Draft Environmental Impact Statement for the Enefit American Oil Utility Corridor Project

DOI-BLM-UT-G010-2014-0007-EIS
Case File: UTU-89449 (Oil Shale Crude Pipeline)
UTU-89451 (Water Line)
UTU-89452 (Natural Gas Pipeline)
UTU-89453 (Power Line)
UTU-91398 (Road Realignment)

U.S. Department of Interior
Bureau of Land Management
Vernal Field Office
170 South 500 East
Vernal, Utah 84078

April 2016

BLM Mission

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Vernal Field Office
170 South 500 East
Vernal, UT 84078

April 2016

IN REPLY REFER TO:
1790
LLUTG01000
DOI-BLM-UT-G010-2014-0007-EIS

Dear Reader:

Enclosed for your review is the Draft Environmental Impact Statement (EIS) for the Enefit American Oil Utility Corridor Project (Utility Project). The Bureau of Land Management (BLM) prepared the Draft EIS in consultation with cooperating agencies and in accordance with the National Environmental Policy Act of 1969 (NEPA), including Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provision of NEPA at 40 Code of Federal Regulations (CFR) Parts 1500-1508; U.S. Department of Interior guidance at 43 CFR Part 46; and other applicable laws and directives.

The BLM Vernal Field Office has prepared a Draft EIS to analyze and disclose the impacts of granting a right-of-way across federal land to Enefit American Oil (Enefit) and Moon Lake Electric Association for the construction and operation of five rights-of-way for utilities and a road across BLM-administered lands. As proposed, 19 miles of water supply pipeline, 9 miles of natural gas supply pipeline, 11 miles of oil product line, 30 miles of single or dual overhead 138-kilovolt (kV) H-frame powerlines, and 6 miles of Dragon Road upgrade and pavement would be constructed and operated crossing BLM- and State-administered lands in the Vernal Field Office. The Utility Project would provide utilities and move processed oil from Enefit's South Project, which is planned on private land, and minerals owned by Enefit. The South Project, a non-federal connected action, will include development of a 7,000- to 9,000-acre commercial oil shale mining, retorting, and upgrading operation in Uintah, County.

The Utility Project area is located within the southern portion of Township 8-10 South, Range 24-25 East, Salt Lake Meridian, in Uintah County, Utah, approximately 12 miles southeast of Bonanza, Utah. Vernal, Utah, is the nearest major municipality, located approximately 40 miles north of the Project area. The community of Rangely, Colorado, is located approximately 25 miles northeast of the Project area.

The Proposed Action and an alternative of taking No Action are considered in detail in the Draft EIS. Under the Proposed Action, the BLM would issue a grant to Enefit for utility rights-of-way across BLM-administered lands and improvements to Dragon Road. Under the No-Action alternative, the BLM would deny Enefit's application for utility rights-of-way and road improvement, and Enefit would pursue securing natural gas, electricity, and water utilities and product delivery via alternative means for the South Project.

The approval or disapproval of the South Project is outside the BLM's authority because it is located on private lands and minerals. However, since the South Project is a non-Federal action that potentially has a cumulatively significant impact together with the proposed action, the BLM has determined it must be considered in the same NEPA document (40 CFR 1508.25). Therefore, since the South Project is considered a non-Federal connected and cumulative action to the Project, the potential indirect and cumulative effects associated with the South Project are analyzed and disclosed in this EIS. The BLM is aware that no mine plans are currently filed with the State of Utah; therefore, design of the mine is conceptual. If a mine plan is filed with the State, it would be reviewed, approved, or denied by the Utah Division of Oil, Gas and Mining.

The Draft EIS was prepared pursuant to NEPA, as well as other regulations and statutes, to address possible environmental and social and economic impacts that could result from implementation of the Project. The EIS is not a decision document. Its purpose is to inform the public and the decision maker of the impacts associated with implementing the Proposed Action, to evaluate alternatives to the Proposed Action, and to solicit other agencies and the public for comments on the proposal and its potential effects prior to BLM's making an informed decision on the right-of-way requests.

The BLM will host three public open-house meetings to provide an overview of the Proposed Action and to take comments. The open-house meetings will be announced in advance via newsletter and local media and will be posted on the project website at:

http://www.blm.gov/ut/st/en.html

Electronic copies of the Draft EIS on CD are available for public distribution. The Draft EIS also is available for review and downloading from the BLM website noted above. Printed hard copies of the DEIS are available for review at the following BLM office locations:

Vernal Field Office
170 South 500 East
Vernal, UT 84078

Utah State Office
Public Reading Room
440 West 200 South, Suite 500
Salt Lake City, Utah 84111

If you would like to submit comments on this Draft EIS, we request that you make them as specific as possible, with references to page numbers and chapters of the document. The most useful comments will contain new technical or scientific information, identify data gaps in the impact analysis, or provide technical or science-based rationale for opinions or preferences. Written comments will be accepted by email, by letter, or on the project website for 60 days following the publication of the Notice of Availability in the *Federal Register* by the U.S. Environmental Protection Agency. Emailed comments may be submitted to blm_ut_vernal_comments@blm.gov and postal mail copies should be sent to:

Bureau of Land Management
Vernal Field Office
ATTN: Stephanie Howard
170 South 500 East
Vernal, UT 84078

Hand delivery of written comments on the Draft EIS to 170 South 500 East, Vernal, Utah, may occur between 7:45 a.m. and 4:30 p.m., Monday through Friday, excluding federal holidays. Envelopes and the subject line of emails should be identified as "Enefit American Oil Utility Corridor Project".

Before including your address, phone number, e-mail address, or any other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can request in your comment that your personal identifying information be withheld from public review, BLM cannot guarantee that it will be able to do so. Comments submitted anonymously will not be accepted.

For further information, please contact Stephanie Howard, BLM Project Coordinator, at showard@blm.gov or (435) 781-4469. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1-800-877-8339 to contact the above individual during normal business hours. The FIRS is available 24 hours a day, seven days a week, to leave a message or question with the above individual. You will receive a reply during normal business hours.

Sincerely,

Richard Rymerson
District Manager

U.S. Department of the Interior
Bureau of Land Management

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Enefit American Oil Utility Corridor Project

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BLM Vernal Field Office
170 South 500 East
Vernal, Utah 84078

Cooperating Agencies
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
Utah Public Lands Policy Coordination Office
Uintah County, Utah

April 2016

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Enefit American Oil Utility Corridor Project
DOI-BLM-UT-G010-2014-0007-EIS

Lead Agency:	U.S. Department of the Interior Bureau of Land Management Vernal Field Office
Cooperating Agencies:	U.S. Army Corps of Engineers U.S. Environmental Protection Agency U.S. Fish and Wildlife Service Utah Public Lands Policy Coordination Office Uintah County, Utah
Type of Action:	Right-of-way Grant from the Bureau of Land Management
Project Location:	Uintah County, Utah
For further information on this document, contact:	Bureau of Land Management Vernal Field Office Attn: Stephanie Howard 170 South 500 East Vernal, Utah 84078 (435) 781-4469
Or email:	blm_ut_vernal_comments@blm.gov
Access information about the project:	https://www.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=37462&dctmId=0b0003e880615c1f
Availability period:	60 days after the publication of the Notice of Availability by the EPA in the *Federal Register*

Abstract

Pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969, the Bureau of Land Management (BLM) Vernal Field Office has prepared a Draft Environmental Impact Statement (EIS) to analyze and disclose the impacts of granting a right-of-way across federal land to Enefit American Oil (Enefit) and Moon Lake Electric Association for the construction and operation of five rights-of-way for utilities and a road across BLM-administered lands. As proposed, 19 miles of water supply pipeline, 9 miles of natural gas supply pipeline, 11 miles of oil product line, 30 miles of single or dual overhead 138-kilovolt H-frame powerlines, and 6 miles of Dragon Road upgrade and pavement would be constructed and operated, and would cross BLM- and State-administered lands in the Vernal Field Office. The Utilities Project would provide utilities and move processed oil from Enefit's South Project, which is planned on private land and minerals owned by Enefit. The South Project, a non-federal connected action, will include development of a 7,000- to 9,000-acre commercial oil shale mining, retorting, and upgrading operation in Uintah, County.

