the Recovery Program actions to serve as Conservation Measures in the project description for projects up to 4,500 acre-feet/year.

After many years of successful implementation of the Recovery Program and Agreement, federal action agencies have come to anticipate Recovery Program activities and a requirement of a financial contribution (for new depletions greater than 100 acre-feet) toward these activities serving as RPAs that must be included in their project planning to avoid jeopardy to listed species. Thus, the RPA has essentially become part of the proposed action. The Recovery Program activities will now serve as conservation measures within the proposed action and minimize adverse effects to listed species or critical habitat. The following excerpts summarize portions of the Recovery Program that address depletion impacts, section 7 consultation, and Project proponent responsibilities:

> "All future section 7 consultations completed after approval and implementation of this program (establishment of the Implementation Committee, provision of congressional funding, and initiation of the elements) will result in a one-time contribution to be paid to the USFWS by water project proponents in the amount of $10.00 per acre-foot based on the average annual depletion of the project . . . This figure will be adjusted annually for inflation [the current figure is $20.87 per acre-foot] . . . Concurrently with the completion of the Federal action which initiated the consultation, e.g., . . . issuance of a 404 permit, 10 percent of the total contribution

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> will be provided." The balance will be due at the time of issuance of federal approvals from the BIA.

It is important to note that these provisions of the Recovery Program were based on appropriate legal protection of the instream flow needs of the endangered Colorado River fishes. The Recovery Program further states:

> ". . . it is necessary to protect and manage sufficient habitat to support self-sustaining populations of these species. One way to accomplish this is to provide long term protection of the habitat by acquiring or appropriating water rights to ensure instream flows. Since this program sets in place a mechanism and a commitment to assure that the instream flows are protected under State law, the USFWS will consider these elements under section 7 consultation as offsetting project depletion impacts."

CONSULTATION HISTORY

August 8, 2015:	We received the draft programmatic environmental assessment from your office.
August 27, 2015:	Our comments to the draft programmatic environmental assessment were sent in a letter to your office.
November 25, 2015:	We received the revised draft programmatic biological assessment from your office.
December 22, 2015:	We received the requested shapefiles and Global Information Systems data from Grasslands Consulting.
January 11, 2016:	We received responses to our comments from August 2015 via email from your office.
February 19, 2016:	Our comments to the revised draft programmatic biological assessment were mailed to your office as a hard copy letter and sent electronically through email.
May 9, 2016:	We confirmed the water depletion calculation methods and compensatory mitigation amount through email correspondence with your office.
May 10, 2016:	We received electronic files through email with the final biological assessment, response to our comments sent on February 16, 2016, and an email with conservation measures for the western yellow-billed cuckoo.
June 22, 2016:	We sent an email with additional questions about the Project to your office.
July 8, 2016:	We received responses from your office via email to our questions sent on June 22.

ED_004016P_00013422-00011

August 3, 2016: We received an email from your office detailing the amount of disturbance by activity for the *Sclerocactus* habitat polygon and revised shape files for Alternative C.

August 8, 2016: We continued discussion over email about BIA adopting the updated BLM weed management policy for projects occurring on Tribal lands.

BIOLOGICAL OPINION

1. DESCRIPTION OF THE PROPOSED ACTION

The Project area consists of approximately 53,380 acres of land, including Township (T) 3 South (S), Range (R) 1 East (E); T3S, R2E; part of T4S, R2E; and part of T4S, R3E, Utah Special Meridian (USM). Surface ownership is a combination of Tribal, Federal, State, and Private surface owners and is detailed in Table 1.1-1 of the BA. It should be noted that surface ownership does not correspond to mineral ownership, and a split-estate of different surface and sub-surface ownership occurs throughout the Project area.

Under the agency preferred alternative, Resource Protection Alternative C, CPE proposes to construct, drill, operate, maintain, and ultimately reclaim up to 271 conceptual and exploratory oil and natural gas wells and ancillary facilities within the Randlett EDA on the Uintah and Ouray Indian Reservation in Uintah County, Utah. The 271 new wells will be drilled from 139 new single well pads, 18 new multiple well pads, and 96 existing well pads. The life of the Project is anticipated to be 35 years, which is based on the last productive well drilled in the last year of the 5-year drilling phase, and anticipated 20-year life of that producing well, and an estimate 10 years to achieve successful final reclamation. Up to five drilling rigs will be operating simultaneously.

CPE proposes to construct:

- 88 vertical wells
- 176 directionally drilled wells
- 7 horizontally drilled wells
- 157 new well pads
- Up to three compressor facilities;
- Up to two water treatment facilities for recycling, distribution, and injection of produced water;
- Up to five salt water disposal wells;
- Up to 9 injector wells for a pilot waterflood injection project;
- Up to two waterflood injector facilities;
- Up to 15 central tank batteries (CTBs) for oil and produced water collection;
- Up to three oil storage areas; and
- Up to two equipment storage areas.
- 41.3 miles of new or upgraded unpaved access road
- 41.3 miles of surface gathering and trunk pipeline, collocated with roads
- 41.3 miles of buried water pipelines, collocated with roads

Estimated short and long-term surface disturbance is summarized in table 2.1.9.1 from the EA and included below as Table 1. Proposed new single well pads will result in approximately 3 acres of initial surface disturbance and multiple well pads will have approximately 5 acres of associate

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disturbance, depending on the number of wells per pad. For the 96 wells proposed on existing well pads, no modifications to the existing well pads, access roads, or pipelines are anticipated. Proposed wells may be drilled using either conventional methods or using a closed loop drilling system, depending on location.

New and improved access roads will be developed with a 100 foot right-of-way (ROW), resulting in 41.3 miles of new or improved roads. CPE proposes to install 41.3 miles of buried water pipeline, surface oil emulsion and natural gas pipelines within the 100 foot road ROW. Surface pipelines will consist of polyethylene or steel pipe, depending on service, with sizes ranging between 3 to 12 inches in diameter, depending on whether the pipeline is used as a gathering or trunk line. Heating trace lines for the oil emulsion lines will be two inches in diameter and will be attached to the oil lines for heat tracing. Water pipelines will be buried to prevent freezing and located on the opposite side of the road from product surface lines. It is possible that 10 percent of the pipeline will be cross-country and not collocated within the road ROW.

The total anticipated surface disturbance for the Project is 1,050 acres.

Table 1. Estimated Total Surface Disturbance under Alternative C- Resource Protection Alternative

Project Feature	Quantity	Total Short-term Disturbance (acres)	Total Long-term Disturbance (acres)
New Wells			
Vertical Wells	88	-	-
Directional Wells	176	-	-
Horizontal Wells	7	-	-
Subtotal for New Wells	***271***	-	-
Well Pads			
Existing Well Pads	96	-	-
New Single-Well Pads[1]	139	417	208.5
New Horizontal or Multi-Well Pads[1]	18	90	27
Expanded Well Pads	0	-	-
Subtotal for Well Pads	***253***	***507***	***235.5***
New Utility Corridors			
Co-located Access Road and Pipeline Corridors[2]	41.3 miles	407.0	241.0
Subtotal for Utility Corridors	***41.3 miles***	***407.0***	***241.0***
Facilities[3]			
Compressor Stations	3	15	15

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Project Feature	Quantity	Total Short-term Disturbance (acres)	Total Long-term Disturbance (acres)
Water Treatment Facilities	2	10	10
Saltwater Disposal Wells	5	2.5	2.5
Waterflood Injector Wells	9	27	13.5
Pilot Waterflood Injector Facilities	2	-	-
Central Tank Batteries	15	52.5	52.5
Oil Storage Areas	3	9	9
Equipment Storage Areas	2	20	20
Subtotal for Facilities	***41***	***136***	***122.5***
TOTAL[4]	**NA**	**1,050.0**	**599.0**

[1] The initial surface disturbance for vertical or directional single-well pads is estimated at three acres. The initial surface disturbance for horizontal or multi-well pads is estimated at five acres. The long-term disturbance for both pads is estimated at 1.5 acres.

[2] The short-term disturbance acreage for co-located roads and pipelines ROWs is based on a 100-foot-wide short-term ROW width. The long-term disturbance acreage is based on a 55-foot-wide long-term ROW.

[3] Surface facilities were based upon the following sizes: Compressor stations at 5 acres per facility; saltwater disposal facilities at 0.5 acres per facility, CTBs at 3.5 acres per facility, oil storage areas at 3 acres per facility, and equipment storage areas at 10 acres per facility. Waterflood pilot project injection wells would be constructed similar to new single-well pads. Pilot waterflood injector facilities would be constructed on existing pads or proposed well pads and would not result in additional surface disturbance. Central facilities such as compressor stations would not be included in interim reclamation efforts as the entire facility would be needed for the ife of the Project.

[4] Total acreage estimates are based on GIS-software calculations and may not equal total acreage by well pad due to rounding, removal of overlapping development and minute boundary discrepancies. GIS-based calculations are considered more accurate than estimates calculated using simple addition and therefore will be utilized throughout this document.

The Project proposes to use a total of 1,270 acre-feet of fresh water from three water sources for the life of the Project, with an average annual water depletion of 158.75 acre-feet required for a period of eight years. Fresh water for the Project will be obtained from the Duchesne County Conservancy District (WR 47-1817), a source considered historic under the Upper Colorado River Endangered Fish Recovery Program (Recovery Program). Additional water will be obtained from Maurice Harvey Pond (WR 47-1358) and Johnson Water District (WR 47-7478) sources, both considered to be a new depletion by the Recovery Program.

Treated produced water could be recycled and co-mingled with fresh water for use in completion operations and possible future waterflood activities. Approximately half of the water for waterflooding operations will come from produced water that will be treated for injection and the other half will come from fresh water sources; however, for the purpose of providing a conservative water use estimate, it is assumed that all water used for waterflooding operations will come from the fresh water sources identified. Produced water that cannot be recycled will be re-injected at the five proposed salt water disposal wells into selected geologic formations or into two existing salt-water injection wells.

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Upon abandonment, the operator will reclaim well pads, roads, and pipelines as directed by the surface owner. Reclamation procedures will emphasize the eventual ecosystem reconstruction in order to return the land to a pre-disturbance condition or better. Reclamation procedures include interim reclamation that will quickly stabilize disturbed areas to protect those areas not needed for production from unnecessary degradation. Within six months of finalizing the well construction, drilling and completion phases of the proposed project, all surfaces not needed during the production phase will undergo interim reclamation, weather permitting. CPE will implement measures to control noxious weeds along roadsides, pipeline routes, and well pads. Noxious weed control efforts will primarily consist of chemical treatment and mechanical removal. Reserve pits, if present, will be reclaimed within 12 months of finishing completion activities. Final reclamation, taking place after the lifetime of the well, will return the vegetation and soils in areas of surface disturbance to their original state.

1.1. 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 Colorado River fish, we define the action area to be the Upper Colorado River basin area of influence.

For the purpose of our evaluation of impacts to the *Sclerocactus*, we define the action area to include the area directly disturbed by the action plus a 2,953 foot (900 meter [m]) buffer distance where impacts from fugitive dust can impact *Sclerocactus* individuals, habitat, and pollinators. This buffer distance is derived from evidence that fugitive dust from roads can disperse and negatively impact vegetation 1,312 feet (400 m) from the source (Lewis 2013), and that the average habitat area required by pollinators to sustain nesting and foraging habitat is 1,641 feet (500 m) around an individual plant (Winder 2012); additively this establishes a 2,953 foot (900 m) area of impact. For the purposes of this consultation the action area for the Project includes the Randlett EDA with a 900 meter buffer within the *Sclerocactus* habitat polygon. Therefore, the total action area for *Sclerocactus* is 68,768 acres.

1.2. Applicant and Agency Committed Conservation Measures

In addition to the measures outlined in sections 2.1.10 and 2.1.11of the EA, CPE has committed to the following conservation measures for avoidance and minimization of impacts to *Sclerocactus* and the endangered fish species.

1.2.1. *Four Endangered Upper-Colorado River Fish*

- For the water depletion contribution, the applicant will make a one-time payment which has been calculated by multiplying the Project's average annual depletion of 158.75 acre-feet by the depletion charge in effect at the time payment is made. For Fiscal Year 2016 (October 1, 2015, to September 30, 2016), the depletion charge is $20.87 per acre-foot for the average annual depletion which equals a total payment of $3,313 for this Project. Payment will be provided to the USFWS designated agent, the National Fish and Wildlife Foundation (Foundation), at the time of issuance of the federal approvals from the BIA. The balance will be due at the time the construction commences. The payment will be included by the BIA as a permit stipulation. The amount payable will be adjusted annually for

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inflation on October 1 of each year based on the Composite Consumer Price Index. All payments should be made to the Foundation:

Deposits by check shall be sent to:
National Fish and Wildlife Foundation,
1133 15th Street, NW, Suite 1100
Washington, D.C. 20005
Attn: Chief Financial Officer

Deposits by EFT shall be sent to:
National Fish and Wildlife Foundation
c/o Bank of America
730 15th Street, NW, Washington, DC, 20005
ABA Bank Transit Number (for Wire): 026009593
ABA Bank Transit Number (for ACH): 054001204
Account Number: 2260 0568 9394

All deposits must include a notation identifying the name of the project for which the deposit is being made.

- The payment will be accompanied by a cover letter that identifies the project and biological opinion number (06E23000-2015-F-0252) 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 payer, 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 Action Agency 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.

1.2.2. *Uinta basin hookless and Pariette cactus*

- CPE will notify our office if disturbance occurs within 100 feet of *Sclerocactus*.

- Herbicide use in suitable or occupied *Sclerocactus* habitat will follow conservation measures in Appendix A of this BO.

1.2.3. *Noxious and Invasive Plant Species*

- Within the Project Area, vehicles will be power washed when leaving an area of high infestation in order to prevent spread of weed seeds to non-infested areas within the Project Area and throughout the basin.
- Herbicide use in suitable or occupied habitat for any federally listed species will follow conservation measures in Appendix A of this BO.

1.2.4 *Western yellow-billed cuckoo*

- Crescent Point will apply noise abatement measures, such as a buried muffler system, to production equipment. During the production phase, measures will be sufficient to ensure

ED_004016P_00013422-00016

noise levels at 500 feet from the source do not generate a greater than 10 decibel increase in noise levels above ambient conditions.

- To ensure that noise levels during the production phase do not exceed a greater than a 10 decibel increase in the ambient noise levels recorded at 500 feet from the source, noise level monitoring will be developed and implemented by Crescent Point.
- Ambient noise level readings will be taken at the edge of the nearest suitable habitat to each well pad prior to construction in order to determine the ambient noise level for that site.

2. STATUS OF THE SPECIES

The purpose of this section is to summarize the best available information regarding the current range wide status of the listed plant species. Additional information regarding listed species may be obtained from the sources of information cited for these species.

Sclerocactus

2.1. Regulatory Status and Taxonomy

Sclerocactus glaucus (Uinta Basin hookless cactus; hereafter *S. glaucus*) was listed as a threatened species in 1979 (44 FR 58870). However, based on more recent genetic studies (Porter et al. 2000), common garden experiments (Welsh et al. 2003), and morphological characteristics (Heil and Porter 2004), we currently recognize *S. glaucus* as three distinct species: *S. brevispinus* (Pariette cactus), *S. wetlandicus* (Uinta Basin hookless cactus), and *S. glaucus* (Colorado hookless cactus). These three species retain their threatened status (74 FR 47112, September 15, 2009). There is no critical habitat designated for these species. In April 2010, we developed a recovery outline for Uinta Basin hookless cactus (USFWS 2010a) and Pariette cactus (USFWS 2010b).