The Proposed Action and an alternative of taking No Action are considered in detail in the Draft EIS. Under the Proposed Action, the BLM would issue a grant to Enefit for utility rights-of-way across BLM-administered lands and improvements to Dragon Road. Under the No Action Alternative, the BLM would deny Enefit's application for utility rights-of-way and road improvement, and Enefit would pursue securing natural gas, electricity, and water utilities and product delivery via alternative means for the South Project.

Since the BLM has no jurisdiction over the South Project, neither the private minerals nor the private surface, no decision regarding the South Project will result from this EIS. To the BLM's knowledge, no mine plans for the South Project are currently filed with the State of Utah. If and when a mine plan is filed with the State, it would be reviewed and approved or denied by Utah Division of Oil, Gas, and Mining. For further detail regarding the South Project refer to Section 2.3 of this EIS.

Table of Contents
List of Acronyms and Abbreviations

TABLE OF CONTENTS

List of Maps

List of Figures

List of Tables

List of Appendices

LIST OF ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	Micrograms per cubic meter

A

AADT	Annual average daily traffic
ACEC	Area of Critical Environmental Concern
ACEPM	Applicant-Committed Environmental Protection Measures
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
A.D.	Anno Domini
AGRC	Automated Geographic Reference Center
Amsl	above mean sea level
APE	Area of potential effect
APP	Avian Protection Plan
APLIC	Avian Power Line Interaction Committee
Applicant	Enefit American Oil and Moon Lake Electric
ARMS	Air Resource Management Strategy
ARPA	Archaeological Resources Protection Act
ATV	All-terrain vehicle

B

BACT	best available control technology
BEA	Bureau of Economic Analysis
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	Best Management Practice
B.P.	Before Present
BPD	Barrels per day
BPP	Bonanza Power Plant
BSC	Biological Soil Crusts

C

CAA	Clean Air Act of 1970
CARB	California Air Resource Board
CCA	Core conservation area
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESQG	Conditionally Exempt Small Quality Generators
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	Methane
CIAA	Cumulative impact analysis area

CNHP	Colorado Natural Heritage Program
COM	Construction, Operation and Maintenance
CO_2	Carbon dioxide
CUP	Central Utah Project
CWA	Clean Water Act of 1972

D

DGT	Deseret Generation and Transmission Cooperative
D&RGW	Denver and Rio Grande Western

E

EDRR	Early Detection Rapid Response
EIS	Environmental Impact Statement
Enefit	Enefit American Oil
ENBB	Environmental Notification Bulletin Board
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
EPG	Environmental Planning Group
ESA	Endangered Species Act of 1973

F

FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FFSL	Utah Division of Forestry, Fire, and State Lands
FHWA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act of 1976
FR	Federal Register
FTE	Full Time Equivalent
FWS	U.S. Fish and Wildlife Service

G

GHG	Greenhouse gas
GHMA	General Habitat Management Areas
GIS	Geographic Information System
GLO	General Land Office
GWP	Global Warming Potential

H

HAP	Hazardous air pollutants
HCHO	Formaldehyde
HDD	Horizontal Directional Drilling

HFC	Hydrofluorocarbon
HMTA	Hazardous Materials Transportation Act
HONO	Nitrous acid
HUC	Hydrologic unit code

I

IEEE	Institute of Electrical and Electronics Engineers
IM	Instruction Memorandum

K

KOP	Key observation point
kV	Kilovolt

L

LCA	Life-cycle analysis
LEPC	Local Emergency Planning Commission

M

MACT	Maximum achievable control
MBTA	Migratory Bird Treaty Act
mG	Milligauss
mg	Milligrams
MLEA	Moon Lake Electric Association (Applicant)
MSDS	Material safety data sheets
MW	Megawatt

N

NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NDE	Non-destructive examination
NEPA	National Environmental Policy Act of 1969
NESC	National Electrical Safety Code
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act of 1966
NHT	National Historic Trail
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NO_x	Nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NSR	New source review

NTSA	National Trails System Act of 1968
N_2O	Nitrous oxide

O

OHV	Off-highway vehicle
OHWM	Ordinary high water mark
OPLMA-PRP	Omnibus Public Land Management Act–Paleontological Resource Preservation
OSHA	Occupational Safety and Hazard Administration

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PCAA	Penstemon Conservation Agreement Areas
PFC	Perfluorocarbon
PFYC	Potential fossil yield classification
PHMSA	Pipeline and Hazardous Materials Safety Administration
PLPCO	Public Lands Policy Coordination Office
PM	Particulate Matter
PMZ	Primary Management Zone
POD	Plan of Development
PRPA	Paleontological Resources Preservation Act
PSD	Prevention of Significant Deterioration

R

RCRA	Resource Conservation and Recovery Act
RCW	Ranney Collector Wells
RD&D	Research, development, and demonstration
RFFA	Reasonably Foreseeable Future Action
RFRA	Religious Freedom Restoration Act of 1993
RMP	Resource Management Plan
ROD	Record of Decision
ROI	Region of influence
RQ	Reportable quantity
RV	Recreational vehicle

S

SCADA	Supervisory Control and Data Acquisition
SCAQMD	South Coast Air Quality Management District
SERC	State Emergency Response Commission
SCO	Synthetic Crude Oil
SF_6	Sulfur hexafluroide
SHPO	State Historic Preservation Office
SIC	Standard Industrial Category
SIP	State Implementation Plans

SITLA	State Institutional Trust Lands Administration
SLRU	Sensitivity Level Rating Units
South Project	Enefit's Utah Oil Shale Project
SPCC	Spill Prevention Control and Countermeasure Plan
SQG	Small-quantity Generators
SQRU	Scenic Quality Rating Unit
SWAP	Utah State Wildlife Action Plan
SWReGAP	Southwest Regional Gap Analysis Project

T

TCP	Traditional cultural property
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TPQ	Threshold Planning Quantity
TSP	Total suspended particulate

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UAC	Utah Administrative Code
UBETS	Uinta Basin Energy and Transportation Study
UBEZ	Uintah Basin Energy Zone
UBWOS	Uinta Basin Winter Ozone Study
UCCOD	Uintah County, Utah, Code of Ordinances
UDEQ	Utah Department of Environmental Quality
UDNR	Utah Department of Natural Resources
UDOGM	Utah Division of Oil, Gas and Mining
UDOT	Utah Department of Transportation
UDWR	Utah Division of Wildlife Resources
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UPDES	Utah Pollutant Discharge Elimination System
URMCC	Utah Reclamation Mitigation and Conservation Commission
URMPFL	Utah Resource Management Plan for Federal Lands
USACE	U.S. Army Corps of Engineers
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USDOT	U.S. Department of Transportation
USGS	U.S. Geological Survey Utility Project
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VMT	Vehicle miles traveled
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VOC	Volatile organic compound
VRI	Visual Resource Inventory
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WRCC	Western Regional Climate Center
WSR	Wild and Scenic Rivers