2.2. Distribution and Life History

Sclerocactus occur in Uintah County, Utah along the Green River, White River, and their tributaries. The species also occurs within Duchesne and Carbon Counties. Pariette cactus grows on fine soils in clay badlands derived from the Uinta geologic formation (USFWS 1990). It is found on "stoney, gravelly, hilly terrain," and is frequently, although not always, associated with desert pavement (soil with a high percentage of thin rock fragments covering the surface). Pariette cactus habitat is a sparsely vegetated desert shrubland dominated by saltbush (*Atriplex* spp.), rabbit brush (*Chrysothamnus* spp.), and horse brush (*Tetradymia* spp.) species (USFWS 1990).

Uinta Basin hookless cactus is generally found on coarse soils derived from cobble and gravel stream terrace deposits, or rocky surfaces on mesa slopes at 1,350 to 1,900 meters elevation (4,400 to 6,200 feet) (USFWS 1990; Heil and Porter 2004). Uinta Basin hookless cactus can be found growing with other common desert shrubland plants including shadscale, black sagebrush, and galleta grass. However, the habitat type for Uinta Basin hookless cactus has expanded with recent reports of individual cacti found in habitat that was previously considered unsuitable (multiple survey reports 2013-2015).

In 2013, consistent with our recovery outlines for these species, we developed *Sclerocactus* Core Conservation Areas (CCAs) to guide the protection of important population areas of high cactus

ED_004016P_00013422-00017

density and maintain connectivity across the range of the species (USFWS 2013). The *Sclerocactus* habitat polygon was updated in 2016, but CCAs were not changed. *Sclerocactus* Core Conservation Area 1 (CCA 1), Core Conservation Area 2 (CCA 2), and the *Sclerocactus* habitat polygon were delineated based on pollinator travel distance and density of cactus populations (USFWS 2013, Tepedino 2010). The CCA1 polygons include the densest concentrations of cactus locations and the most restrictive management recommendations. The CCA 1 polygons were developed using a 400-meter buffer around plants to allow for pollinator travel. The CCA 2 polygons include less-dense cactus areas and less restrictive management recommendations, while still maintaining a minimum amount of undisturbed habitat to protect the species. The CCA 2 polygons were developed using a 1,000-meter buffer around plants.

The *Sclerocactus* habitat polygon encompasses CCA 1 and CCA 2 polygons and defines the area in which the Uinta basin hookless cactus and the Pariette cactus, and their potential habitat are likely to be located. The total area of *Sclerocactus* habitat polygon is 516,068 acres. Within the *Sclerocactus* habitat polygon there are 170,964 acres of CCA 2 and CCA 1 habitat. Although *Sclerocactus* populations can be found outside of these CCA habitat polygons, they tend to occur in greater numbers and at higher densities within the polygons. The habitat and CCA polygons will be adjusted as more known locations are documented.

The habitat and CCAs for the Uinta Basin hookless cactus and Pariette cactus are spread across four land ownership types summarized below in Tables 1 and 2.

Table 1. Distribution (acres and percent) of Uinta Basin hookless cactus habitat by landowner type. For the total acreage column, all larger polygons include the acreage of the smaller polygons. Numbers are rounded to the nearest whole number.

Uintah Basin hookless cactus					
	State (Acres)	**Private**	**Tribal**	**BLM**	**Total**
Potential habitat polygon	43,287	11,940	109,534	240,215	404,978
	11%	3%	27%	59%	
CCA 2	9,514	1,678	23,194	58,002	92,389
	10%	2%	25%	63%	
CCA 1	2,269	245	7,024	17,384	26,924
	8%	1%	26%	65%	

ED_004016P_00013422-00018

Table 2. Distribution (acres and percent) of Pariette cactus habitat by landowner type. For the total acreage column, all larger polygons include the acreage of the smaller polygons. Numbers are rounded to the nearest whole number.

Pariette cactus					
	State (Acres)	**Private**	**Tribal**	**BLM**	**Total**
Potential habitat polygon	**4,518**	**38,473**	**35,925**	**32,172**	111,090
	4%	35%	32%	29%	
CCA2	**1,569**	**3,742**	**13,188**	**18,206**	36,704
	4 %	10%	36%	50%	
CCA1	**201**	**1,101**	**6,435**	**7,209**	14,947
	1%	7%	43%	48%	

The distribution of *Sclerocactus* individuals is not even across the landscape or landownership status. Table 3 below shows the total number and percent of known individuals within each landowner category.

Table 3. Distribution of Uinta Basin hookless cactus individuals by landowner type.

Species	**Tribal**	**State**	**Private**	**Federal**	**Total #**
Pariette cactus	30,445	637	3488	3536	38,106
	80%	**2%**	**9%**	**9%**	
Uinta Basin hookless cactus	47,724	3,115	7,598	40,105	98,542
	48%	**3%**	**8%**	**41%**	
Hybrid	4,223	600	758	7,431	13,012
	32%	**5%**	**6%**	**57%**	
TOTAL *Sclerocactus*	82,392	4,352	11,844	51,072	149,660
	55%	**3%**	**8%**	**34%**	

Both of these *Sclerocactus* are outcrossing species, meaning they require pollen from the flower of a different plant to produce viable seed (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), pollinate the Pariette and Uinta Basin hookless cactus. These bees can travel from 0.4 to 1 kilometer (km) between plants (Tepedino pers. Comm. 2010). Other insects, including ants and beetles, may also pollinate Uinta Basin hookless cactus (USFWS 1990), though both are predominately pollinated by ground-nesting bees (Tepedino et al. 2010). Limiting the amount of fragmentation and disturbance within the habitat of Uinta Basin hookless cactus is important to maintain adequate pollinator habitats and healthy cactus populations.

The life history and population dynamics of this species is poorly known, but they are thought to be long-lived perennials, usually flowering after three or four years. There is early population demographic and population trend data for both *Sclerocactus* that shows an observed decline in population size and growth rate over a three year period from 2012-2014 (SWCA 2015). Population viability analysis also shows a negative population growth vital rate of 0.89 for the *Sclerocactus*. Modeled data out to 10-years also shows a decline both in population growth rate and population size (SWCA 2015). We recognize that this data covers a short period of time and that long-term data are required in order to fully understand the population trends. Information from this study will be updated as it becomes available.

ED_004016P_00013422-00019

Additional information on these species' life histories, population dynamics, status, and distribution is described in detail within the "Recovery Plan for the Uinta Basin Hookless Cactus" (USFWS 1990) and the more recent recovery outlines (USFWS 2010a; Service 2010b).

2.3. Threats to the Species

Ongoing and proposed oil and gas development are the primary threats to the *Sclerocactus* from the combined impacts of road and well pad development, fugitive dust, erosion, isolation of populations due to habitat fragmentation, impacts to pollinators and seed dispersers, increased access by off-road vehicles and illegal collectors due to an expanded road network, and pesticide and herbicide use (BLM 2008). These species are also sought by cacti and succulent collectors around the world (USFWS 2010a).

Habitat loss associated with energy development is a major threat across the known range. There are 8,726 existing oil and gas well locations within the *Sclerocactus* habitat polygon. We used GIS analysis to calculate the amount of disturbance in CCA 1, CCA 2, and the *Sclerocactus* habitat polygons by estimating that there are 5 acres of disturbance associated with each well. For every additional well on a shared well pad, we estimate 0.25 acres of additional disturbance. Thus, in May of 2015 we calculated that approximately 26,505 acres (4.9 percent) of the *Sclerocactus* habitat polygon is already disturbed by oil and gas development. Energy related surface disturbance levels in CCA 2 units range between 0 to 12.2 percent and between 0 to 11 percent within the CCA 1 areas.

Habitat fragmentation is a primary direct threat to Uinta Basin hookless cactus. The primary sources of habitat fragmentation are the increased number of access roads, pipeline and other utility ROWs, and long-term surface disturbance from well pads and associated facilities. The anthropogenic fragmentation of plant habitats can decrease species density (Mustajarvi *et al.* 2001) and result in isolated, smaller populations that are more prone to extinction. Decreased species density has the potential to adversely impact pollination and reproductive success of *Sclerocactus* species (Mustajarvi *et al.* 2001).

Surface disturbance due to energy development, roads, off-road vehicle use, and livestock disturbance can lead to increased dust, erosion and storm water runoff that can impact the *Sclerocactus*. Construction activities, access roads, and vehicular traffic within and near occupied habitats increase fugitive dust and particulates that negatively affect the *Sclerocactus*. Dust accumulation is higher near roads, with fugitive dust depositing up to 984 feet from the source (Everett 1980). Dust accumulation may adversely impact photosynthesis, respiration, transpiration, water use efficiency, leaf conductance, growth rate, gas exchange, and growth (Eller 1977; Spatt and Miller 1981; Thompson et al. 1984; Farmer 1993; Sharifi et al. 1997; Trombulak and Frissell 2000; Hobbs 2001, Lewis 2013). In the Uinta Basin region of Utah, dust has been demonstrated to reduce reproductive success of the federally endangered shrubby- reed-mustard out to a distance of 400 meters from the edge of a dirt road (Lewis 2013). Erosion and runoff from surface disturbing activities can have direct impacts to cacti from burying to direct removal of individuals. Erosion and runoff can be natural events, but are often worsened by human activities such as vegetation removal and alteration of stream courses, making these events more catastrophic. These augmented events can lead to greater damage to native ecosystems through additional scour and burial of soils and plants. Increases in dust, erosion, and storm water runoff interact cumulatively with other negative effects to further fragment and disturb *Sclerocactus* populations. To reduce

ED_004016P_00013422-00020

these impacts from dust the USFWS Utah Field Office implements a minimum 300-foot avoidance area for all permanent and vegetation clearing activity in the Uinta Basin region (USFWS 2013).

A majority of *Sclerocactus* cactus potential habitat on BLM land is leased for grazing. At least 36 BLM grazing allotments overlap with the *Sclerocactus* habitat polygon, with both cattle and sheep grazing annually or on deferred rotation, depending on the specific allotment. On Tribal lands, BIA range units also occur throughout the *Sclerocactus* habitat polygon. Livestock grazing results in cactus mortality when livestock trample, nick, cut, break individual cacti (USFWS 1990; Utah Natural Heritage Program 2006; BLM 2008; 72 FR 53215, September 18, 2007, Brunson 2013). Damage from livestock is known to occur and has been documented in field observation reports (Brunson 2013, BLM 2015, Reisor 2013). Due to lack of systematic monitoring we do not know the frequency or extent of impacts livestock has on the plants and its habitat. Through the trampling of soil livestock can degrade the habitat by compaction of the soil and reducing water filtration, removing biological soil crust (Castellano 2007; Sharrow 2007). Such habitat degradation can reduce seedling recruitment and reproductive output, and stress individuals by reducing water availability (Kuske *et al.* 2012; Schwinning *et al.* 2008).

Overgrazing is the continued heavy grazing by domestic livestock beyond the recovery capacity of forage plants (Vallentine 1990). Overgrazing can result in degradation of western ecosystem functions and structures (Fleischner 1994). Overgrazing can facilitate the establishment of invasive species like cheatgrass (Masters and Sheley 2001), which are difficult to eradicate and tend to outcompete native vegetation, including cacti. Invasive weeds (including *Bromus tectorum* and *Halogeton glomeratus*) are prevalent on BLM lands in the range of *Sclerocactus* and less so on tribal lands where grazing has been concentrated in areas outside of suitable cactus habitat (72 FR 53214, September 18, 2007).

Accidental damage or death occurs when a cactus is kicked, stepped on, or driven over by humans or livestock inadvertently. Roads and pipelines create permanent pathways for humans and livestock to utilize as easy travel corridors across a rugged landscape, which can result in attracting human and livestock traffic into these corridors through occupied habitat. As road and pipeline density increases within occupied habitat, the chance for accidental damage or death increases as human or livestock venture off the existing disturbed area into undisturbed occupied habitat. Additionally, livestock grazing may exacerbate this situation by focusing grazing within the remaining interspaces between roads and wells, leading to further accidental damage or death of *Sclerocactus* individuals.

Illegal collection of Uinta Basin hookless cactus historically is one of the primary threats to the conservation and recovery of this species (BLM 2008). The increased number of access roads from energy development within and near occupied habitats allows greater access to rare plant populations and potentially could increase illegal collection of the species.

Noxious and invasive plant species directly compete for resources with native species such as *Sclerocactus* and alter the habitat making it more difficult for the species to survive and thrive. Seeds from invasive species are often carried by vehicles and spread via vehicle-caused air turbulence (Forman and Alexander 1998). Within the action area, noxious and invasive species are often present in the soil seed bank, and once an area is disturbed, these species can quickly establish. In addition, competition from noxious and invasive species can further reduce special status species' population size. Invasive plants spread more easily when other land uses such as livestock grazing are concentrated within the remaining interspaces between roads and wells.

ED_004016P_00013422-00021

The cumulative pressures of energy development and grazing can lead to more invasive plants in *Sclerocactus* habitat.

The spread of noxious and invasive plants may change species composition within native plant communities. This may lead to increased livestock grazing on native grasses and shrubs that act as "nurse" plants for immature cacti. Nurse plants create an environment that is more favorable for successful establishment of immature cacti by providing shade, moisture, and protection from trampling. Additionally, habitat alteration from invasive species can alter pollinator composition in the area, thereby possibly reducing the effectiveness of pollination within the native community. All of these connected actions reduce the ability of *Sclerocactus* to thrive within its native habitat.

3. ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as follows:

- The past and present impacts of all Federal, State, or private actions and other human activities in the action area;
- The anticipated impacts of all proposed State or Federal projects in the action area that have already undergone formal or early section 7 consultation; and
- The impact of State or private actions which are contemporaneous with the consultation process.

3.1. Status of the Species within the Action Area

Sclerocactus

As described in the Status of the Species (section 2), available demographic information indicates that Uinta Basin hookless cactus and Pariette cactus are declining range-wide, including portions of the action area. Approximately 34,161acres (50 percent) of the action area is within the *Sclerocactus* habitat polygon. The action area represents 6.6 percent of the *Sclerocactus* habitat polygon and includes 43,080[1] (28.7 percent) of known *Sclerocactus* individuals. This equates to 9,803[1] (23 percent) Pariette cactus individuals and 33,277[1] (32.3 percent) Uinta Basin hookless cactus individuals within the action area. The USFWS protocol level clearance surveys have not been conducted throughout the action area, and it is reasonable to assume that there are more *Sclerocactus* individuals within the action area than are currently recorded in our database.

The action area contains 967 acres of CCA 2 habitat and 32 acres of CCA 1 habitat in the Upper Green and Upper Pariette units. Much of the Randlett EDA had not been surveyed at the time of the 2013 core area polygon designations and is therefore not included in the core area analysis. Based on more recent survey information from the CPE 3D seismic project in 2013, it is likely that additional portions of the action area would meet the criteria for CCA 2 and CCA 1 areas. The largest populations of *Sclerocactus* are located in the eastern and western portions of the action area, where *Sclerocactus* are concentrated on the cobble bluffs above the Duchesne river flood plain. In the eastern portion of the action area the cacti are located along the bluffs to the southwest and the northeast of the Duchesne river corridor, while in the western portion the cacti are located to the north and south of the Duchesne river corridor.

[1] Totals of *Sclerocactus* individuals include those individuals identified as hybrid individuals in the data set. For analysis, fifty percent of the hybrid individuals are attributed to each *Sclerocactus* species.

ED_004016P_00013422-00022

3.2 Factors Affecting the Species within the Action Area

Sclerocactus

The same threats as described above in section 2.1.3, Threats to the Species, are present throughout the Project's action area. Existing oil and gas energy development is a significant impact throughout *Sclerocactus* habitat. There are 420 existing wells in *Sclerocactus* habitat within the action area. We used available GIS data (UDOGM 2015) and estimated 5 acres per well average disturbance area (BLM 2012) to estimate the approximate amount of surface disturbance in the action area. Overall, we estimate that 2,100 acres (6.1 percent) of the *Sclerocactus* habitat polygon within the action area is currently disturbed by oil and gas development.

The majority of the action area occurs within Tribal boundaries and conservation of the *Sclerocactus* and their habitat is governed by the Ute Indian Tribe's *Sclerocactus* Management Plan for the Uintah and Ouray Indian Reservation, Uinta Basin, Utah (hereafter, Tribal Management Plan) (Ute Tribe 2015). The Tribal Management Plan requires clearance surveys out to 100 feet from proposed disturbance and recommends a 100 foot avoidance buffer from *Sclerocactus* individuals. Exceptions to the 100 foot avoidance buffer may be granted at the discretion of the Tribe, which can allow disturbance up to 25 feet from a *Sclerocactus* individual. These survey and avoidance buffers are less than the 300 foot survey and avoidance buffer recommended by our protocols (USFWS 2011 and 2014).

Increased road construction and use is associated with ongoing and proposed energy developments in the action area. The distance from a road at which dust can affect vegetation varies (Everett 1980; Spatt and Miller 1981; Walker and Everett 1987; Santelmann and Gorham 1988; McCrea 1984; Myers-Smith *et al.* 2006). Dust related impacts are greatest next to roads and impacts attenuate with distance from roads (references summarized in USFWS 2014). We expect impacts to be greatest within 300 feet (91 meters) of dirt access roads (Etyemezian *et al.* 2004; Veranth *et al.* 2003; Lewis 2013; Silver 2007) and therefore recommend a 300 foot avoidance of *Sclerocactus* individuals.

Uintah County is known to have extensive areas of noxious and invasive plant species (Project EA, 2016), some of which occur within the action area. Seeds from invasive species are often carried and spread by vehicles (Forman and Alexander 1998) and are associated with vehicles, roads, and other corridors. The spread of invasive nonnative species is considered the second largest threat to imperiled plants in the United States (Wilcove *et al.* 1998), and is second only to habitat loss as factors responsible for biodiversity declines (Randall 1996).

Approximately 9,359 acres (18 percent) of the action area are classified by Southwest Regional Gap Analysis Project agricultural lands. Agricultural lands increase fragmentation of *Sclerocactus* and pollinator habitat and may result in negative effects to pollinators through pesticide use. In addition, 9,837 acres (18.7 percent) within the action area are located within BIA range units or BLM grazing allotments. In addition to domestic livestock, feral horses are known to occur throughout the action area and negatively impact the cacti. Livestock are known to impact *Sclerocactus* through kicking or trampling, causing soil compaction, spreading of invasive weeds, and reducing pollinator forage.

ED_004016P_00013422-00023

4. EFFECTS OF THE ACTION

The effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Sclerocactus

Impacts to *Sclerocactus* individuals from this Project include an increase of those impacts described in "Status of the Species: Threats" (see section 2). Particularly, we expect increases in fugitive dust, pollinator disturbance, weed invasion, accidental damage to individuals, illegal collection, and overall habitat fragmentation (Eller 1977; Spatt and Miller 1981; Thompson et al. 1984; Farmer 1993; Sharifi et al. 1997; Forman and Alexander 1998; Trombulak and Frissell 2000; Hobbs 2001; BLM 2008; Tepedino et al. 2010, BLM) due to increased human use and surface disturbances associated with this Project.

The proposed Project will construct 271 new oil and gas wells from 157 new well pads and 96 expanded well pad, resulting in 507 acres of new disturbance. New and upgraded access roads and new pipeline corridors will result in 407 acres of new disturbance. New surface disturbance will be minimized by drilling multiple wells from the same well pads, maximizing use of existing roads and infrastructure, and co-locating right-of-ways. The total conceptual short-term disturbance for this Project is 1,050 aces.

Approximately 500.3 acres of short-term disturbance and approximately 280 acres of long-term disturbance will occur within the *Sclerocactus* habitat polygon. The 500.3 acres of new disturbance will increase the overall level of disturbance throughout the *Sclerocactus* habitat polygon from 5.14 percent to 5.23 percent. A single well pad, or 3.5 of the total acres of disturbance, will occur within the Upper Green CCA 2 unit within the *Sclerocactus* polygons, but will not measurably increase the percent area disturbed within the unit. No new disturbance will occur within the CCA 1 *Sclerocactus* polygons.

Approximately 43,080 (28.7 percent) *Sclerocactus* individuals throughout the action area and within 2,953 feet (900 meters) of surface disturbing activities will experience indirect impacts from the project, such as dust deposition, increased traffic, weed dispersal, pollinator disruption, and habitat fragmentation.

Under the Tribal Management Plan, *Sclerocactus* individuals will be in closer proximity to surface disturbance and will experience increased negative impacts from fugitive dust, invasive weeds, fragmentation, pollinator, disturbance, and habitat loss. CPE has committed to implement the Tribal Management Plan for this Project, which requires a 100 foot survey and avoidance buffer. Based on GIS analysis of CPE's conceptual infrastructure placements and the USFWS 300 foot buffer, 6,204 (4.1 percent of the total *Sclerocactus* population) *Sclerocactus* individuals could be impacted, including 1,514 (3.4 percent) Pariette cactus individuals and 4,690 (4.5 percent) Uinta Basin hookless cactus individuals which are located within the 300 foot recommended avoidance area.

ED_004016P_00013422-00024

Due to the conservation measures (see, Applicant and Agency Committed Conservation Measures, section 1) committed to by CPE and BIA, direct impacts to *Sclerocactus*, such as crushing, digging, or burying, are not expected as a result of this Project.

Some impacts to *Sclerocactus* resulting from oil and gas development will be minimized through site-specific project design and conservation measures. However, minimizing the impacts cannot entirely negate the larger landscape-level changes such as increased habitat fragmentation and habitat loss, pollinator disturbance, changes in erosion and water runoff, and increased weed invasion (Forman and Alexander 1998; Mustajarvi et al. 2001, BLM 2008). These disturbances will continue to negatively affect *Sclerocactus* species throughout the action area and range of the species.

5. CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the proposed action are not considered under this section because they require separate consultation pursuant to section 7 of the ESA.

Declines in the abundance or range of many special status species are attributable to various human activities on Federal, state, and private lands, such as human population expansion and associated infrastructure development; energy development and associated infrastructure; construction and operation of dams along major waterways; water retention, diversion, or dewatering of springs, wetlands, or streams; recreation, including off-road vehicle activity; expansion of agricultural or grazing activities, including alteration or clearing of native habitats for domestic animals or crops; and introductions of non-native plant, wildlife, or fish or other aquatic species, which can alter native habitats or out-compete or prey upon native species. Many of these activities are expected to continue on State and private lands within the range of various federally protected wildlife, fish, and plant species, and could contribute to cumulative effects to the species within the action area. Species with small population sizes, endemic locations, or slow reproductive rates will generally be more susceptible to cumulative effects.

Non-federal activities have the potential to cumulatively affect *Sclerocactus*, as a significant portion of the species' range occurs on state, private, and tribal lands without federal mineral leases or federal surface rights (see Tables 1, 2, and 3 in Distribution section). Quantified data on the future extent of these activities are difficult to obtain, but we must assume, for the purposes of this assessment, that some level of these activities are reasonably certain to occur, particularly energy and mineral exploration, development, livestock grazing, stone collecting, off-highway vehicle use, and illegal cactus collecting. Where these future activities intersect *Sclerocactus* populations or habitat, they will cumulatively add to the existing and future impacts of activities authorized by federal agencies. *Sclerocactus* individuals on non-federal lands will be negatively impacted by direct loss and disturbance, as well as landscape-scale factors (habitat fragmentation, increased dust, and so on) due to cumulative impacts in the action area. Future projects with no federal nexus have the potential to cumulatively affect *Sclerocactus* species, as a significant portion of these species' ranges occur on state and private lands that are not always subject to section 7 consultations.

ED_004016P_00013422-00025

6. CONCLUSION

After reviewing the current status of Pariette cactus or Uinta Basin hookless cactus and the environmental baseline for the action area; the effects of the proposed action; and the cumulative effects, it is our biological opinion that this project, as described in this biological opinion, is not likely to jeopardize the continued existence of Pariette cactus or Uinta Basin hookless cactus.

We base our conclusion on the following:

1) No disturbance will occur within *Sclerocactus* CCA 1,
2) Only 3.5 acres of disturbance will occur in *Sclerocactus* CCA2 and the disturbance within the Upper Green CCA 2 Unit will increase by less than 0.03 percent to a total of 2.71 percent. This is below our recommended disturbance threshold of 5 percent maximum disturbance,
3) Less than one half of a percent of the *Sclerocactus* polygon will be disturbed,
4) Only 3.4 percent of Pariette cactus and 4.5 percent of Uinta Basin hookless cactus occur within 300 feet of disturbance where indirect impacts are greatest, and
5) Site specific *Sclerocactus* surveys will be conducted,reported to our office, and thus inform what areas to avoid during development.
6) No *Sclerocactus* individuals will be damaged, crushed, or buried and mortality will not occur.

7. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the USFWS to include significant habitat modification or degradation that results in death or injury of listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the USFWS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7 (o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Colorado pikeminnow, humpback chub, bonytail, and razorback sucker are harmed from the reduction of water in their habitats resulting from the subject action in the following manner--1) individuals using habitats diminished by the proposed water depletions could be more susceptible to predation and competition from non-native fish; 2) habitat conditions may be rendered unsuitable for breeding because reduced flows would impact habitat formulation and maintenance as described in the biological opinion.

Estimating the number of individuals of these species 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

ED_004016P_00013422-00026

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. 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 158.75 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 BIA as described in the proposed action exempts the BIA and project proponent from the prohibitions of section 9 of the Act. The BIA is responsible for reporting to our office if the amount of average annual depletion is exceeded.

Sections 7(b)(4) and 7(o)(2) of the ESA generally do not apply to listed plant species, therefore we are not providing an incidental take statement for listed plant species in this biological opinion. However, limited protection of listed plants from take is provided to the extent that the ESA prohibits the removal and reduction to possession of Federally listed endangered 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.

This incidental take statement does not constitute an authorization for take of listed migratory birds under the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, or any other Federal statute.

7.1. Reporting Requirements

Data from clearance or spot check surveys for *Sclerocactus*, Ute ladies' tresses, and Yellow-billed cuckoo will be submitted to the BIA by January 31 each year following the event. *Sclerocactus* surveys will also be submitted to the BLM Vernal field office to be incorporated into the species database.

If listed plants are crushed or injured during Project activities, immediate notification must be made to our Salt Lake City Office, at (801) 975-3330, the USFWS Division of Law Enforcement, Ogden, Utah, at (801) 625-5570, and to the BIA (435) 722-4331. Pertinent information including the date, time, location, and possible cause of injury or mortality of each species shall be recorded and provided to our office.

If ground disturbance is permitted by the Tribe to occur within 100 feet of *Sclerocactus* individuals, the USFWS will be notified in a written report. The report shall include the location information, number of cactus, distance from disturbance, and any additional conservation measures implemented.

In order to be exempt from the prohibitions of section 9 of the Act, the BIA must comply with all Recovery Program activities and the monitoring proposed below. The implementing regulations for incidental take require that Federal agencies must report the progress of the action and its impact on the species (50 CFR 402.14(i)).

ED_004016P_00013422-00027

To meet this mandate, the BIA will monitor and report the progress of their action as follows:

1. Submit to our office an annual report of water depletions associated with oil and gas development, including the following information:

- Project name and/or applicant name
- Permit number and/or special use authorization
- General location and legal description
- Depletion amount in acre-feet
- Timing of depletion
- Identify if new or historic depletion
- Sub-total water depletion (acre-feet) for each applicant
- Total depletion for the entire year in acre-feet
- Total number of APDs approved
- Total number of wells spudded

Reports shall be due to our office on a yearly basis by October 31. The address for our office is:

U.S. Fish and Wildlife Office – Utah Field Office
2369 West Orton Circle, Suite 50
West Valley City, Utah 84119

Upon locating dead, injured; or sick 'listed species, immediate notification must be made to the USFWS Utah Field Office at (801) 975-3330 and the USFWS Division of Law Enforcement, Ogden, Utah, at (801) 625-5570. Pertinent information including the date, time, location, and possible cause of injury or mortality of each species shall be recorded and provided to the Service. Instructions for proper care, handling, transport, and disposition of such specimens will be issued by the USFWS Division of Law Enforcement. Care must be taken in handling sick or injured animals to ensure effective treatment and in handling dead specimens to preserve biological material in the best possible state.

8. REASONABLE AND PRUDENT MEASURES

No reasonable and prudent measures are included for this Project. As described above *(Colorado River Fish Recovery Program-Background)*, the Recovery Program minimizes the effects of water depletions to critical habitat. We provide additional recommendations for the *Sclerocactus* species (see Conservation Recommendations, below).

9. CONSERVATION RECOMMENDATIONS

As optional conservation measures we recommend they following for the *Sclerocactus* species:

- We recommend that all Uinta Basin hookless cactus individuals be avoided by a minimum of 300 feet in order to avoid all impacts to the species.
- We recommend that all Applicant Committed Conservation Measures apply where *Sclerocactus* individuals are within 300 feet of surface disturbance.
- We recommend that the mitigation fee to be contributed to the *Sclerocactus* Mitigation Fund be based on the 300 foot disturbance buffer in order to accurately account for the *Sclerocactus* habitat being impacted. The total recommended payment is in table 4 below.

ED_004016P_00013422-00028

Table 4. Recommended Mitigation Payment

Disturbance Acres	Multiplier	Fee
CCA 2: 3.5	$6,260	$21,910
Suitable habitat: 496.8	$2,550	$1,266,840
TOTAL		**$1,288,750**

10. REINITIATION – CLOSING STATEMENT

This concludes formal consultation on the action outlined in your request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action was retained (or is authorized by law) and if: (1) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (2) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (3) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

We appreciate your commitment in the conservation of endangered species. If the project changes or it is later determined that the project affects listed species differently than identified above; it may become necessary to reinitiate section 7 consultation. If you require further assistance or have any questions, please contact Rita Reisor at (801) 975-3330 extension 135.

ED_004016P_00013422-00029

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ED_004016P_00013422-00032

Appendix A

Conservation Measures for Herbicide Use within Suitable Habitat for Federally Listed Species for Non-Aquatic Infestations

General Conservation Measures

- All projects involving surface disturbance will include a weed management plan (WMP). The WMP may be integrated into an overall reclamation plan if desired.
- All herbicide treatments will be applied by a Utah licensed Pesticide Applicator. If licensed in another state, a reciprocal license may be obtained through the Utah Department of Agriculture website.
- A Pesticide Use Plan (PUP) will be submitted with the WMP or reclamation plan for all BIA-administered lands.
- Weeds will be controlled within the disturbance areas, including borrow areas along roads.

Reseed if feasible to promote competition with weeds.