Executive Summary

EXECUTIVE SUMMARY

ES.1 Introduction

This document, the Environmental Impact Statement (EIS), is being prepared to support decision-making by the Bureau of Land Management (BLM), regarding whether or not to issue rights-of-way pursuant to Title V of the Federal Land Policy and Management Act of 1976, as amended (FLPMA), in response to five *Application(s) for Transportation and Utility Systems and Facilities on Federal Lands* (Standard Form 299), submitted by Enefit American Oil (Enefit) and Moon Lake Electric Association (MLEA) (collectively known as the Applicant) to the BLM (Case File Nos. UTU-89449, UTU-89451, UTU-89452, UTU-89453 [MLEA], and UTU-91398) for the Enefit American Oil Utility Corridor Project (Utility Project). The applications were submitted and received on December 3, 2012, and April 3, 2013 (for MLEA). BLM is preparing this EIS pursuant to the requirements of the National Environmental Policy Act, as amended (NEPA) and the Council on Environmental Quality (CEQ) regulations for implementing NEPA, at 40 CFR Parts 1500 through 1508, to evaluate and disclose the potential Utility Project-related environmental impacts that could result from the BLM's Proposed Action of approving the Applicant's project and alternatives to the Proposed Action.

The Applicant is seeking authorization to construct and operate 19 miles of water supply pipeline, 9 miles of natural gas supply pipeline, 11 miles of oil product line, 30 miles of single or dual overhead 138-kilovolt (kV) H-frame powerlines, and 6 miles of Dragon Road upgrade and pavement across BLM- and State-administered lands in the Vernal Field Office. The Utility Project area is located in the southern portion of Township 8-10 South, Range 24-25 East, Salt Lake Meridian, in Uintah County, Utah, approximately 12 miles southeast of Bonanza, Utah. Vernal, Utah, is the nearest major municipality, located approximately 40 miles north of the Utility Project area. The community of Rangely, Colorado, is located approximately 25 miles northeast of the Utility Project study area.

The Utility Project would allow access to utilities and move processed oil from Enefit's South Project, which is planned on private land and minerals owned by Enefit. The South Project is a non-federal connected action and would include development of a 7,000- to 9,000-acre commercial oil shale mining, retorting, and upgrading operation in Uintah, County. The South Project is anticipated to produce 50,000 barrels of oil per day at full build out for a period of up to 30 years utilizing oil shale ore rock mined from Enefit's private property holdings.

Approval or disapproval of the South Project is outside the BLM's authority because it is located on private lands and minerals. Because approval or disapproval of the South Project is outside of BLM's authority, the BLM is evaluating the South Project, for purpose of compliance with CEQ's regulatory requirements at 43 CFR 1508.25, as a "non-federal connected action" as discussed in the BLM NEPA Handbook H-1790-1. Under these regulatory requirements, and in accordance with the associated BLM guidance, non-federal actions that potentially have a cumulatively significant impact together with the proposed action must be considered in the same NEPA document. Therefore, the South Project is considered a connected and cumulative action to the Utility Project and the potential indirect and cumulative effects associated with the South Project are analyzed and disclosed in this EIS. The BLM is not aware that any mine plan of operations for the South Project has been filed with the State of Utah, who would be the authorizing entity; therefore, assumptions have been made regarding such operations, for analysis purposes.

After reviewing the scope of the Proposed Action, the BLM, as the lead federal agency, determined authorization of the proposed Utility Project is a major federal action and would require preparation of an EIS in compliance with requirements of NEPA.

The BLM published a Notice of Intent (NOI) to prepare the EIS in the *Federal Register* (FR*)* on July 1, 2013. Three federal agencies, the U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (FWS), and the U.S. Environmental Protection Agency (EPA), along with the State of Utah and Uintah County, are participating as cooperating agencies in preparation of the EIS.

ES.2 Bureau of Land Management's Purpose and Need for the Federal Action

The purpose of the BLM stems from the overarching policy and direction in FLPMA, as amended, and its mission, which is multiple-use, sustained-yield management of the National System of Public Lands. The FLPMA also provides the BLM with discretionary authority to grant use (i.e., right-of-way) of land they administer, taking into consideration impacts on natural and cultural resources (including historical resources). In doing so, the BLM must endeavor "to minimize damage to scenic and esthetic values and fish and wildlife habitat and otherwise protect the environment" through avoidance or mitigation (FLPMA Title V). To this end, the BLM is charged with analyzing applications for utility and transportation systems on federal land it administers.

The need of this federal action is to respond to the Applicant's right-of-way applications for construction, operation, and maintenance of the Utility Project infrastructure across federal land for the benefit of its South Project development of an unconventional energy source.

ES.3 Scope of Analysis

The BLM Vernal Field Office conducted extensive internal and external coordination as described below in an effort to establish whether the South Project should be considered a connected action or cumulative action within the EIS. Detailed information on the coordination conducted is described in Section 1.2.1 of the EIS. The conclusions reached about the scope of the analysis of the Utility Project EIS are as follows:

- Although the South Project is not within BLM jurisdiction for approval or denial, it has been proposed on a conceptual level. Also, the South Project appears to be a non-federal connected action to the Utility Project due to the South Project's detailed design and engineering being delayed pending a BLM decision on the Utility Project. The detailed design and engineering required to fulfill the scope of facilities and target production are anticipated to be affected by the BLM's decision.
- The Utility Project and the South Project also are cumulative actions.
- The South Project's relationship to the Utility Project and the extent to which the South Project and its effects can be prevented or modified by the BLM decision-making on the Utility Project will be described in Chapter 2 of the EIS.
- Since some of the effects of the South Project can be modified by BLM decision-making, they will be analyzed as indirect effects of the Utility Project to the extent that those changes are known, given the preliminary stage of the South Project and its missing details regarding design and engineering. This is in accordance with the BLM NEPA Handbook H-1790-1, which states:

  > *If the connected non-Federal action cannot be prevented by BLM decision making, but its effects can be modified by BLM decision-making, then the changes in the effects of the connected non-Federal action must be analyzed as indirect effects of the BLM proposed action.*

- Those effects of the South Project that cannot be modified by BLM decision-making will be described in the cumulative impacts section to the extent that those effects are known, given the preliminary stage of the South Project and its missing details regarding design and engineering. This is in accordance with the BLM NEPA Handbook H-1790-1, which states:

> *Effects of the non-Federal action that cannot be modified by BLM decision-making may still need to be analyzed in the cumulative effects analysis for BLM action if they have a cumulative effect together with the effects of the BLM action.*

- No alternatives regarding the South Project will be developed in accordance with the BLM handbook, which states:

> *The consideration of a non-Federal connected action is limited in your NEPA analysis, because the NEPA process is focused on agency decision making (40 CFR 1500.1©, 40 CFR 1508.18, 40 CFR 1508.23). You would not have to develop or present the purpose and need for the non-Federal action, and you are not required to consider alternatives available to the non-Federal party for its action.*

Similarly, in accordance with Section 7.3 of the BLM Handbook, where, as here, the Applicant has other reasonable access to utilities for development of the South Project, the effects of the South Project do not count toward the significance of the BLM's Proposed Action to approve the rights-of-way associated with the Utility Project. The No Action Alternative assumes the South Project would go forward should the rights-of-way not be approved. Therefore, the effects of the South Project would not be part of the incremental difference in effects between the No Action Alternative and the Proposed Action.