- All disturbance areas will be monitored for noxious weeds annually, for a minimum of three growing seasons following completion of project or until desirable vegetation is established. Monitoring reports should include shapefiles (compatible with ArcMap) of all noxious weed species found. When possible, data will include percent cover, size of infestation, and treatment applied.
- The use of dragging (before seed set), manual control, and biological control will be considered before the use of chemicals. Dragging will not occur after seed set.
- Weeds will be controlled prior to seed set annually (mechanically, biologically, chemically, etc), or at the appropriate time for the individual species. Some populations may require more than one treatment per year.
- Only the herbicides listed in tables 3 and 4 below will be permitted for use.
- Herbicides may be applied solely through the following methods (Table 1):
  - backpack spot sprayer (preferred),
  - wick application (preferred),
  - bottle drip (for cut stump treatments),
  - low (preferred) or high boom sprayers mounted on truck or ATV,
- All herbicide applications must strictly follow label instructions.
- When necessary, the potential for wind erosion of herbicide-contaminated soil will be evaluated on a project level basis and mitigation will be incorporated into weed management plans or PUPs. Mitigation could include: reseeding, strip spraying strips,

ED_004016P_00013422-00033

using berms, or other feasible methods.

- Except within designated critical habitat for Colorado River fishes, non-aquatic herbicide application will maintain the following buffer distances from open water (e.g., springs, wetlands, rivers, streams, ponds, and lakes) unless a greater distance is specified on the herbicide label:
    - 25 feet boom truck application
    - 10 feet backpack sprayer application
- Aquatic formulation of herbicides can be applied up to the edge of open water, in accordance with label instructions.
- Empty herbicide containers will be disposed of according to label instructions.
- No cleaning of equipment near moving or open water, or near drainages.
- Herbicides will only be transported when properly secured in sealed and labelled containers.
- Herbicides, surfactants and other chemicals will be stored and mixed at least 50 feet from the edge of any body of water and outside of the riparian zone.
- Broadcast application (i.e., with use of ATV/UTV sprayers, or backpack sprayers over a continuous area greater than 0.25 acres) of herbicides with slight or greater toxicity (Toxicity Class I, II, or III) in critical habitat for endangered Colorado River fish (the 100-year floodplain of the Green, Colorado, Yampa, and White Rivers) is not conducted when the 100-year floodplain can be inundated by high water (generally May 1 to July 15) to avoid potential adverse effects to listed fish.
- The BIA weed coordinator will coordinate all herbicide applications within a half mile of federally-listed threatened and endangered plants or populations.
- For all herbicide applications within 0.5 miles of federally-listed threatened and endangered plants, the applicant will provide the BIA with a shapefile, map, or coordinates of project locations with the PUP. The BIA will include a map of buffer zones around special status plants specific to each PUP, and will indicate any treatment areas that require additional mitigation measures.
- When PUPs or WMPs are approved, the BIA will provide maps and lists of wellpads or treatment areas where these mitigation measures will apply. Maps and lists will be attached to the signed PUP or WMP.

Conservation Measures for Federally Listed Plants

The following mitigation measures apply to any herbicide treatment that occurs within **0.5 miles** of federally listed plant species locations:

- No herbicide spraying when wind speeds exceed 6 miles per hour (measured on-site).
- No aerial application.
- Use typical application rates as opposed to maximum rates (Table 2).

ED_004016P_00013422-00034

- Use the largest droplet size possible while still effectively covering target weeds.
- High boom application is allowed; however, low-drift application methods—including hand gun, low boom, and wick—are preferred.
- Use granular formulas when available.
- Incorporate drift reducing agents when feasible and according to label specifications.
- No off-road travel within 0.5 miles of special status plant populations, unless prior approval by USFWS botanist.

Mitigation Measures for Treatment within Low-Risk, Herbicide-Specific Buffers

These conservation measures will be applied when working within the low-risk buffers identified in tables 3 and 4.

- Use manual spot treatments including herbicide injection, wick application, cut stump, or backpack sprayers.
- Where weed infestations exceed the disturbance area(s), prior to treatment, herbicide applicators would accompany a BIA-approved botanist on meandering surveys to identify "no spray" areas adjacent to special status plants.
- A BIA-approved botanist will remain onsite during herbicide treatment to ensure that special status plants are avoided.
- No herbicide application during flowering season of any special status plants in or near the treatment area.
- Store herbicide containers away from special status plants in spill proof containers.
- Use drift reducing agents.
- The BIA, in coordination with USFWS, may develop additional site-specific conservation measures for sensitive status plants as needed.
- When PUPs or WMPs are approved, the BIA botanist will provide maps and lists of wellpads or treatment areas where these mitigation measures would apply. Maps and lists would be attached to the signed PUP or WMP.

Conservation Measures for Western yellow-billed cuckoo

Suitable nesting and foraging habitat for western yellow-billed cuckoo will be identified and mapped according to the Utah Ecological Services Field Office 2015 Guidelines for the identification of suitable habitat in Utah. Mapping will be submitted to the Utah Ecological Services Field Office for verification prior to any herbicide use. The following conservation measures will be applied within 0.5 mile of western yellow-billed cuckoo suitable habitat:

- No aerial application of herbicides will be conducted.
- Herbicides with toxicity to insects or amphibians will not be used between May 1 – August 31.

ED_004016P_00013422-00035

Table 1. Summary of Chemical Application Methods[1]

Method	Description
Hand/Selective Treatment	Selective treatment of individual plants to avoid spraying other desirable plants. There is a low likelihood of drift or delivery of herbicides away from treatment sites. This method is used in sensitive areas, such as near water, to avoid getting any herbicide on the soil or in the water. Hand/Selective methods could be done under more variable conditions than spot spraying or broadcast spraying). Specific methods include: a. Wicking and Wiping - Involves using a sponge or wick on a long handle to wipe herbicide onto foliage and stems. Use of a wick eliminates the possibility of spray drift or droplets falling on non-target plants. Herbicide can drip or dribble from some wicks. b. Foliar Application - These methods apply herbicide directly to the leaves and stems of a plant. An adjuvant or surfactant is often needed to enable the herbicide to penetrate the plant cuticle, a thick, waxy layer present on leaves and stems of most plants. There are several types of foliar application tools available. c. Basal Bark - This method applies a 6 to 12 inch band of herbicide around the circumference of the trunk of the target plant, approximately one foot above ground. The width of the sprayed band depends on the size of the plant and the species' susceptibility to the herbicide. The herbicide can be applied with a backpack sprayer, hand-held bottle, or wick. d. Frill or Hack and Squirt - The frill method, also called the "hack and squirt" treatment, is often used to treat woody species with large, thick trunks. The tree is cut using a sharp knife, saw, or ax, or drilled with a power drill or other device. Herbicide is then immediately applied to the cut with a backpack sprayer, squirt bottle, syringe, or similar equipment. e. Stem Injection - Herbicides can be injected into herbaceous stems using a needle and syringe. Herbicide pellets can also be injected into the trunk of a tree using a specialized tool. f. Cut-stump - This method is often used on woody species that normally resprout after being cut. Cut down the tree or shrub, and immediately spray or squirt herbicide on the exposed cambium (living inner bark) of the stump. The herbicide must be applied to the entire inner bark (cambium) within minutes after the trunk is cut. The outer bark and heartwood do not need to be treated since these tissues are not alive, although they support and protect the tree's living tissues. The cut stump treatment allows for a great deal of control over the site of herbicide application, and therefore, has a low probability of affecting non-target species or contaminating the environment. It also requires only a small amount of herbicide to be effective.
Spot Spraying	Spot applicators spray herbicide directly onto small patches or individual target plants only and avoid spraying other desirable plants. These applicators range from motorized rigs with spray hoses to backpack sprayers, to hand-pumped spray or squirt bottles, which can target very small plants or parts of plants.

ED_004016P_00013422-00036

Method	Description
Broadcast (Boom) Spraying	A boom, a long horizontal tube with multiple spray heads, may be mounted or attached to a tractor, ATV (all terrain vehicle) or other vehicle. The boom is then carried above the invasive plants while spraying herbicide, allowing large areas to be treated rapidly with each sweep of the boom. Offsite movement due to vaporization or drift and possible treatment of non-target plants can be of concern when using this method. The herbicide is carried in a tank and reaches the nozzles via tubing. All herbicides are metered out from the nozzles in a controlled manner. The nozzle controls the droplet size, the area (or cone) being covered by the herbicide and it could be turned on/off with ease. Some nozzles could rotate. All this flexibility permits the operator to carefully apply herbicide at specific rates over specific areas. Many of the new boom spray operations have very sophisticated electronic monitoring that delivers exact amounts of herbicides and keeps records on rates and areas covered. Offsite movement due to drift and possible treatment of non-target plants could be of concern when using this method. Not all broadcast methods include a boom; boom-less nozzles are currently in use that can reduce the risk of non-target effects. Backpacks may also be used as a broadcast tool, if not directed at individual plants.
Aerial	Herbicides applied aerially by helicopter or fixed-wing aircraft.

[1]Table from Invasive Plant Management — Kemmerer, Pinedale, and Rock Springs Field Office Environmental Assessment, 2009

ED_004016P_00013422-00037

Table 2. Recommended herbicide application rates[1] (as analyzed in the PVEIS and PEIS risk assessments, BLM 2007a and 2015).

Herbicide Application Rates (in a.i. or a.e. per acre)			
Herbicide	**Permitted for Use on BLM**		**Average application rate within the VPA, 2014**
	Typical	Maximum	
Bromacil	4.0 lbs. a.i.	12.0 lbs. a.i.	4.07 lbs. a.i.
Chlorsulfuron	0.047 lb. a.i.	0.141 lb. a.i.	0.0031 lb. a.i.
Clopyralid	0.35 lb. a.e.	1.0 lb. a.e.	0.0114 lb. a.e.
2,4-D	1.0 lb. a.e.	1.9 lbs. a.e.	0.95 lb. a.e.
Dicamba	0.25 lb. a.e.	2.0 lbs. a.e.	1 lb. a.e.
Diuron	6.0 lbs. a.i.	20.0 lbs. a.i.	4.83 lbs. a.i.
Glyphosate	2.0 lbs. a.e.	7.0 lbs. a.e.	1.92 lbs. a.e.
Hexazinone	1.0 lbs. a.i.	8.0 lbs. a.i.	1.8 lbs. a.i.
Imazapyr	0.45 lb. a.e.	1.5 lbs. a.e.	NA
Metsulfuron methyl	0.03 lb. a.i.	0.15 lb. a.i.	NA
Picloram	0.35 lb. a.e.	1.0 lb. a.e.	0.25 lb. a.e.
Sulfometuron methyl	0.14 lb. a.i.	0.38 lb. a.i.	0.135 lb. a.i.
Tebuthiuron	0.5 lb. a.i.	4.0 lbs. a.i.	NA
Triclopyr	1.0 lb. a.e.	10.0 lbs. a.e.	NA
Diflufenzopyr + Dicamba	0.2625 lb. a.e.	0.35 lb. a.e.	NA
Imazapic	0.0313 lb. a.e.	0.1875 lb. a.e.	NA
Aminopyralid	0.078 lb. a.e.	0.11 lb. a.e.	NA
Fluroxypyr	0.25 lb a.e.	0.5 lb. a.e.	NA
Rimsulfuron	0.0469 lb. a.i.	0.0625 a.i.	NA

[1] Table taken from Programmatic Environmental Impact Statement for Vegetation Treatments Using Pesticides on BLM Lands in 17 Western States (PVEIS), completed in 2007, and the Programmatic Environmental Impact Statement for Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States (PEIS), completed in 2015.

ED_004016P_00013422-00038

Table 3. Chemical-specific low-risk buffers from TES plant species for the proposed action, BLM-evaluated herbicides, from the 2007 PVEIS and 2015 PEIS.

Application Type[c]	Bromacil	Chlorsulfuron	Dicamba[a]	Diflufenzopyr[b]	Diuron	Imazapic	Sulfometuron Methyl	Tebuthiuron	Aminopyralid	Fluroxypyr	Rimsulfuron
Buffer Distance (feet) from TES Plants, PVEIS Table 4-12 and PEIS Table 4-8											
Low Boom	1200	1000	1050	100	1000	0	1100	0	100	100	100
High Boom	1200	1000	1050	900	1000	0	1000	50	400	400	400
Aerial	NA	1400	NA	NA	1100	0	1500	NA	1800	1200	1600

[a]The buffer distances for Dicamba are the same for typical as opposed to maximum rates and this is the only herbicide applied in the VFO that has an application rate that is higher than the typical rate.

[b]Diflufenzopyr is currently registered with the U.S. Environmental Protection Agency (EPA) for use in formulation with dicamaba, known as Overdrive ®. The BLM will use diflufenzopyr as a stand-alone active ingredient when the ingredient is registered for use by the EPA.

[c]Low boom is 20 inches above the ground and high boom is 50 inches above the ground.

Table 4. Chemical-specific low-risk buffers from TES plant species for the proposed action, USDA Forest Service-evaluated herbicides, from the 2007 PVEIS and 2015 PEIS.

Application Type[a]	2,4-D	Clopyralid	Glyphos-ate	Hexazi-none	Imazapyr	Metsul-furon Methyl	Picloram	Triclopyr
Buffer Distance (feet) from Special Status Plants, Proposed								
Low Boom	100	500	25	100	1000	1000	1000	300
High Boom								500
Aerial			300					

[a]Low boom is 20 inches above the ground and high boom is 50 inches above the ground.

ED_004016P_00013422-00039

References

BLM. 2007. Final Vegetation Treatments Using Pesticides on Bureau of Land Management lands in 17 Western States, Programmatic Environmental Impact Statement.

BLM. 2015. Programmatic Environmental Impact Statement for Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States (PEIS), November 2015.

ED_004016P_00013422-00040

United States Department of the Interior
FISH AND WILDLIFE SERVICE
UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

September 26, 2016

RECEIVED
OCT 03 2016
UINTAH AND OURAY AGENCY
Superintendent

In Reply Refer To:
FWS/R6
ES/UT
06E23000-2015-F-0252

Memorandum

To: Superintendent, Bureau of Indian Affairs, Uintah and Ouray Agency, Fort Duchesne, Utah

From: Utah Field Supervisor, Ecological Services, U.S. Fish and Wildlife Service, West Valley City, Utah

Subject: Conclusion of formal section 7 programmatic consultation for Crescent Point Energy's Randlett EDA Area 271 Well Project

In accordance with section 7 of the Endangered Species Act (Act) 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 Crescent Point Energy's (CPE) proposed Randlett Exploration and Development Agreement (EDA) Area Project (hereafter, Project) and its effects on Uinta Basin hookless cactus (*Sclerocactus wetlandicus*) and Pariette cactus (*Sclerocactus brevispinus*) (hereafter, refered to as *Sclerocactus*). This BO is based on information provided in your May 2016 request for formal consultation, Biological Assessment (BA), and subsequent email and letter correspondence (see Consultation History, below).

The Project is also likely to adversely affect the bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), and humpback chub (*Gila cypha*) due to water depletions associated with energy development operations (see Description of the Proposed Action, below). However, as described below (see section 1.2.1, Colorado River Endangered Fishes), ongoing conservation efforts of the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (hereafter, Recovery Program) offset impacts associated with water depletions. In addition, CPE has committed to payment of a depletion fee for this project (see section 1.2.1, Four Endangered Upper-Colorado River Fish). Therefore, these species are not considered further in this BO.

Ute ladies'-tresses (*Spiranthes diluvialis*) and western yellow-billed cuckoo (*Coccyzus americanus*) were analyzed as part of the BA and we concur with your determination of "may affect, not likely to adversely affect" for both species. The Project does not impact proposed critical habitat for the western yellow-billed cuckoo. Our concurrence is based on the agreement by CPE and the Bureau of Indian Affairs (BIA) to implement the specific conservation measures for Ute ladies'-tresses and

ED_004016P_00013422-00041

Western yellow-billed cuckoo as stated in the BA and this BO (see Applicant Committed Conservation Measures, below).

COLORADO RIVER ENDANGERED FISH

On January 21-22, 1988, the Secretary of the Department of the Interior; the Governors of Wyoming, Colorado, and Utah; and the Administrator of the Western Area Power Administration signed a Cooperative Agreement to implement the "Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin" (U.S. Fish and Wildlife Service (USFWS) 1987). In 2001, the Recovery Program was extended until September 30, 2013. 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.

In order to further define and clarify processes outlined in sections 4.1.5, 4.1.6, and 5.3.4 of the Recovery Program, a section 7 Agreement (Agreement) and a Recovery Implementation Program Recovery Action Plan (RIPRAP) was developed (USFWS 1993). The Agreement establishes a framework for conducting all future section 7 consultations on depletion impacts related to new projects and all impacts associated with historic projects in the Upper Basin. Procedures outlined in the Agreement are used to determine if sufficient progress is being accomplished in the recovery of the endangered fishes to enable the Recovery Program to serve as a reasonable and prudent alternative (RPA) to avoid jeopardy. The RIPRAP was finalized on October 15, 1993, and has been reviewed and updated annually.

In accordance with the 1993 Agreement, the USFWS annually assesses progress of the implementation of recovery actions to determine if progress toward recovery has been sufficient for the Recovery Program to serve as a RPA for projects that deplete water from the Colorado River. In the last review the USFWS determined that the Program has made sufficient progress to offset water depletions from individual projects up to 4,500 acre-feet/year. Therefore, it is appropriate for the Recovery Program actions to serve as Conservation Measures in the project description for projects up to 4,500 acre-feet/year.

After many years of successful implementation of the Recovery Program and Agreement, federal action agencies have come to anticipate Recovery Program activities and a requirement of a financial contribution (for new depletions greater than 100 acre-feet) toward these activities serving as RPAs that must be included in their project planning to avoid jeopardy to listed species. Thus, the RPA has essentially become part of the proposed action. The Recovery Program activities will now serve as conservation measures within the proposed action and minimize adverse effects to listed species or critical habitat. The following excerpts summarize portions of the Recovery Program that address depletion impacts, section 7 consultation, and Project proponent responsibilities:

> "All future section 7 consultations completed after approval and implementation of this program (establishment of the Implementation Committee, provision of congressional funding, and initiation of the elements) will result in a one-time contribution to be paid to the USFWS by water project proponents in the amount of $10.00 per acre-foot based on the average annual depletion of the project . . . This figure will be adjusted annually for inflation [the current figure is $20.87 per acre-foot] . . . Concurrently with the completion of the Federal action which initiated the consultation, e.g., . . . issuance of a 404 permit, 10 percent of the total contribution

ED_004016P_00013422-00042

> will be provided." The balance will be due at the time of issuance of federal approvals from the BIA.

It is important to note that these provisions of the Recovery Program were based on appropriate legal protection of the instream flow needs of the endangered Colorado River fishes. The Recovery Program further states:

> ". . . it is necessary to protect and manage sufficient habitat to support self-sustaining populations of these species. One way to accomplish this is to provide long term protection of the habitat by acquiring or appropriating water rights to ensure instream flows. Since this program sets in place a mechanism and a commitment to assure that the instream flows are protected under State law, the USFWS will consider these elements under section 7 consultation as offsetting project depletion impacts."

CONSULTATION HISTORY

August 8, 2015:	We received the draft programmatic environmental assessment from your office.
August 27, 2015:	Our comments to the draft programmatic environmental assessment were sent in a letter to your office.
November 25, 2015:	We received the revised draft programmatic biological assessment from your office.
December 22, 2015:	We received the requested shapefiles and Global Information Systems data from Grasslands Consulting.
January 11, 2016:	We received responses to our comments from August 2015 via email from your office.
February 19, 2016:	Our comments to the revised draft programmatic biological assessment were mailed to your office as a hard copy letter and sent electronically through email.
May 9, 2016:	We confirmed the water depletion calculation methods and compensatory mitigation amount through email correspondence with your office.
May 10, 2016:	We received electronic files through email with the final biological assessment, response to our comments sent on February 16, 2016, and an email with conservation measures for the western yellow-billed cuckoo.
June 22, 2016:	We sent an email with additional questions about the Project to your office.
July 8, 2016:	We received responses from your office via email to our questions sent on June 22.

ED_004016P_00013422-00043

August 3, 2016: We received an email from your office detailing the amount of disturbance by activity for the *Sclerocactus* habitat polygon and revised shape files for Alternative C.

August 8, 2016: We continued discussion over email about BIA adopting the updated BLM weed management policy for projects occurring on Tribal lands.

BIOLOGICAL OPINION

1. DESCRIPTION OF THE PROPOSED ACTION

The Project area consists of approximately 53,380 acres of land, including Township (T) 3 South (S), Range (R) 1 East (E); T3S, R2E; part of T4S, R2E; and part of T4S, R3E, Utah Special Meridian (USM). Surface ownership is a combination of Tribal, Federal, State, and Private surface owners and is detailed in Table 1.1-1 of the BA. It should be noted that surface ownership does not correspond to mineral ownership, and a split-estate of different surface and sub-surface ownership occurs throughout the Project area.

Under the agency preferred alternative, Resource Protection Alternative C, CPE proposes to construct, drill, operate, maintain, and ultimately reclaim up to 271 conceptual and exploratory oil and natural gas wells and ancillary facilities within the Randlett EDA on the Uintah and Ouray Indian Reservation in Uintah County, Utah. The 271 new wells will be drilled from 139 new single well pads, 18 new multiple well pads, and 96 existing well pads. The life of the Project is anticipated to be 35 years, which is based on the last productive well drilled in the last year of the 5-year drilling phase, and anticipated 20-year life of that producing well, and an estimate 10 years to achieve successful final reclamation. Up to five drilling rigs will be operating simultaneously.

CPE proposes to construct:

- 88 vertical wells
- 176 directionally drilled wells
- 7 horizontally drilled wells
- 157 new well pads
- Up to three compressor facilities;
- Up to two water treatment facilities for recycling, distribution, and injection of produced water;
- Up to five salt water disposal wells;
- Up to 9 injector wells for a pilot waterflood injection project;
- Up to two waterflood injector facilities;
- Up to 15 central tank batteries (CTBs) for oil and produced water collection;
- Up to three oil storage areas; and
- Up to two equipment storage areas.
- 41.3 miles of new or upgraded unpaved access road
- 41.3 miles of surface gathering and trunk pipeline, collocated with roads
- 41.3 miles of buried water pipelines, collocated with roads

Estimated short and long-term surface disturbance is summarized in table 2.1.9.1 from the EA and included below as Table 1. Proposed new single well pads will result in approximately 3 acres of initial surface disturbance and multiple well pads will have approximately 5 acres of associate

ED_004016P_00013422-00044

disturbance, depending on the number of wells per pad. For the 96 wells proposed on existing well pads, no modifications to the existing well pads, access roads, or pipelines are anticipated. Proposed wells may be drilled using either conventional methods or using a closed loop drilling system, depending on location.

New and improved access roads will be developed with a 100 foot right-of-way (ROW), resulting in 41.3 miles of new or improved roads. CPE proposes to install 41.3 miles of buried water pipeline, surface oil emulsion and natural gas pipelines within the 100 foot road ROW. Surface pipelines will consist of polyethylene or steel pipe, depending on service, with sizes ranging between 3 to 12 inches in diameter, depending on whether the pipeline is used as a gathering or trunk line. Heating trace lines for the oil emulsion lines will be two inches in diameter and will be attached to the oil lines for heat tracing. Water pipelines will be buried to prevent freezing and located on the opposite side of the road from product surface lines. It is possible that 10 percent of the pipeline will be cross-country and not collocated within the road ROW.

The total anticipated surface disturbance for the Project is 1,050 acres.

Table 1. Estimated Total Surface Disturbance under Alternative C- Resource Protection Alternative

Project Feature	Quantity	Total Short-term Disturbance (acres)	Total Long-term Disturbance (acres)
New Wells			
Vertical Wells	88	-	-
Directional Wells	176	-	-
Horizontal Wells	7	-	-
Subtotal for New Wells	***271***	-	-
Well Pads			
Existing Well Pads	96	-	-
New Single-Well Pads[1]	139	417	208.5
New Horizontal or Multi-Well Pads[1]	18	90	27
Expanded Well Pads	0	-	-
Subtotal for Well Pads	***253***	***507***	***235.5***
New Utility Corridors			
Co-located Access Road and Pipeline Corridors[2]	41.3 miles	407.0	241.0
Subtotal for Utility Corridors	***41.3 miles***	***407.0***	***241.0***
Facilities[3]			
Compressor Stations	3	15	15

ED_004016P_00013422-00045

Project Feature	Quantity	Total Short-term Disturbance (acres)	Total Long-term Disturbance (acres)
Water Treatment Facilities	2	10	10
Saltwater Disposal Wells	5	2.5	2.5
Waterflood Injector Wells	9	27	13.5
Pilot Waterflood Injector Facilities	2	-	-
Central Tank Batteries	15	52.5	52.5
Oil Storage Areas	3	9	9
Equipment Storage Areas	2	20	20
Subtotal for Facilities	***41***	***136***	***122.5***
TOTAL[4]	**NA**	**1,050.0**	**599.0**

[1] The initial surface disturbance for vertical or directional single-well pads is estimated at three acres. The initial surface disturbance for horizontal or multi-well pads is estimated at five acres. The long-term disturbance for both pads is estimated at 1.5 acres.

[2] The short-term disturbance acreage for co-located roads and pipelines ROWs is based on a 100-foot-wide short-term ROW width. The long-term disturbance acreage is based on a 55-foot-wide long-term ROW.

[3] Surface facilities were based upon the following sizes: Compressor stations at 5 acres per facility; saltwater disposal facilities at 0.5 acres per facility, CTBs at 3.5 acres per facility, oil storage areas at 3 acres per facility, and equipment storage areas at 10 acres per facility. Waterflood pilot project injection wells would be constructed similar to new single-well pads. Pilot waterflood injector facilities would be constructed on existing pads or proposed well pads and would not result in additional surface disturbance. Central facilities such as compressor stations would not be included in interim reclamation efforts as the entire facility would be needed for the ife of the Project.

[4] Total acreage estimates are based on GIS-software calculations and may not equal total acreage by well pad due to rounding, removal of overlapping development and minute boundary discrepancies. GIS-based calculations are considered more accurate than estimates calculated using simple addition and therefore will be utilized throughout this document.

The Project proposes to use a total of 1,270 acre-feet of fresh water from three water sources for the life of the Project, with an average annual water depletion of 158.75 acre-feet required for a period of eight years. Fresh water for the Project will be obtained from the Duchesne County Conservancy District (WR 47-1817), a source considered historic under the Upper Colorado River Endangered Fish Recovery Program (Recovery Program). Additional water will be obtained from Maurice Harvey Pond (WR 47-1358) and Johnson Water District (WR 47-7478) sources, both considered to be a new depletion by the Recovery Program.

Treated produced water could be recycled and co-mingled with fresh water for use in completion operations and possible future waterflood activities. Approximately half of the water for waterflooding operations will come from produced water that will be treated for injection and the other half will come from fresh water sources; however, for the purpose of providing a conservative water use estimate, it is assumed that all water used for waterflooding operations will come from the fresh water sources identified. Produced water that cannot be recycled will be re-injected at the five proposed salt water disposal wells into selected geologic formations or into two existing salt-water injection wells.

ED_004016P_00013422-00046

Upon abandonment, the operator will reclaim well pads, roads, and pipelines as directed by the surface owner. Reclamation procedures will emphasize the eventual ecosystem reconstruction in order to return the land to a pre-disturbance condition or better. Reclamation procedures include interim reclamation that will quickly stabilize disturbed areas to protect those areas not needed for production from unnecessary degradation. Within six months of finalizing the well construction, drilling and completion phases of the proposed project, all surfaces not needed during the production phase will undergo interim reclamation, weather permitting. CPE will implement measures to control noxious weeds along roadsides, pipeline routes, and well pads. Noxious weed control efforts will primarily consist of chemical treatment and mechanical removal. Reserve pits, if present, will be reclaimed within 12 months of finishing completion activities. Final reclamation, taking place after the lifetime of the well, will return the vegetation and soils in areas of surface disturbance to their original state.

1.1. 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 Colorado River fish, we define the action area to be the Upper Colorado River basin area of influence.

For the purpose of our evaluation of impacts to the *Sclerocactus*, we define the action area to include the area directly disturbed by the action plus a 2,953 foot (900 meter [m]) buffer distance where impacts from fugitive dust can impact *Sclerocactus* individuals, habitat, and pollinators. This buffer distance is derived from evidence that fugitive dust from roads can disperse and negatively impact vegetation 1,312 feet (400 m) from the source (Lewis 2013), and that the average habitat area required by pollinators to sustain nesting and foraging habitat is 1,641 feet (500 m) around an individual plant (Winder 2012); additively this establishes a 2,953 foot (900 m) area of impact. For the purposes of this consultation the action area for the Project includes the Randlett EDA with a 900 meter buffer within the *Sclerocactus* habitat polygon. Therefore, the total action area for *Sclerocactus* is 68,768 acres.

1.2. Applicant and Agency Committed Conservation Measures

In addition to the measures outlined in sections 2.1.10 and 2.1.11of the EA, CPE has committed to the following conservation measures for avoidance and minimization of impacts to *Sclerocactus* and the endangered fish species.

1.2.1. *Four Endangered Upper-Colorado River Fish*

- For the water depletion contribution, the applicant will make a one-time payment which has been calculated by multiplying the Project's average annual depletion of 158.75 acre-feet by the depletion charge in effect at the time payment is made. For Fiscal Year 2016 (October 1, 2015, to September 30, 2016), the depletion charge is $20.87 per acre-foot for the average annual depletion which equals a total payment of $3,313 for this Project. Payment will be provided to the USFWS designated agent, the National Fish and Wildlife Foundation (Foundation), at the time of issuance of the federal approvals from the BIA. The balance will be due at the time the construction commences. The payment will be included by the BIA as a permit stipulation. The amount payable will be adjusted annually for

ED_004016P_00013422-00047

inflation on October 1 of each year based on the Composite Consumer Price Index. All payments should be made to the Foundation:

Deposits by check shall be sent to:
National Fish and Wildlife Foundation,
1133 15th Street, NW, Suite 1100
Washington, D.C. 20005
Attn: Chief Financial Officer

Deposits by EFT shall be sent to:
National Fish and Wildlife Foundation
c/o Bank of America
730 15th Street, NW, Washington, DC, 20005
ABA Bank Transit Number (for Wire): 026009593
ABA Bank Transit Number (for ACH): 054001204
Account Number: 2260 0568 9394

All deposits must include a notation identifying the name of the project for which the deposit is being made.

- The payment will be accompanied by a cover letter that identifies the project and biological opinion number (06E23000-2015-F-0252) 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 payer, 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 Action Agency 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.

1.2.2. *Uinta basin hookless and Pariette cactus*

- CPE will notify our office if disturbance occurs within 100 feet of *Sclerocactus*.