Wherever incomplete or unavailable information regarding the significance of adverse effects is determined to be relevant to a reasoned choice among alternatives for the Proposed Action, the agency will obtain the information if the cost is not exorbitant. If the cost is exorbitant or the means to get the information are unknown, then the EIS will include: (1) a statement that the information is missing, (2) a statement of the relevance of the information, (3) a summary of credible scientific information relevant to the issue, and (4) the agency's evaluation of the impacts based on available information and/or scientifically accepted theoretical approaches or research methods (40 CFR 1502.22).

This guidance and approach has been followed in preparation of the Utility Project EIS.

ES.4 Decision to Be Made

The decision to be made by the BLM is whether or not to grant the Applicant five rights-of-way to construct, operate, and maintain the proposed facilities on land they administer and under what terms and conditions. In so doing, the BLM, as lead agency, in coordination with the cooperating agencies, analyzes, through the EIS, the Applicant's plan for and the potential environmental impacts of constructing, operating, maintaining the Utility Project. Based on the analysis presented in this EIS, the BLM will issue a Record of Decision (ROD) on whether or not to grant the requested rights-of-way for the Utility Project on land administered by the BLM.

The South Project, an oil shale mining and a shale oil production complex proposed in the Uintah Basin, is a non-federal, connected action that is outside of the BLM's authority for approval. Although the South Project would proceed regardless of the BLM's Utility Project decision, the detailed design and engineering of the South Project is pending and would be affected by the BLM's decision.

In accordance with 43 CFR Section 1610.0-5(b), actions that occur on federal lands administered by the BLM, including a decision to grant a right-of-way under Title V of the FLPMA, are guided by decisions specified in the existing BLM Resource Management Plan (RMP). The pertinent RMP for BLM-administered land potentially crossed by the proposed Utility Project is the *Vernal Field Office Record of Decision and Approved Resource Management Plan* (BLM 2008).

Although not part of the BLM's decision on the Proposed Action, in accordance with *H-1790-1 National Environmental Policy Act Handbook*, the BLM will be analyzing and considering the effects of the South Project, which includes the following (refer to Section 2.3 of Chapter 2 for more detailed information):

- Oil shale mining operation
- Production plant
- Water storage
- Associated utility relocations

However, since the BLM has no jurisdiction over the South Project, neither the private minerals nor the private surface, no decision regarding the South Project will result from this EIS. To the BLM's knowledge, no mine plans for the South Project are currently filed with the State of Utah. If and when a mine plan is filed with the State, it would be reviewed and approved or denied by Utah Division of Oil, Gas, and Mining (UDOGM) . For further detail regarding the South Project, refer to Section 2.3 of this EIS.

ES.5 Decision Framework

This Draft EIS is prepared in accordance with the NEPA and in compliance with the CEQ regulations (40 CFR Parts 1500-1508), U.S. Department of Interior NEPA implementation regulations (43 CFR Part 36), and guidelines listed in the BLM NEPA Handbook (H-1790-1, BLM 2008). Because the BLM is the decision-maker regarding the Proposed Action, the BLM is the lead federal agency tasked with the preparation of the Draft EIS.

The Draft EIS evaluates two alternatives; the Proposed Action) and the No Action Alternative. The decision to be made by the BLM is whether or not to grant the Applicant five rights-of-way to construct, operate, and maintain the proposed facilities on land they administer and under what terms and conditions. In so doing, the BLM, as lead agency, in coordination with the cooperating agencies, analyzes, through the Draft EIS, the Applicant's plan for and the potential environmental impacts of constructing, operating, and maintaining the Utility Project, and to a lesser extent, the South Project.

No decision will be made regarding the South Project, as the BLM has no jurisdiction over the private minerals or the private surface estate proposed for development. Furthermore, to the BLM's knowledge, no mine plans for the South Project are currently filed with the State of Utah. If and when a mine plan is filed with the State, it would be reviewed and approved or denied by UDOGM. Therefore, the South Project is evaluated only as a non-federal, connected action in this EIS because it is outside of the BLM's authority for approval, though some of its specifics could be affected by the specifics of the Utility Project, which is the subject of BLM decision making.

The ROD associated with this Draft EIS will determine whether or not to grant the requested rights-of-way for the Utility Project on land administered by the BLM.

ES.6 Applicant's Interests and Objectives

The Applicant's goal for the Utility Project is to supply natural gas, electrical power, water, and other needed infrastructure through one or more utility corridors to produce and deliver shale oil from oil shale mined under the South Project by uninterrupted operation of an economically viable mining, oil shale retorting, and upgrading facility. The South Project is located on one of the largest tracts of privately owned oil shale property in the United States. The property, acquired by Enefit, covers approximately 13,441 acres of oil shale containing approximately 1.2 billion barrels of shale oil.

In August 2005, Congress enacted the Energy Policy Act of 2005, 42 United States Code (U.S.C.) § 15927. Section 369 of the Energy Policy Act declares that United States oil shale and tar sands deposits are "strategically important domestic resources that should be developed to reduce the growing dependence of the U.S. on politically and economically unstable sources of foreign oil imports" and mandates that development of oil shale "should occur, with an emphasis on sustainability" to benefit the United Sates. (*Id* at § 15927(b)). To support this policy, the Energy Policy Act directs the Secretary to implement a series of action to, among other things, make public lands available to support oil shale development activities. The Applicant's request for granting of a right-of-way(s) from the BLM supports the purposes underlying the above provisions of the Energy Policy Act.

In March 2011, Utah Governor Herbert released the document *Energy Initiatives & Imperatives, Utah's 10-Year Strategic Energy Plan* to serve as a structure and outline to guide the state's planning with regards to energy and transmission development, efficiency and conservation, economic development, and the development and application of new technology to promote energy independence and sustainability for Utah. The plan provided five guiding principles and ten goals for energy strategy in the state, and both the Utility Project and South Project are proposed with those principles and goals in mind in order to promote and sustain responsible energy and economic development in the State of Utah.

In February 2012, the State of Utah established the State of Utah Resource Management Plan for Federal Lands (URMPFL), by creating the Uintah Basin Energy Zone (UBEZ). Both the South Project and proposed Utility Project are located within the UBEZ. Specifically, Utah Code Ann. §63J-8-105.5(3)(b) of the URMPFL states, "the highest management priority for all lands within the [UBEZ] is responsible management and development of existing energy and mineral resources in order to provide long-term domestic energy and supplies for Utah and the United States." Further, Utah Code Ann. §63J-8 105.5(5) (c) and (d) indicate that the State calls upon federal agencies to "allow continued maintenance and increased development of roads, power lines, pipeline infrastructure, and other utilities necessary to achieve the goals, purposes, and policies described in this section" and "refrain from any planning decisions and management actions that will undermine, restrict, or diminish the goals, purposes, and policies for the [UBEZ]."