- Herbicide use in suitable or occupied *Sclerocactus* habitat will follow conservation measures in Appendix A of this BO.

1.2.3. *Noxious and Invasive Plant Species*

- Within the Project Area, vehicles will be power washed when leaving an area of high infestation in order to prevent spread of weed seeds to non-infested areas within the Project Area and throughout the basin.
- Herbicide use in suitable or occupied habitat for any federally listed species will follow conservation measures in Appendix A of this BO.

1.2.4 *Western yellow-billed cuckoo*

- Crescent Point will apply noise abatement measures, such as a buried muffler system, to production equipment. During the production phase, measures will be sufficient to ensure

ED_004016P_00013422-00048

noise levels at 500 feet from the source do not generate a greater than 10 decibel increase in noise levels above ambient conditions.

- To ensure that noise levels during the production phase do not exceed a greater than a 10 decibel increase in the ambient noise levels recorded at 500 feet from the source, noise level monitoring will be developed and implemented by Crescent Point.
- Ambient noise level readings will be taken at the edge of the nearest suitable habitat to each well pad prior to construction in order to determine the ambient noise level for that site.

2. STATUS OF THE SPECIES

The purpose of this section is to summarize the best available information regarding the current range wide status of the listed plant species. Additional information regarding listed species may be obtained from the sources of information cited for these species.

Sclerocactus

2.1. Regulatory Status and Taxonomy

Sclerocactus glaucus (Uinta Basin hookless cactus; hereafter *S. glaucus*) was listed as a threatened species in 1979 (44 FR 58870). However, based on more recent genetic studies (Porter et al. 2000), common garden experiments (Welsh et al. 2003), and morphological characteristics (Heil and Porter 2004), we currently recognize *S. glaucus* as three distinct species: *S. brevispinus* (Pariette cactus), *S. wetlandicus* (Uinta Basin hookless cactus), and *S. glaucus* (Colorado hookless cactus). These three species retain their threatened status (74 FR 47112, September 15, 2009). There is no critical habitat designated for these species. In April 2010, we developed a recovery outline for Uinta Basin hookless cactus (USFWS 2010a) and Pariette cactus (USFWS 2010b).

2.2. Distribution and Life History

Sclerocactus occur in Uintah County, Utah along the Green River, White River, and their tributaries. The species also occurs within Duchesne and Carbon Counties. Pariette cactus grows on fine soils in clay badlands derived from the Uinta geologic formation (USFWS 1990). It is found on "stoney, gravelly, hilly terrain," and is frequently, although not always, associated with desert pavement (soil with a high percentage of thin rock fragments covering the surface). Pariette cactus habitat is a sparsely vegetated desert shrubland dominated by saltbush (*Atriplex* spp.), rabbit brush (*Chrysothamnus* spp.), and horse brush (*Tetradymia* spp.) species (USFWS 1990).

Uinta Basin hookless cactus is generally found on coarse soils derived from cobble and gravel stream terrace deposits, or rocky surfaces on mesa slopes at 1,350 to 1,900 meters elevation (4,400 to 6,200 feet) (USFWS 1990; Heil and Porter 2004). Uinta Basin hookless cactus can be found growing with other common desert shrubland plants including shadscale, black sagebrush, and galleta grass. However, the habitat type for Uinta Basin hookless cactus has expanded with recent reports of individual cacti found in habitat that was previously considered unsuitable (multiple survey reports 2013-2015).

In 2013, consistent with our recovery outlines for these species, we developed *Sclerocactus* Core Conservation Areas (CCAs) to guide the protection of important population areas of high cactus

ED_004016P_00013422-00049

density and maintain connectivity across the range of the species (USFWS 2013). The *Sclerocactus* habitat polygon was updated in 2016, but CCAs were not changed. *Sclerocactus* Core Conservation Area 1 (CCA 1), Core Conservation Area 2 (CCA 2), and the *Sclerocactus* habitat polygon were delineated based on pollinator travel distance and density of cactus populations (USFWS 2013, Tepedino 2010). The CCA1 polygons include the densest concentrations of cactus locations and the most restrictive management recommendations. The CCA 1 polygons were developed using a 400-meter buffer around plants to allow for pollinator travel. The CCA 2 polygons include less-dense cactus areas and less restrictive management recommendations, while still maintaining a minimum amount of undisturbed habitat to protect the species. The CCA 2 polygons were developed using a 1,000-meter buffer around plants.

The *Sclerocactus* habitat polygon encompasses CCA 1 and CCA 2 polygons and defines the area in which the Uinta basin hookless cactus and the Pariette cactus, and their potential habitat are likely to be located. The total area of *Sclerocactus* habitat polygon is 516,068 acres. Within the *Sclerocactus* habitat polygon there are 170,964 acres of CCA 2 and CCA 1 habitat. Although *Sclerocactus* populations can be found outside of these CCA habitat polygons, they tend to occur in greater numbers and at higher densities within the polygons. The habitat and CCA polygons will be adjusted as more known locations are documented.

The habitat and CCAs for the Uinta Basin hookless cactus and Pariette cactus are spread across four land ownership types summarized below in Tables 1 and 2.

Table 1. Distribution (acres and percent) of Uinta Basin hookless cactus habitat by landowner type. For the total acreage column, all larger polygons include the acreage of the smaller polygons. Numbers are rounded to the nearest whole number.

Uintah Basin hookless cactus					
	State (Acres)	**Private**	**Tribal**	**BLM**	**Total**
Potential habitat polygon	43,287	11,940	109,534	240,215	404,978
	11%	3%	27%	59%	
CCA 2	9,514	1,678	23,194	58,002	92,389
	10%	2%	25%	63%	
CCA 1	2,269	245	7,024	17,384	26,924
	8%	1%	26%	65%	

ED_004016P_00013422-00050

Table 2. Distribution (acres and percent) of Pariette cactus habitat by landowner type. For the total acreage column, all larger polygons include the acreage of the smaller polygons. Numbers are rounded to the nearest whole number.

Pariette cactus					
	State (Acres)	**Private**	**Tribal**	**BLM**	**Total**
Potential habitat polygon	**4,518**	**38,473**	**35,925**	**32,172**	111,090
	4%	35%	32%	29%	
CCA2	**1,569**	**3,742**	**13,188**	**18,206**	36,704
	4 %	10%	36%	50%	
CCA1	**201**	**1,101**	**6,435**	**7,209**	14,947
	1%	7%	43%	48%	

The distribution of *Sclerocactus* individuals is not even across the landscape or landownership status. Table 3 below shows the total number and percent of known individuals within each landowner category.

Table 3. Distribution of Uinta Basin hookless cactus individuals by landowner type.

Species	**Tribal**	**State**	**Private**	**Federal**	**Total #**
Pariette cactus	30,445	637	3488	3536	38,106
	80%	**2%**	**9%**	**9%**	
Uinta Basin hookless cactus	47,724	3,115	7,598	40,105	98,542
	48%	**3%**	**8%**	**41%**	
Hybrid	4,223	600	758	7,431	13,012
	32%	**5%**	**6%**	**57%**	
TOTAL *Sclerocactus*	82,392	4,352	11,844	51,072	149,660
	55%	**3%**	**8%**	**34%**	

Both of these *Sclerocactus* are outcrossing species, meaning they require pollen from the flower of a different plant to produce viable seed (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), pollinate the Pariette and Uinta Basin hookless cactus. These bees can travel from 0.4 to 1 kilometer (km) between plants (Tepedino pers. Comm. 2010). Other insects, including ants and beetles, may also pollinate Uinta Basin hookless cactus (USFWS 1990), though both are predominately pollinated by ground-nesting bees (Tepedino et al. 2010). Limiting the amount of fragmentation and disturbance within the habitat of Uinta Basin hookless cactus is important to maintain adequate pollinator habitats and healthy cactus populations.

The life history and population dynamics of this species is poorly known, but they are thought to be long-lived perennials, usually flowering after three or four years. There is early population demographic and population trend data for both *Sclerocactus* that shows an observed decline in population size and growth rate over a three year period from 2012-2014 (SWCA 2015). Population viability analysis also shows a negative population growth vital rate of 0.89 for the *Sclerocactus*. Modeled data out to 10-years also shows a decline both in population growth rate and population size (SWCA 2015). We recognize that this data covers a short period of time and that long-term data are required in order to fully understand the population trends. Information from this study will be updated as it becomes available.

ED_004016P_00013422-00051

Additional information on these species' life histories, population dynamics, status, and distribution is described in detail within the "Recovery Plan for the Uinta Basin Hookless Cactus" (USFWS 1990) and the more recent recovery outlines (USFWS 2010a; Service 2010b).

2.3. Threats to the Species

Ongoing and proposed oil and gas development are the primary threats to the *Sclerocactus* from the combined impacts of road and well pad development, fugitive dust, erosion, isolation of populations due to habitat fragmentation, impacts to pollinators and seed dispersers, increased access by off-road vehicles and illegal collectors due to an expanded road network, and pesticide and herbicide use (BLM 2008). These species are also sought by cacti and succulent collectors around the world (USFWS 2010a).

Habitat loss associated with energy development is a major threat across the known range. There are 8,726 existing oil and gas well locations within the *Sclerocactus* habitat polygon. We used GIS analysis to calculate the amount of disturbance in CCA 1, CCA 2, and the *Sclerocactus* habitat polygons by estimating that there are 5 acres of disturbance associated with each well. For every additional well on a shared well pad, we estimate 0.25 acres of additional disturbance. Thus, in May of 2015 we calculated that approximately 26,505 acres (4.9 percent) of the *Sclerocactus* habitat polygon is already disturbed by oil and gas development. Energy related surface disturbance levels in CCA 2 units range between 0 to 12.2 percent and between 0 to 11 percent within the CCA 1 areas.

Habitat fragmentation is a primary direct threat to Uinta Basin hookless cactus. The primary sources of habitat fragmentation are the increased number of access roads, pipeline and other utility ROWs, and long-term surface disturbance from well pads and associated facilities. The anthropogenic fragmentation of plant habitats can decrease species density (Mustajarvi *et al.* 2001) and result in isolated, smaller populations that are more prone to extinction. Decreased species density has the potential to adversely impact pollination and reproductive success of *Sclerocactus* species (Mustajarvi *et al.* 2001).

Surface disturbance due to energy development, roads, off-road vehicle use, and livestock disturbance can lead to increased dust, erosion and storm water runoff that can impact the *Sclerocactus*. Construction activities, access roads, and vehicular traffic within and near occupied habitats increase fugitive dust and particulates that negatively affect the *Sclerocactus*. Dust accumulation is higher near roads, with fugitive dust depositing up to 984 feet from the source (Everett 1980). Dust accumulation may adversely impact photosynthesis, respiration, transpiration, water use efficiency, leaf conductance, growth rate, gas exchange, and growth (Eller 1977; Spatt and Miller 1981; Thompson et al. 1984; Farmer 1993; Sharifi et al. 1997; Trombulak and Frissell 2000; Hobbs 2001, Lewis 2013). In the Uinta Basin region of Utah, dust has been demonstrated to reduce reproductive success of the federally endangered shrubby- reed-mustard out to a distance of 400 meters from the edge of a dirt road (Lewis 2013). Erosion and runoff from surface disturbing activities can have direct impacts to cacti from burying to direct removal of individuals. Erosion and runoff can be natural events, but are often worsened by human activities such as vegetation removal and alteration of stream courses, making these events more catastrophic. These augmented events can lead to greater damage to native ecosystems through additional scour and burial of soils and plants. Increases in dust, erosion, and storm water runoff interact cumulatively with other negative effects to further fragment and disturb *Sclerocactus* populations. To reduce

ED_004016P_00013422-00052

these impacts from dust the USFWS Utah Field Office implements a minimum 300-foot avoidance area for all permanent and vegetation clearing activity in the Uinta Basin region (USFWS 2013).

A majority of *Sclerocactus* cactus potential habitat on BLM land is leased for grazing. At least 36 BLM grazing allotments overlap with the *Sclerocactus* habitat polygon, with both cattle and sheep grazing annually or on deferred rotation, depending on the specific allotment. On Tribal lands, BIA range units also occur throughout the *Sclerocactus* habitat polygon. Livestock grazing results in cactus mortality when livestock trample, nick, cut, break individual cacti (USFWS 1990; Utah Natural Heritage Program 2006; BLM 2008; 72 FR 53215, September 18, 2007, Brunson 2013). Damage from livestock is known to occur and has been documented in field observation reports (Brunson 2013, BLM 2015, Reisor 2013). Due to lack of systematic monitoring we do not know the frequency or extent of impacts livestock has on the plants and its habitat. Through the trampling of soil livestock can degrade the habitat by compaction of the soil and reducing water filtration, removing biological soil crust (Castellano 2007; Sharrow 2007). Such habitat degradation can reduce seedling recruitment and reproductive output, and stress individuals by reducing water availability (Kuske *et al.* 2012; Schwinning *et al.* 2008).

Overgrazing is the continued heavy grazing by domestic livestock beyond the recovery capacity of forage plants (Vallentine 1990). Overgrazing can result in degradation of western ecosystem functions and structures (Fleischner 1994). Overgrazing can facilitate the establishment of invasive species like cheatgrass (Masters and Sheley 2001), which are difficult to eradicate and tend to outcompete native vegetation, including cacti. Invasive weeds (including *Bromus tectorum* and *Halogeton glomeratus*) are prevalent on BLM lands in the range of *Sclerocactus* and less so on tribal lands where grazing has been concentrated in areas outside of suitable cactus habitat (72 FR 53214, September 18, 2007).

Accidental damage or death occurs when a cactus is kicked, stepped on, or driven over by humans or livestock inadvertently. Roads and pipelines create permanent pathways for humans and livestock to utilize as easy travel corridors across a rugged landscape, which can result in attracting human and livestock traffic into these corridors through occupied habitat. As road and pipeline density increases within occupied habitat, the chance for accidental damage or death increases as human or livestock venture off the existing disturbed area into undisturbed occupied habitat. Additionally, livestock grazing may exacerbate this situation by focusing grazing within the remaining interspaces between roads and wells, leading to further accidental damage or death of *Sclerocactus* individuals.

Illegal collection of Uinta Basin hookless cactus historically is one of the primary threats to the conservation and recovery of this species (BLM 2008). The increased number of access roads from energy development within and near occupied habitats allows greater access to rare plant populations and potentially could increase illegal collection of the species.

Noxious and invasive plant species directly compete for resources with native species such as *Sclerocactus* and alter the habitat making it more difficult for the species to survive and thrive. Seeds from invasive species are often carried by vehicles and spread via vehicle-caused air turbulence (Forman and Alexander 1998). Within the action area, noxious and invasive species are often present in the soil seed bank, and once an area is disturbed, these species can quickly establish. In addition, competition from noxious and invasive species can further reduce special status species' population size. Invasive plants spread more easily when other land uses such as livestock grazing are concentrated within the remaining interspaces between roads and wells.

ED_004016P_00013422-00053

The cumulative pressures of energy development and grazing can lead to more invasive plants in *Sclerocactus* habitat.

The spread of noxious and invasive plants may change species composition within native plant communities. This may lead to increased livestock grazing on native grasses and shrubs that act as "nurse" plants for immature cacti. Nurse plants create an environment that is more favorable for successful establishment of immature cacti by providing shade, moisture, and protection from trampling. Additionally, habitat alteration from invasive species can alter pollinator composition in the area, thereby possibly reducing the effectiveness of pollination within the native community. All of these connected actions reduce the ability of *Sclerocactus* to thrive within its native habitat.

3. ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as follows:

- The past and present impacts of all Federal, State, or private actions and other human activities in the action area;
- The anticipated impacts of all proposed State or Federal projects in the action area that have already undergone formal or early section 7 consultation; and
- The impact of State or private actions which are contemporaneous with the consultation process.

3.1. Status of the Species within the Action Area

Sclerocactus

As described in the Status of the Species (section 2), available demographic information indicates that Uinta Basin hookless cactus and Pariette cactus are declining range-wide, including portions of the action area. Approximately 34,161acres (50 percent) of the action area is within the *Sclerocactus* habitat polygon. The action area represents 6.6 percent of the *Sclerocactus* habitat polygon and includes 43,080[1] (28.7 percent) of known *Sclerocactus* individuals. This equates to 9,803[1] (23 percent) Pariette cactus individuals and 33,277[1] (32.3 percent) Uinta Basin hookless cactus individuals within the action area. The USFWS protocol level clearance surveys have not been conducted throughout the action area, and it is reasonable to assume that there are more *Sclerocactus* individuals within the action area than are currently recorded in our database.

The action area contains 967 acres of CCA 2 habitat and 32 acres of CCA 1 habitat in the Upper Green and Upper Pariette units. Much of the Randlett EDA had not been surveyed at the time of the 2013 core area polygon designations and is therefore not included in the core area analysis. Based on more recent survey information from the CPE 3D seismic project in 2013, it is likely that additional portions of the action area would meet the criteria for CCA 2 and CCA 1 areas. The largest populations of *Sclerocactus* are located in the eastern and western portions of the action area, where *Sclerocactus* are concentrated on the cobble bluffs above the Duchesne river flood plain. In the eastern portion of the action area the cacti are located along the bluffs to the southwest and the northeast of the Duchesne river corridor, while in the western portion the cacti are located to the north and south of the Duchesne river corridor.

[1] Totals of *Sclerocactus* individuals include those individuals identified as hybrid individuals in the data set. For analysis, fifty percent of the hybrid individuals are attributed to each *Sclerocactus* species.

ED_004016P_00013422-00054

3.2 Factors Affecting the Species within the Action Area

Sclerocactus

The same threats as described above in section 2.1.3, Threats to the Species, are present throughout the Project's action area. Existing oil and gas energy development is a significant impact throughout *Sclerocactus* habitat. There are 420 existing wells in *Sclerocactus* habitat within the action area. We used available GIS data (UDOGM 2015) and estimated 5 acres per well average disturbance area (BLM 2012) to estimate the approximate amount of surface disturbance in the action area. Overall, we estimate that 2,100 acres (6.1 percent) of the *Sclerocactus* habitat polygon within the action area is currently disturbed by oil and gas development.

The majority of the action area occurs within Tribal boundaries and conservation of the *Sclerocactus* and their habitat is governed by the Ute Indian Tribe's *Sclerocactus* Management Plan for the Uintah and Ouray Indian Reservation, Uinta Basin, Utah (hereafter, Tribal Management Plan) (Ute Tribe 2015). The Tribal Management Plan requires clearance surveys out to 100 feet from proposed disturbance and recommends a 100 foot avoidance buffer from *Sclerocactus* individuals. Exceptions to the 100 foot avoidance buffer may be granted at the discretion of the Tribe, which can allow disturbance up to 25 feet from a *Sclerocactus* individual. These survey and avoidance buffers are less than the 300 foot survey and avoidance buffer recommended by our protocols (USFWS 2011 and 2014).

Increased road construction and use is associated with ongoing and proposed energy developments in the action area. The distance from a road at which dust can affect vegetation varies (Everett 1980; Spatt and Miller 1981; Walker and Everett 1987; Santelmann and Gorham 1988; McCrea 1984; Myers-Smith *et al.* 2006). Dust related impacts are greatest next to roads and impacts attenuate with distance from roads (references summarized in USFWS 2014). We expect impacts to be greatest within 300 feet (91 meters) of dirt access roads (Etyemezian *et al.* 2004; Veranth *et al.* 2003; Lewis 2013; Silver 2007) and therefore recommend a 300 foot avoidance of *Sclerocactus* individuals.

Uintah County is known to have extensive areas of noxious and invasive plant species (Project EA, 2016), some of which occur within the action area. Seeds from invasive species are often carried and spread by vehicles (Forman and Alexander 1998) and are associated with vehicles, roads, and other corridors. The spread of invasive nonnative species is considered the second largest threat to imperiled plants in the United States (Wilcove *et al.* 1998), and is second only to habitat loss as factors responsible for biodiversity declines (Randall 1996).

Approximately 9,359 acres (18 percent) of the action area are classified by Southwest Regional Gap Analysis Project agricultural lands. Agricultural lands increase fragmentation of *Sclerocactus* and pollinator habitat and may result in negative effects to pollinators through pesticide use. In addition, 9,837 acres (18.7 percent) within the action area are located within BIA range units or BLM grazing allotments. In addition to domestic livestock, feral horses are known to occur throughout the action area and negatively impact the cacti. Livestock are known to impact *Sclerocactus* through kicking or trampling, causing soil compaction, spreading of invasive weeds, and reducing pollinator forage.

ED_004016P_00013422-00055

4. EFFECTS OF THE ACTION

The effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Sclerocactus

Impacts to *Sclerocactus* individuals from this Project include an increase of those impacts described in "Status of the Species: Threats" (see section 2). Particularly, we expect increases in fugitive dust, pollinator disturbance, weed invasion, accidental damage to individuals, illegal collection, and overall habitat fragmentation (Eller 1977; Spatt and Miller 1981; Thompson et al. 1984; Farmer 1993; Sharifi et al. 1997; Forman and Alexander 1998; Trombulak and Frissell 2000; Hobbs 2001; BLM 2008; Tepedino et al. 2010, BLM) due to increased human use and surface disturbances associated with this Project.

The proposed Project will construct 271 new oil and gas wells from 157 new well pads and 96 expanded well pad, resulting in 507 acres of new disturbance. New and upgraded access roads and new pipeline corridors will result in 407 acres of new disturbance. New surface disturbance will be minimized by drilling multiple wells from the same well pads, maximizing use of existing roads and infrastructure, and co-locating right-of-ways. The total conceptual short-term disturbance for this Project is 1,050 aces.

Approximately 500.3 acres of short-term disturbance and approximately 280 acres of long-term disturbance will occur within the *Sclerocactus* habitat polygon. The 500.3 acres of new disturbance will increase the overall level of disturbance throughout the *Sclerocactus* habitat polygon from 5.14 percent to 5.23 percent. A single well pad, or 3.5 of the total acres of disturbance, will occur within the Upper Green CCA 2 unit within the *Sclerocactus* polygons, but will not measurably increase the percent area disturbed within the unit. No new disturbance will occur within the CCA 1 *Sclerocactus* polygons.

Approximately 43,080 (28.7 percent) *Sclerocactus* individuals throughout the action area and within 2,953 feet (900 meters) of surface disturbing activities will experience indirect impacts from the project, such as dust deposition, increased traffic, weed dispersal, pollinator disruption, and habitat fragmentation.

Under the Tribal Management Plan, *Sclerocactus* individuals will be in closer proximity to surface disturbance and will experience increased negative impacts from fugitive dust, invasive weeds, fragmentation, pollinator, disturbance, and habitat loss. CPE has committed to implement the Tribal Management Plan for this Project, which requires a 100 foot survey and avoidance buffer. Based on GIS analysis of CPE's conceptual infrastructure placements and the USFWS 300 foot buffer, 6,204 (4.1 percent of the total *Sclerocactus* population) *Sclerocactus* individuals could be impacted, including 1,514 (3.4 percent) Pariette cactus individuals and 4,690 (4.5 percent) Uinta Basin hookless cactus individuals which are located within the 300 foot recommended avoidance area.

ED_004016P_00013422-00056

Due to the conservation measures (see, Applicant and Agency Committed Conservation Measures, section 1) committed to by CPE and BIA, direct impacts to *Sclerocactus*, such as crushing, digging, or burying, are not expected as a result of this Project.

Some impacts to *Sclerocactus* resulting from oil and gas development will be minimized through site-specific project design and conservation measures. However, minimizing the impacts cannot entirely negate the larger landscape-level changes such as increased habitat fragmentation and habitat loss, pollinator disturbance, changes in erosion and water runoff, and increased weed invasion (Forman and Alexander 1998; Mustajarvi et al. 2001, BLM 2008). These disturbances will continue to negatively affect *Sclerocactus* species throughout the action area and range of the species.

5. CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the proposed action are not considered under this section because they require separate consultation pursuant to section 7 of the ESA.

Declines in the abundance or range of many special status species are attributable to various human activities on Federal, state, and private lands, such as human population expansion and associated infrastructure development; energy development and associated infrastructure; construction and operation of dams along major waterways; water retention, diversion, or dewatering of springs, wetlands, or streams; recreation, including off-road vehicle activity; expansion of agricultural or grazing activities, including alteration or clearing of native habitats for domestic animals or crops; and introductions of non-native plant, wildlife, or fish or other aquatic species, which can alter native habitats or out-compete or prey upon native species. Many of these activities are expected to continue on State and private lands within the range of various federally protected wildlife, fish, and plant species, and could contribute to cumulative effects to the species within the action area. Species with small population sizes, endemic locations, or slow reproductive rates will generally be more susceptible to cumulative effects.

Non-federal activities have the potential to cumulatively affect *Sclerocactus*, as a significant portion of the species' range occurs on state, private, and tribal lands without federal mineral leases or federal surface rights (see Tables 1, 2, and 3 in Distribution section). Quantified data on the future extent of these activities are difficult to obtain, but we must assume, for the purposes of this assessment, that some level of these activities are reasonably certain to occur, particularly energy and mineral exploration, development, livestock grazing, stone collecting, off-highway vehicle use, and illegal cactus collecting. Where these future activities intersect *Sclerocactus* populations or habitat, they will cumulatively add to the existing and future impacts of activities authorized by federal agencies. *Sclerocactus* individuals on non-federal lands will be negatively impacted by direct loss and disturbance, as well as landscape-scale factors (habitat fragmentation, increased dust, and so on) due to cumulative impacts in the action area. Future projects with no federal nexus have the potential to cumulatively affect *Sclerocactus* species, as a significant portion of these species' ranges occur on state and private lands that are not always subject to section 7 consultations.

ED_004016P_00013422-00057

6. CONCLUSION

After reviewing the current status of Pariette cactus or Uinta Basin hookless cactus and the environmental baseline for the action area; the effects of the proposed action; and the cumulative effects, it is our biological opinion that this project, as described in this biological opinion, is not likely to jeopardize the continued existence of Pariette cactus or Uinta Basin hookless cactus.

We base our conclusion on the following:

1) No disturbance will occur within *Sclerocactus* CCA 1,
2) Only 3.5 acres of disturbance will occur in *Sclerocactus* CCA2 and the disturbance within the Upper Green CCA 2 Unit will increase by less than 0.03 percent to a total of 2.71 percent. This is below our recommended disturbance threshold of 5 percent maximum disturbance,
3) Less than one half of a percent of the *Sclerocactus* polygon will be disturbed,
4) Only 3.4 percent of Pariette cactus and 4.5 percent of Uinta Basin hookless cactus occur within 300 feet of disturbance where indirect impacts are greatest, and
5) Site specific *Sclerocactus* surveys will be conducted,reported to our office, and thus inform what areas to avoid during development.
6) No *Sclerocactus* individuals will be damaged, crushed, or buried and mortality will not occur.

7. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the USFWS to include significant habitat modification or degradation that results in death or injury of listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the USFWS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7 (o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Colorado pikeminnow, humpback chub, bonytail, and razorback sucker are harmed from the reduction of water in their habitats resulting from the subject action in the following manner--1) individuals using habitats diminished by the proposed water depletions could be more susceptible to predation and competition from non-native fish; 2) habitat conditions may be rendered unsuitable for breeding because reduced flows would impact habitat formulation and maintenance as described in the biological opinion.

Estimating the number of individuals of these species 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

ED_004016P_00013422-00058

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. 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 158.75 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 BIA as described in the proposed action exempts the BIA and project proponent from the prohibitions of section 9 of the Act. The BIA is responsible for reporting to our office if the amount of average annual depletion is exceeded.

Sections 7(b)(4) and 7(o)(2) of the ESA generally do not apply to listed plant species, therefore we are not providing an incidental take statement for listed plant species in this biological opinion. However, limited protection of listed plants from take is provided to the extent that the ESA prohibits the removal and reduction to possession of Federally listed endangered 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.

This incidental take statement does not constitute an authorization for take of listed migratory birds under the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, or any other Federal statute.

7.1. Reporting Requirements

Data from clearance or spot check surveys for *Sclerocactus*, Ute ladies' tresses, and Yellow-billed cuckoo will be submitted to the BIA by January 31 each year following the event. *Sclerocactus* surveys will also be submitted to the BLM Vernal field office to be incorporated into the species database.

If listed plants are crushed or injured during Project activities, immediate notification must be made to our Salt Lake City Office, at (801) 975-3330, the USFWS Division of Law Enforcement, Ogden, Utah, at (801) 625-5570, and to the BIA (435) 722-4331. Pertinent information including the date, time, location, and possible cause of injury or mortality of each species shall be recorded and provided to our office.

If ground disturbance is permitted by the Tribe to occur within 100 feet of *Sclerocactus* individuals, the USFWS will be notified in a written report. The report shall include the location information, number of cactus, distance from disturbance, and any additional conservation measures implemented.

In order to be exempt from the prohibitions of section 9 of the Act, the BIA must comply with all Recovery Program activities and the monitoring proposed below. The implementing regulations for incidental take require that Federal agencies must report the progress of the action and its impact on the species (50 CFR 402.14(i)).

ED_004016P_00013422-00059

To meet this mandate, the BIA will monitor and report the progress of their action as follows:

1. Submit to our office an annual report of water depletions associated with oil and gas development, including the following information:

- Project name and/or applicant name
- Permit number and/or special use authorization
- General location and legal description
- Depletion amount in acre-feet
- Timing of depletion
- Identify if new or historic depletion
- Sub-total water depletion (acre-feet) for each applicant
- Total depletion for the entire year in acre-feet
- Total number of APDs approved
- Total number of wells spudded

Reports shall be due to our office on a yearly basis by October 31. The address for our office is:

U.S. Fish and Wildlife Office – Utah Field Office
2369 West Orton Circle, Suite 50
West Valley City, Utah 84119

Upon locating dead, injured; or sick listed species, immediate notification must be made to the USFWS Utah Field Office at (801) 975-3330 and the USFWS Division of Law Enforcement, Ogden, Utah, at (801) 625-5570. Pertinent information including the date, time, location, and possible cause of injury or mortality of each species shall be recorded and provided to the Service. Instructions for proper care, handling, transport, and disposition of such specimens will be issued by the USFWS Division of Law Enforcement. Care must be taken in handling sick or injured animals to ensure effective treatment and in handling dead specimens to preserve biological material in the best possible state.

8. REASONABLE AND PRUDENT MEASURES

No reasonable and prudent measures are included for this Project. As described above *(Colorado River Fish Recovery Program-Background)*, the Recovery Program minimizes the effects of water depletions to critical habitat. We provide additional recommendations for the *Sclerocactus* species (see Conservation Recommendations, below).