Furthermore, the production of shale oil would aid in fulfilling the energy policy of the State of Utah, which states that: "It is the policy of the state that Utah will promote the development of nonrenewable energy resources, including natural gas, coal, oil, *oil shale*, and tar sands…. Utah will promote the development of resources and infrastructure sufficient to meet the state's growing demand, while contributing to the regional and national energy supply, thus reducing dependence on international energy sources." Utah Code Ann. §63M-4-301(1) (b), (d) (emphasis added). Granting the federal rights-of-way and enabling development of the South Project would advance implementation of the goals of the State's energy policy.

ES.7 Conformance with BLM Management Plans and Other Laws and Policy Considerations

In accordance with Section 302 of FLPMA and 43 CFR Section 1610.0-5(b), actions that occur on federal lands administered by the BLM, including a decision to grant a right-of-way under Title V of the FLPMA, are guided by decisions specified in the applicable BLM RMP. The applicable RMP in this instance is the Vernal [Utah] Field Office Record of Decision and Approved Resource Management Plan (BLM 2008f). The Vernal RMP includes management objectives for lands potentially crossed by the proposed Utility Project.

Although it specifically pertains only to leasing and development of oil shale and tar sands on BLM-managed public lands, and not to the authorization of rights-of-way, such as the Proposed Action and alternatives considered in this EIS, *The Approved Land Use Plan Amendments/ROD for Allocation of Oil Shale and Tar Sands Resources on Lands Administered by the Bureau of Land Management in Colorado, Utah, and Wyoming and Final Programmatic Environmental Impact Statement* (2013), and its supporting programmatic EIS provides information regarding the nature of these resources, and their possible development, as well as a context within which this Proposed Action may occur. When information regarding the construction and operation of the South Project was not available from the Applicant, information in the PEIS was incorporated by reference in to analysis of this EIS.

The Proposed Action would be consistent with the following state and county land use plans:

- *Uintah County General Plan* (2005), which supports "multiple-use management practices, responsible public-land resource use and development, and improved public and private access to and across public lands.
- *Uintah County General Plan* (2010), which reflects the appropriate locations for various land uses and helps to implement the county's policies concerning land use and development.
- *The Approved Land Use Plan Amendments/ROD for Allocation of Oil Shale and Tar Sands Resources on Lands Administered by the Bureau of Land Management in Colorado, Utah, and Wyoming and Final Programmatic Environmental Impact Statement* (2013), which designates certain public lands, managed by the BLM, as available for application for leasing and future exploration and development of oil shale and tar sands resources.

ES.8 Summary Comparison of Resources

The following section provides detailed comparative analysis of the resources for each alternative. A determination of potential significant impacts remaining after mitigation and cumulative effects (if present) also are identified. The basis for the information summarized for each resource is contained in Chapters 3 and 4 of the EIS.

ES.8.1 Affected Resources

The Agency Preferred Alternative on federal lands is the Proposed Action due to the reduced air quality impacts that would occur as compared to the No Action Alternative, which would result in increased trucking of water and product and self-generation of power. The BLM, in coordination with the cooperating agencies, believes this Alternative would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors.

The following sections summarize the major findings of the EIS by alternative.

ES.8.1.1 Proposed Action – Utility Project (Agency Preferred)

ES.8.1.1.1 Greenhouse Gases

Use of construction equipment that meets current standards for emissions and energy-efficiency performance will maintain greenhouse gas (GHG) emissions to the lowest practical level and reduce impacts. The generation and release of GHGs during construction would be of a relatively short duration. For the Utility Project, total GHG emissions are a small fraction of the regional inventory, and are well below the de minimis reporting thresholds (25,000 MT/yr) under federal GHG regulations. However, there could be an unquantifiable but small impact on the regional or global climate.

ES.8.1.1.2 Air Quality

Total corridor project air emissions are less than major source significance levels defined in the federal Clean Air Act. The impacts due to generation and release of air pollutants during corridor construction will be localized, and of relatively short duration, less than 30 months overall. With the planned mitigation measures in place, the short and long-term impacts to air quality will be minor.

ES.8.1.1.3 Soil Resources

With applicant committed mitigation, impacts would be minor.

ES.8.1.1.4 Mineral Resources

With avoidance of known oil and gas well pads, impacts on mineral resources would be minor.

ES.8.1.1.5 Water Resources

Direct and indirect effects to water resources from construction and operation of the Utility Project may include surface water depletion for use during construction, degradation of surface water from potential spills during construction and operations, and degradation of surface water due to sedimentation and turbidity from construction activities and vehicle use during operations. In addition, impacts related to crossing the White River are avoided by use of Horizontal Directional Drilling (HDD) and spanning the river with the transmission lines.

No anticipated water depletion is expected because the Applicant would use an existing water right. No groundwater is anticipated to be used for the Utility Project.

Pipelines would be designed to minimize potential for leaks, spills, and potential spills during construction and operation of the Utility Project. Flow meters on either end of the pipelines and at each end of the White River crossing will be used to control and monitor pipelines. Degradation of surface water due to sedimentation and turbidity from construction activities and vehicle use during operations is not anticipated. The use of site-appropriate best management practices and mitigation would minimize impacts.

ES.8.1.1.6 Vegetation

Impacts would include clearing and removal of vegetation during construction, operation, and maintenance of the Utility Project. Potential exists for introduction and/or spread of noxious weeds and/or invasive plant species associated the Utility Project. With best management practices and applicant committed mitigation, impacts would be minor.

ES.8.1.1.7 Special Status Plants

Impacts would include loss of individual plants and degradation of occupied or potential habitat from soil disturbance, leading to increased invasion by noxious weeds and/or invasive plant species, increased soil erosion, alterations to runoff patterns, and increased dust production.

With best management practices, Applicant committed mitigation, and adherence to the conservation area requirements, impacts would be minor.

ES.8.1.1.8 Wildlife

Both short-term and long-term impacts are anticipated to occur from the Utility Project on wildlife species and their habitats during construction, and would affect big game and migratory birds. With best management practices and Applicant committed mitigation, impacts would be minor.

ES.8.1.1.9 Special Status Wildlife

Both short-term and long-term impacts are anticipated to occur from the Utility Project on special status wildlife species and their habitats, due to activities such as ground disturbance during construction. Impacts would affect black-footed ferret, raptors, and prairie dogs. The Utility Project is located within the General Habitat Management Area (GHMA) as identified in the BLM Utah Greater Sage-Grouse Approved Resource Management Plan (2015c). Mitigation measures identified in this plan would apply to the Utility Project because project activities would result in habitat loss and degradation to sage-grouse GHMA. The Applicant would comply with mitigation measures to achieve net conservation gain.

With best management practices and applicant committed mitigation, impacts would be minor.

ES.8.1.1.10 Special Status Fish

No direct impacts on critical habitat are anticipated. However, sedimentation as a result of the Utility Project may affect Colorado River fish, due to slight increases in sedimentation and erosion. It is unlikely that these unquantifiable amounts of sediment would adversely affect fish or habitats because of the minimal increase in sediment load on the White River.

ES.8.1.1.11 Cultural Resources

Impacts on cultural resources could include direct and permanent ground disturbance during construction; direct and indirect long-term visual, atmospheric, and auditory intrusions that could compromise aspects of site integrity; and direct and indirect permanent disturbances of cultural resources due to changes in public accessibility.

Potential direct and indirect impacts on cultural resources would need to be mitigated to the satisfaction of the federal agency. Mitigation measures may include: data recovery studies, preparation of formal documentation, other non-site specific measures, and modification of the Utility Project alignment.