9. CONSERVATION RECOMMENDATIONS

As optional conservation measures we recommend they following for the *Sclerocactus* species:

- We recommend that all Uinta Basin hookless cactus individuals be avoided by a minimum of 300 feet in order to avoid all impacts to the species.
- We recommend that all Applicant Committed Conservation Measures apply where *Sclerocactus* individuals are within 300 feet of surface disturbance.
- We recommend that the mitigation fee to be contributed to the *Sclerocactus* Mitigation Fund be based on the 300 foot disturbance buffer in order to accurately account for the *Sclerocactus* habitat being impacted. The total recommended payment is in table 4 below.

ED_004016P_00013422-00060

Table 4. Recommended Mitigation Payment

Disturbance Acres	Multiplier	Fee
CCA 2: 3.5	$6,260	$21,910
Suitable habitat: 496.8	$2,550	$1,266,840
TOTAL		**$1,288,750**

10. REINITIATION – CLOSING STATEMENT

This concludes formal consultation on the action outlined in your request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action was retained (or is authorized by law) and if: (1) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (2) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (3) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

We appreciate your commitment in the conservation of endangered species. If the project changes or it is later determined that the project affects listed species differently than identified above; it may become necessary to reinitiate section 7 consultation. If you require further assistance or have any questions, please contact Rita Reisor at (801) 975-3330 extension 135.

ED_004016P_00013422-00061

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ED_004016P_00013422-00064

Appendix A

Conservation Measures for Herbicide Use within Suitable Habitat for Federally Listed Species for Non-Aquatic Infestations

General Conservation Measures

- All projects involving surface disturbance will include a weed management plan (WMP). The WMP may be integrated into an overall reclamation plan if desired.
- All herbicide treatments will be applied by a Utah licensed Pesticide Applicator. If licensed in another state, a reciprocal license may be obtained through the Utah Department of Agriculture website.
- A Pesticide Use Plan (PUP) will be submitted with the WMP or reclamation plan for all BIA-administered lands.
- Weeds will be controlled within the disturbance areas, including borrow areas along roads.

Reseed if feasible to promote competition with weeds.

- All disturbance areas will be monitored for noxious weeds annually, for a minimum of three growing seasons following completion of project or until desirable vegetation is established. Monitoring reports should include shapefiles (compatible with ArcMap) of all noxious weed species found. When possible, data will include percent cover, size of infestation, and treatment applied.
- The use of dragging (before seed set), manual control, and biological control will be considered before the use of chemicals. Dragging will not occur after seed set.
- Weeds will be controlled prior to seed set annually (mechanically, biologically, chemically, etc), or at the appropriate time for the individual species. Some populations may require more than one treatment per year.
- Only the herbicides listed in tables 3 and 4 below will be permitted for use.
- Herbicides may be applied solely through the following methods (Table 1):
  - backpack spot sprayer (preferred),
  - wick application (preferred),
  - bottle drip (for cut stump treatments),
  - low (preferred) or high boom sprayers mounted on truck or ATV,
- All herbicide applications must strictly follow label instructions.
- When necessary, the potential for wind erosion of herbicide-contaminated soil will be evaluated on a project level basis and mitigation will be incorporated into weed management plans or PUPs. Mitigation could include: reseeding, strip spraying strips,

ED_004016P_00013422-00065

using berms, or other feasible methods.

- Except within designated critical habitat for Colorado River fishes, non-aquatic herbicide application will maintain the following buffer distances from open water (e.g., springs, wetlands, rivers, streams, ponds, and lakes) unless a greater distance is specified on the herbicide label:
    - 25 feet boom truck application
    - 10 feet backpack sprayer application
- Aquatic formulation of herbicides can be applied up to the edge of open water, in accordance with label instructions.
- Empty herbicide containers will be disposed of according to label instructions.
- No cleaning of equipment near moving or open water, or near drainages.
- Herbicides will only be transported when properly secured in sealed and labelled containers.
- Herbicides, surfactants and other chemicals will be stored and mixed at least 50 feet from the edge of any body of water and outside of the riparian zone.
- Broadcast application (i.e., with use of ATV/UTV sprayers, or backpack sprayers over a continuous area greater than 0.25 acres) of herbicides with slight or greater toxicity (Toxicity Class I, II, or III) in critical habitat for endangered Colorado River fish (the 100-year floodplain of the Green, Colorado, Yampa, and White Rivers) is not conducted when the 100-year floodplain can be inundated by high water (generally May 1 to July 15) to avoid potential adverse effects to listed fish.
- The BIA weed coordinator will coordinate all herbicide applications within a half mile of federally-listed threatened and endangered plants or populations.
- For all herbicide applications within 0.5 miles of federally-listed threatened and endangered plants, the applicant will provide the BIA with a shapefile, map, or coordinates of project locations with the PUP. The BIA will include a map of buffer zones around special status plants specific to each PUP, and will indicate any treatment areas that require additional mitigation measures.
- When PUPs or WMPs are approved, the BIA will provide maps and lists of wellpads or treatment areas where these mitigation measures will apply. Maps and lists will be attached to the signed PUP or WMP.

Conservation Measures for Federally Listed Plants

The following mitigation measures apply to any herbicide treatment that occurs within **0.5 miles** of federally listed plant species locations:

- No herbicide spraying when wind speeds exceed 6 miles per hour (measured on-site).
- No aerial application.
- Use typical application rates as opposed to maximum rates (Table 2).

ED_004016P_00013422-00066

- Use the largest droplet size possible while still effectively covering target weeds.
- High boom application is allowed; however, low-drift application methods—including hand gun, low boom, and wick—are preferred.
- Use granular formulas when available.
- Incorporate drift reducing agents when feasible and according to label specifications.
- No off-road travel within 0.5 miles of special status plant populations, unless prior approval by USFWS botanist.

Mitigation Measures for Treatment within Low-Risk, Herbicide-Specific Buffers

These conservation measures will be applied when working within the low-risk buffers identified in tables 3 and 4.

- Use manual spot treatments including herbicide injection, wick application, cut stump, or backpack sprayers.
- Where weed infestations exceed the disturbance area(s), prior to treatment, herbicide applicators would accompany a BIA-approved botanist on meandering surveys to identify "no spray" areas adjacent to special status plants.
- A BIA-approved botanist will remain onsite during herbicide treatment to ensure that special status plants are avoided.
- No herbicide application during flowering season of any special status plants in or near the treatment area.
- Store herbicide containers away from special status plants in spill proof containers.
- Use drift reducing agents.
- The BIA, in coordination with USFWS, may develop additional site-specific conservation measures for sensitive status plants as needed.
- When PUPs or WMPs are approved, the BIA botanist will provide maps and lists of wellpads or treatment areas where these mitigation measures would apply. Maps and lists would be attached to the signed PUP or WMP.

Conservation Measures for Western yellow-billed cuckoo

Suitable nesting and foraging habitat for western yellow-billed cuckoo will be identified and mapped according to the Utah Ecological Services Field Office 2015 Guidelines for the identification of suitable habitat in Utah. Mapping will be submitted to the Utah Ecological Services Field Office for verification prior to any herbicide use. The following conservation measures will be applied within 0.5 mile of western yellow-billed cuckoo suitable habitat:

- No aerial application of herbicides will be conducted.
- Herbicides with toxicity to insects or amphibians will not be used between May 1 – August 31.

ED_004016P_00013422-00067

Table 1. Summary of Chemical Application Methods[1]

Method	Description
Hand/Selective Treatment	Selective treatment of individual plants to avoid spraying other desirable plants. There is a low likelihood of drift or delivery of herbicides away from treatment sites. This method is used in sensitive areas, such as near water, to avoid getting any herbicide on the soil or in the water. Hand/Selective methods could be done under more variable conditions than spot spraying or broadcast spraying). Specific methods include: a. Wicking and Wiping - Involves using a sponge or wick on a long handle to wipe herbicide onto foliage and stems. Use of a wick eliminates the possibility of spray drift or droplets falling on non-target plants. Herbicide can drip or dribble from some wicks. b. Foliar Application - These methods apply herbicide directly to the leaves and stems of a plant. An adjuvant or surfactant is often needed to enable the herbicide to penetrate the plant cuticle, a thick, waxy layer present on leaves and stems of most plants. There are several types of foliar application tools available. c. Basal Bark - This method applies a 6 to 12 inch band of herbicide around the circumference of the trunk of the target plant, approximately one foot above ground. The width of the sprayed band depends on the size of the plant and the species' susceptibility to the herbicide. The herbicide can be applied with a backpack sprayer, hand-held bottle, or wick. d. Frill or Hack and Squirt - The frill method, also called the "hack and squirt" treatment, is often used to treat woody species with large, thick trunks. The tree is cut using a sharp knife, saw, or ax, or drilled with a power drill or other device. Herbicide is then immediately applied to the cut with a backpack sprayer, squirt bottle, syringe, or similar equipment. e. Stem Injection - Herbicides can be injected into herbaceous stems using a needle and syringe. Herbicide pellets can also be injected into the trunk of a tree using a specialized tool. f. Cut-stump - This method is often used on woody species that normally resprout after being cut. Cut down the tree or shrub, and immediately spray or squirt herbicide on the exposed cambium (living inner bark) of the stump. The herbicide must be applied to the entire inner bark (cambium) within minutes after the trunk is cut. The outer bark and heartwood do not need to be treated since these tissues are not alive, although they support and protect the tree's living tissues. The cut stump treatment allows for a great deal of control over the site of herbicide application, and therefore, has a low probability of affecting non-target species or contaminating the environment. It also requires only a small amount of herbicide to be effective.
Spot Spraying	Spot applicators spray herbicide directly onto small patches or individual target plants only and avoid spraying other desirable plants. These applicators range from motorized rigs with spray hoses to backpack sprayers, to hand-pumped spray or squirt bottles, which can target very small plants or parts of plants.

ED_004016P_00013422-00068

Method	Description
Broadcast (Boom) Spraying	A boom, a long horizontal tube with multiple spray heads, may be mounted or attached to a tractor, ATV (all terrain vehicle) or other vehicle. The boom is then carried above the invasive plants while spraying herbicide, allowing large areas to be treated rapidly with each sweep of the boom. Offsite movement due to vaporization or drift and possible treatment of non-target plants can be of concern when using this method. The herbicide is carried in a tank and reaches the nozzles via tubing. All herbicides are metered out from the nozzles in a controlled manner. The nozzle controls the droplet size, the area (or cone) being covered by the herbicide and it could be turned on/off with ease. Some nozzles could rotate. All this flexibility permits the operator to carefully apply herbicide at specific rates over specific areas. Many of the new boom spray operations have very sophisticated electronic monitoring that delivers exact amounts of herbicides and keeps records on rates and areas covered. Offsite movement due to drift and possible treatment of non-target plants could be of concern when using this method. Not all broadcast methods include a boom; boom-less nozzles are currently in use that can reduce the risk of non-target effects. Backpacks may also be used as a broadcast tool, if not directed at individual plants.
Aerial	Herbicides applied aerially by helicopter or fixed-wing aircraft.

[1]Table from Invasive Plant Management — Kemmerer, Pinedale, and Rock Springs Field Office Environmental Assessment, 2009

ED_004016P_00013422-00069

Table 2. Recommended herbicide application rates[1] (as analyzed in the PVEIS and PEIS risk assessments, BLM 2007a and 2015).

Herbicide Application Rates (in a.i. or a.e. per acre)			
Herbicide	**Permitted for Use on BLM**		**Average application rate within the VPA, 2014**
	Typical	Maximum	
Bromacil	4.0 lbs. a.i.	12.0 lbs. a.i.	4.07 lbs. a.i.
Chlorsulfuron	0.047 lb. a.i.	0.141 lb. a.i.	0.0031 lb. a.i.
Clopyralid	0.35 lb. a.e.	1.0 lb. a.e.	0.0114 lb. a.e.
2,4-D	1.0 lb. a.e.	1.9 lbs. a.e.	0.95 lb. a.e.
Dicamba	0.25 lb. a.e.	2.0 lbs. a.e.	1 lb. a.e.
Diuron	6.0 lbs. a.i.	20.0 lbs. a.i.	4.83 lbs. a.i.
Glyphosate	2.0 lbs. a.e.	7.0 lbs. a.e.	1.92 lbs. a.e.
Hexazinone	1.0 lbs. a.i.	8.0 lbs. a.i.	1.8 lbs. a.i.
Imazapyr	0.45 lb. a.e.	1.5 lbs. a.e.	NA
Metsulfuron methyl	0.03 lb. a.i.	0.15 lb. a.i.	NA
Picloram	0.35 lb. a.e.	1.0 lb. a.e.	0.25 lb. a.e.
Sulfometuron methyl	0.14 lb. a.i.	0.38 lb. a.i.	0.135 lb. a.i.
Tebuthiuron	0.5 lb. a.i.	4.0 lbs. a.i.	NA
Triclopyr	1.0 lb. a.e.	10.0 lbs. a.e.	NA
Diflufenzopyr + Dicamba	0.2625 lb. a.e.	0.35 lb. a.e.	NA
Imazapic	0.0313 lb. a.e.	0.1875 lb. a.e.	NA
Aminopyralid	0.078 lb. a.e.	0.11 lb. a.e.	NA
Fluroxypyr	0.25 lb a.e.	0.5 lb. a.e.	NA
Rimsulfuron	0.0469 lb. a.i.	0.0625 a.i.	NA

[1] Table taken from Programmatic Environmental Impact Statement for Vegetation Treatments Using Pesticides on BLM Lands in 17 Western States (PVEIS), completed in 2007, and the Programmatic Environmental Impact Statement for Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States (PEIS), completed in 2015.

ED_004016P_00013422-00070

Table 3. Chemical-specific low-risk buffers from TES plant species for the proposed action, BLM-evaluated herbicides, from the 2007 PVEIS and 2015 PEIS.

Application Type[c]	Bromacil	Chlorsulfuron	Dicamba[a]	Diflufenzopyr[b]	Diuron	Imazapic	Sulfometuron Methyl	Tebuthiuron	Aminopyralid	Fluroxypyr	Rimsulfuron
Buffer Distance (feet) from TES Plants, PVEIS Table 4-12 and PEIS Table 4-8											
Low Boom	1200	1000	1050	100	1000	0	1100	0	100	100	100
High Boom	1200	1000	1050	900	1000	0	1000	50	400	400	400
Aerial	NA	1400	NA	NA	1100	0	1500	NA	1800	1200	1600

[a]The buffer distances for Dicamba are the same for typical as opposed to maximum rates and this is the only herbicide applied in the VFO that has an application rate that is higher than the typical rate.

[b]Diflufenzopyr is currently registered with the U.S. Environmental Protection Agency (EPA) for use in formulation with dicamaba, known as Overdrive ®. The BLM will use diflufenzopyr as a stand-alone active ingredient when the ingredient is registered for use by the EPA.

[c]Low boom is 20 inches above the ground and high boom is 50 inches above the ground.

Table 4. Chemical-specific low-risk buffers from TES plant species for the proposed action, USDA Forest Service-evaluated herbicides, from the 2007 PVEIS and 2015 PEIS.

Application Type[a]	2,4-D	Clopyralid	Glyphos-ate	Hexazi-none	Imazapyr	Metsul-furon Methyl	Picloram	Triclopyr
Buffer Distance (feet) from Special Status Plants, Proposed								
Low Boom	100	500	25	100	1000	1000	1000	300
High Boom								500
Aerial			300					

[a]Low boom is 20 inches above the ground and high boom is 50 inches above the ground.

ED_004016P_00013422-00071

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ED_004016P_00013422-00072