ES.8.1.1.12 Paleontological Resources

Impacts from the Utility Project include potential loss of a paleontological resource due to ground-disturbing activities, or from increased erosion exposing paleontological resources. With best management practices and applicant committed mitigation measures, the impacts to paleontological resources would be minor.

ES.8.1.1.13 Visual Resources

The Utility Project would locally dominate scenic quality except where existing linear facilities are paralleled, including the crossing of the White River (Class A), where the Utility Project would visually influence approximately 7,150 acres.

The Utility Project would influence views from KOP #5 – Highway 45/Dragon Road (located approximately 0.5 mile away) but due to screening of these views, the Utility Project would instead be viewed from approximately 1 mile away. The Project would influence views from KOP #9 – Duck Rock where the White River is crossed adjacent to an existing above-ground pipeline and transmission line. Based on topographic screening and the viewing distance from other KOPs, views would be minimally influenced by the Utility Project.

The Utility Project would be compliant with Visual Resource Management Class objectives crossed after application of mitigation.

ES.8.1.1.14 Lands and Access

The Utility Project may impact 0.3 acre of industrial use, 1.3 acres of oil/gas extraction, 0.5 acre of extraction mining tailings pond, 13.6 acres of the Bonanza Power Plant (BPP), and 769.1 acres of BLM-administrated grazing allotments (Bonanza, Coyote Wash, Hell's Hole, Watson-BC, and White River Bottoms).

In general, direct effects of the Utility Project on land and access are expected to be minimal because the Utility Project is compatible with the uses crossed. There is potential for the Project to limit access to existing development for a short term during construction of the Utility Project.

Potential direct effect of interfering with maintenance of existing oil and gas wells would be mitigated through avoidance of well pads.

Cathodic protection on pipelines would reduce impacts associated with potential corrosion on existing pipelines as a result of installation of powerlines in a parallel location.

ES.8.1.1.15 Travel Management

Direct effects would result from the proposed improvements on Dragon Road, including minor realignment, widening, and paving.

Indirect effects include an increase in traffic on local roads during construction.

ES.8.1.1.16 Recreation

Short-term effects on off-highway vehicle (OHV) users using existing roads and trails during construction could include restricted access or temporary closure of roads and trails, and increased traffic from construction vehicles and equipment. Impacts also include increased dust/vehicle emissions from additional vehicles associated with construction and maintenance of the Utility Project.

No direct impacts are anticipated for the Duck Rock recreation site.

ES.8.1.1.17 Social and Economic Conditions

Construction of the Utility Project is expected to realize temporary increase in employment of 85-110 workers. Because these workers are likely to relocate to one of the communities closest to the project site, there would be a minor, temporary increase in population. The increase in population is expected to have minor impacts on housing and public services.

The Utility Project is not anticipated to affect environmental justice populations disproportionately.

ES.8.1.1.18 Public Health and Safety

No hazardous materials subject to reporting under the Superfund Amendments and Reauthorization Act Title III in an amount equal to or greater than 10,000 pounds annually would be used, produced, stored, transported, or disposed of during construction. No extremely hazardous substances in threshold planning quantities, as defined in 40 CFR Part 355, would be used.

Hazardous and Universal waste disposal contractors are available in the vicinity. No EPA ID number will be required for the construction phase.

Solid and sanitary waste and used oil will be handled, stored, and disposed of in accordance with local, state, and federal laws, ordinances, and regulations and in such a manner to prevent any negative impact air quality, soils, water quality, vegetation, or wildlife.

Local solid and sanitary waste and used oil handling and disposal contractors are available in the Utility Project vicinity.

ES.8.1.2 Non-federal Connected Action South Project

ES.8.1.2.1 Greenhouse Gases

The construction of the South Project will, in a qualitative sense, have similar GHG emission impacts as construction activities for the utility corridors. Operation of the South Project facility will have longer-term GHG emissions and potential impacts due to operation of fuel-fired process equipment, mining vehicles and equipment, and on-site power generation units. Total GHG emissions are expected to be a small fraction of the regional inventory; however, there could be an unquantifiable but small impact on the regional or global climate.

The South Project is not a BLM leasing or development action, so is not subject to existing BLM policies. The projected GHG emissions would be disclosed as part of an application for a Prevention of Significant Deterioration (PSD) construction permit to EPA Region 8. As part of that application, additional analyses will be conducted at that time, including consideration of potential effects of the proposed development, reasonable alternatives, and possible mitigation/best available control measures (BACT) measures. The EPA's review would encompass considerations appropriate for the application, and will ensure that State and local communities have the opportunity to be involved and are fully informed.

ES.8.1.2.2 Air Quality

The construction of the South Project will, in a qualitative sense, have similar air quality impacts as construction activities on the utility corridors. Operation of the facility over the longer term will cause local air quality impacts due to operation of fuel-fired process equipment, mining equipment and vehicles, and power generation units subject to permitting. Emission mitigation measures, such as those typically imposed by *EPA Region 8 New Source Review* air permitting processes, would mitigate adverse impacts. With the likely mitigation measures in place, the short- and long-term impacts to air quality would be minor.

ES.8.1.2.3 Soil Resources

Long-term direct and indirect impacts of wind and water erosion would occur as a result of mining operations.

ES.8.1.2.4 Mineral Resources

Long-term impacts on private and state mineral resources, and oil and gas leases, would occur as a result of the mining activity on private and state land.

ES.8.1.2.5 Water Resources

Indirect effects of construction and operation of the South Project may include surface water depletion for use during construction and operations; degradation of surface water from potential spills during construction and operations, and degradation of surface water due to sedimentation and turbidity from construction activities and vehicle use during operations.

The use of existing water right will not impact other water right holders in the basin. No groundwater is anticipated to be used for the South Project. Therefore, the South Project would not result in groundwater depletion.

Pipelines would be designed to minimize potential for leaks, spills, and potential spills during construction and operation. Use of Supervisory Control and Data Acquisition (SCADA) leak detection system will be used for control and monitoring of the pipelines to the South Project. Depending on the depth of groundwater in the area of the spill, large spills may reach the groundwater table.

Degradation of surface water due to sedimentation and turbidity from construction activities and vehicle use during operations is not anticipated. The use of site-appropriate best management practices and mitigation would minimize impacts.

ES.8.1.2.6 Vegetation

Indirect effects would occur to vegetation from fugitive dust associated with mining operations and shale oil refining.

Indirect effects on vegetation, such as dust, would occur from construction, operation, and maintenance of the South Project.

Potential for introduction and/or spread of noxious weeds and/or invasive plant species would result from surface disturbance associated the South Project.

ES.8.1.2.7 Special Status Plants

Impacts would include loss of individual plants and degradation of occupied or potential habitat. In addition, soil disturbance could lead to increased invasion by noxious weeds and/or invasive plant species, increased soil erosion, alterations to runoff patterns, and increased dust production.

With best management practices and adherence to the conservation area requirements, impacts would be reduced but not avoided.

ES.8.1.2.8 Wildlife

Long-term effects of the South Project on wildlife species and their habitats would occur to big game and migratory birds.

ES.8.1.2.9 Special Status Wildlife

Long-term effects of the South Project on special status wildlife species and their habitats would occur to greater sage-grouse and raptors.

ES.8.1.2.10 Special Status Fish

No impacts on critical habitat are anticipated. However, sedimentation and contamination from inadvertent spills as a result of the South Project may affect Colorado River fish, due to increases in sedimentation and erosion.

ES.8.1.2.11 Cultural Resources

Impacts on cultural resources could include direct and indirect permanent disturbances due to changes in public accessibility; and direct and indirect long-term visual, atmospheric, and auditory intrusions that could compromise aspects of site integrity.

Potential indirect impacts on cultural resources would need to be mitigated to the satisfaction of the State Historic Preservation Office (SHPO). Mitigation measures may include: data recovery studies, preparation of formal documentation, other non-site specific measures, and modification of the South Project.

ES.8.1.2.12 Paleontological Resources

Indirect long term impacts to paleontological resources would occur from mining operations. The impacts could be the loss of a paleontological resource due to ground-disturbing activities, or through increased erosion that exposes a paleontological resource.

ES.8.1.2.13 Visual Resources

The South Project would locally dominate scenic quality adjacent to the facility due to changes in the existing landscape's form, line, color, and texture.

The rolling terrain adjacent to the South Project screens views from most of the identified Key Observation Points (KOPs) except for views from KOPs #1 – Atchee Road and #5 – Highway 45/Dragon Road where views of the South Project would influence these viewsheds.

ES.8.1.2.14 Lands and Access

Mining operations on private and state land would indirectly impact land uses on BLM administered lands. Indirect effects would include increased traffic and fugitive dust.

ES.8.1.2.15 Travel Management

Mining operations on private and state land would not directly impact travel management on BLM administered lands. Indirect effects would include increased traffic and fugitive dust.

ES.8.1.2.16 Recreation

Mining operations on private and state land would not directly impact recreation uses on BLM administered lands. Indirect effects would include increased traffic and fugitive dust.

ES.8.1.2.17 Social and Economic Conditions

The South Project is expected to generate a significant increase in employment during construction (2,500 workers) and operation (2,000 workers). This will result in a moderate impact to employment, income, population, housing, public financing, and public services in the region of influence (ROI). The rapid increase in employment and population could impact quality of life and potentially cause large social disruptions in communities most impacted by these changes.

The South Project is not anticipated to affect environmental justice populations disproportionately.

ES.8.1.2.18 Public Health and Safety

The South Project will implement an Occupational Safety and Hazard Administration (OSHA) HAZCOM program, Emergency Response and Spill plans to inform workers and protect the environment during hazardous material usage.

The South Project will obtain an EPA waste generator identification number if hazardous wastes are generated for off-site shipment, and will register the facility annually with Utah Department of Environmental Quality (UDEQ), as a generator of hazardous wastes.

South Project employees will use correct procedures for recordkeeping, storage, containers, labels, and manifests, development of hazardous waste profiles, transportation, and disposal in licensed facilities.

South Project employees handling hazardous and universal waste and materials will receive specific training t to prevent any negative impact to air quality, soils, water quality, vegetation, or wildlife.

Solid and sanitary waste and used oil will be handled, stored, and disposed of in accordance with local, state, and federal laws, ordinances, and regulations and in such a manner to prevent any negative impact to air quality, soils, water quality, vegetation, or wildlife.

Local solid and sanitary waste and used oil handling and disposal contractors are available in the Utility Corridor vicinity.

ES.8.1.3 No Action Alternative – No Utility Project

ES.8.1.3.1 Greenhouse Gases

Under the No Action Alternative, the planned utility corridors would not be constructed. This would avoid the GHG emissions and the related potential direct and indirect effects.

ES.8.1.3.2 Air Quality

Direct air quality impacts for the No Action Alternative would be negligible, and would avoid short term and localized impacts resulting from corridor construction and road improvements. However, the indirect impacts due to increased long-term use of on-road vehicles to support the South Project operation would increase overall project impacts.

ES.8.1.3.3 Soil Resources

Dragon Road would not be improved under the No Action Alternative. Use of heavy trucks would result in increased erosion, fugitive dust, and wear on Dragon Road. Use of other existing dirt roads would result in increased compaction and possibly alter run-off patterns on these roadways.

ES.8.1.3.4 Mineral Resources

Impacts to mineral resources would be avoided due to the use of existing roads.

ES.8.1.3.5 Water Resources

Under the No Action Alternative, the planned utility corridors would not be constructed and associated impacts would not occur.

ES.8.1.3.6 Vegetation

Impacts would include increased fugitive dust on vegetation along existing unpaved roadways.

ES.8.1.3.7 Special Status Plants

Direct impacts on Special Status Plants would be avoided through the No Action Alternative.

ES.8.1.3.8 Wildlife

Impacts on habitat and loss or degradation of designated crucial habitat, including indirect impacts to migratory birds and raptors, would be avoided through the No Action Alternative.

ES.8.1.3.9 Special Status Wildlife

Impacts on special status wildlife would be the same as those described for wildlife and would be avoided through the No Action Alternative.

ES.8.1.3.10 Special Status Fish

Indirect impacts on aquatic resources would be avoided under the No Action Alternative.

ES.8.1.3.11 Cultural Resources

Potential impacts on cultural resources would be avoided under the No Action Alternative.

ES.8.1.3.12 Paleontological Resources

Impacts to paleontological resources would be avoided due to the use of existing roads.

ES.8.1.3.13 Visual Resources

Impacts on visual resources would be minimized through the No Action Alternative. Additional effects, including additional vehicle traffic from trucking in utilities, trucking product out, local utility re-location, and other alternative means, would influence but not contrast with existing values to the extent of the Utility Project alternative.

ES.8.1.3.14 Lands and Access

Use of existing roads for trucking in utilities would not directly affect land use resources. Indirect effect from truck traffic and fugitive dust on unpaved roads would occur.

ES.8.1.3.15 Travel Management

Impacts to travel management would increase due to increased truck traffic on SR 45 and Dragon Road from employees' travel and delivery of product to market. This Class B county road (dirt/gravel) as it now exists could disintegrate and deteriorate under the increased level of truck traffic. Increased traffic would also occur on local, state and federal roads serving the South Project area

ES.8.1.3.16 Recreation

Impacts to recreation resources would be avoided due to the use of existing roads. Indirect effects would include increased traffic and fugitive dust.

ES.8.1.3.17 Social and Economic Conditions

The social and economic impacts of the Proposed Action and the No Action Alternatives would be similar, as the temporary pipeline and transmission line workers needed to construct the Utility Project would be replaced with workers supporting the alternative means of obtaining utilities needed under the No Action Alternative, including possible construction of pipelines in another location or temporary truck drivers.

Evaluation of the environmental justice implications of the No Action Alternative would be similar to those described under the non-federal connected action – South Project.

ES.8.1.3.18 Public Health and Safety

The nature and type of hazardous materials and solid waste associated with the project would be the same as those discussed under the Utility Project. The proposed improvements to Dragon Road under the Proposed Action will not occur under the No Action Alternative. This Class B county road (dirt/gravel) as it now exists could disintegrate and deteriorate from truck traffic, increasing the potential for accidents and spills.

ES.8.1.4 No Action Alternative – Non-federal Connected Action South Project

ES.8.1.4.1 Greenhouse Gases

The construction of the South Project will, in a qualitative sense, have similar GHG emission impact as construction activities that would take place under the Proposed Action. Operation of the South Project will have longer term GHG impacts due to operation of fuel-fired process equipment, mining vehicles and equipment, and power generation units. GHG impacts under the No Action Alternative are expected to be more than the Proposed Action due to likely increased vehicle operation should the South Project be developed. The projected GHG emissions for stationary sources would be disclosed as part of an application for a PSD construction permit to EPA Region 8 for the South Project. As part of that application, additional analyses will be conducted at that time including consideration of potential effects of the proposed development, reasonable alternatives, and possible mitigation/BACT measures. The EPA's review would encompass considerations appropriate for the application, and will ensure that State and local communities have the opportunity to be involved and are fully informed.

Additional adverse effects could be attributed to the development of the South Project due to the increased GHG emissions that result from an elevated level on-road truck shipping and commuter vehicle traffic. This projected increase in vehicle use will also cause related increases in local fuel supply requirements, increased vehicle and roadway maintenance, and larger demand for workforce at the South Project. The added "carbon cost" of these additional inputs represent a potential adverse cumulative effect, even though the actual magnitude of the effect is not quantifiable.

Over the projected term of South Project, the indirect GHG emissions due to likely increased vehicle operation and other sources remain a small fraction of the regional inventory; however, there could be an unquantifiable, but small impact on regional or global climate.

ES.8.1.4.2 Air Quality

The construction of the South Project under the No Action Alternative will, in a qualitative sense, have the same air quality impact as construction activities on the utility corridors. Under the No Action Alternative, however, the substantially increased use of on-road motor vehicles to deliver fuel and water and ship product would, over the longer term, have indirect impacts that would be substantially more than the avoided direct impacts related to construction of the Utility Project. Additional local fugitive dust impacts are anticipated due to increased traffic over the unimproved Dragon Road. With higher longer-term air emissions due to tanker traffic increases, the development of the South Project without the Utility Project would likely contribute to a greater degree to the cumulative trend in the Uintah Basin wintertime ozone concentrations.

It is anticipated that operation of the South Project will have long term emissions that would differ from the South Project under the Proposed Action, due to different selection and operation of fuel-fired process equipment, mining equipment, and vehicles, and power generation units. However, under the No Action Alternative, the emission mitigation measures to be imposed by EPA Region 8 New Source Review air permitting will mitigate adverse impacts. It is anticipated that as a result of the new source review process, the short- and long-term impacts to air quality due to the South Project will remain minor, although likely greater than under the South Project under the Proposed Action.

ES.8.1.4.3 Soil Resources

Long-term impacts of wind and water erosion would occur as a result of mining operations. Dragon Road would not be improved under the No Action Alternative. Use of heavy trucks would result in increased erosion, fugitive dust, and wear on Dragon Road. Use of other existing dirt roads would result in increased compaction and possibly alter run-off patterns on these roadways. No impacts are anticipated from the other alternative means of developing the South Project.

ES.8.1.4.4 Mineral Resources

Long-term impacts on private and state mineral resources and oil and gas leases would occur as a result of the mining activity on private and state land.

ES.8.1.4.5 Water Resources

In a memo dated March 22, 2015, the Applicant indicated they could request a different route for the water pipeline across BLM lands. If the Proposed Utility Corridor Project were not approved, the Applicant could seek an alternative route for the water pipeline or develop an alternative water source that would require a new point of diversion from the White River or develop a new groundwater development field in or near the South Project. Any change in the Plan of Development (POD) or development of a groundwater well field would require approval from the Utah Department of Water Rights (UDWaR).

If Enefit requires an alternative or additional water pipeline route or groundwater development well field on BLM lands, they would need to submit a new SF-299 to the BLM for the rights-of-way. Additional studies would be required to analyze the impact on the human and natural environmental. Depending on the timing and specifics of such new application, the evaluation in this EIS may require supplementation, or a separate NEPA document would need to be prepared.

If Enefit were to use their groundwater monitoring wells as supply wells, the point of delivery for the water right intended for use would have to be changed from the White and Green rivers to groundwater point of delivery.

Prior to any change in the point of delivery or approval for groundwater development, the UDWaR would determine if the action would result in adverse impacts to adjacent groundwater users or surface water uses. In addition, trucking water in tanker trucks on Dragon Road was also listed as a possibility.

ES.8.1.4.6 Vegetation

Impacts would be similar to those described under the Proposed Action for the South Project. Impacts to vegetation adjacent to Dragon Road would be increased because the roadway would remain unpaved. The large trucks associated with construction of the South Project and ongoing operations and trucking of product would increase wear on the unpaved road, which would increase erosion and fugitive dust and alter run-off patterns. No impacts are anticipated from the other alternative means of developing the South Project.

ES.8.1.4.7 Special Status Plants

Indirect effects on Special Status Plants associated with the South Project, for the No Action Alternative, would be similar to those previously described for the Non-federal Connected Action – South Project.

ES.8.1.4.8 Wildlife

Indirect effects on wildlife and habitat associated with the South Project are similar to those previously described for the Non-federal Connected Action – South Project.

ES.8.1.4.9 Special Status Wildlife

Indirect effects on special status wildlife associated with the South Project would be similar to those previously described for the Non-federal Connected Action – South Project.

ES.8.1.4.10 Special Status Fish

Indirect impacts on aquatic resources associated with the South Project would be similar to those previously described for the Non-federal Connected Action – South - South Project.

ES.8.1.4.11 Cultural Resources

Types of impacts on cultural resources are the same as those previously described for the Non-federal Connected Action – South Project.

Potential impacts on cultural resources would not be minimized through the No Action Alternative. The South Project area would still be developed to full build out. Appropriate mitigation measures (if required) would be determined through consultation with SHPO during UDOGM mine plan review process.

ES.8.1.4.12 Paleontological Resources

Indirect long term impacts to paleontological resources would occur from mining operations. The impacts could be the loss of a paleontological resource due to ground-disturbing activities, or through increased erosion that exposes a paleontological resource.

ES.8.1.4.13 Visual Resources

Impacts on visual resources associated with the South Project would be similar to those previously described for the Non-federal Connected Action – South Project. If additional structures are proposed for the South Project, their visibility from adjacent lands would incrementally increase impacts on visual resources.

ES.8.1.4.14 Lands and Access

Indirect impacts would occur as previously discussed for the Non-federal Connected Action – South Project.

ES.8.1.4.15 Travel Management

Impacts to travel management would increase due to increased truck traffic on SR 45 and Dragon Road from employees' travel and delivery of product to market. Increased traffic would also occur on local, state, and federal roads serving the South Project area. Additional indirect impacts would include increased fugitive dust and increased wear on the existing roads from heavy truck traffic. No impacts are anticipated from the other alternative means of developing the South Project.

ES.8.1.4.16 Recreation

Impacts would be the same as previously described for the Non-federal Connected Action – South Project.

ES.8.1.4.17 Social and Economic Conditions

The social and economic impacts of the South Project under the No Action Alternative would be similar to those described under the Non-federal Connected Action – South Project, as the temporary pipeline and transmission line workers would with workers supporting the alternative means of obtaining utilities needed including possible construction of pipelines in another location or temporary truck drivers.

Evaluation of the environmental justice implications for the No Action Alternative would be similar to those previously described.

ES.8.1.4.18 Public Health and Safety

The South Project will implement an OSHA HAZCOM program, Emergency Response, and Spill plans to inform workers and protect the environment during hazardous material usage.

The nature and type of hazardous materials associated with the project would be the same as those discussed under the South Project. The proposed improvements to Dragon Road under the Proposed Action will not occur under the No Action Alternative. This Class B county road (dirt/gravel) as it now exists could disintegrate under the increased level of truck traffic.

The South Project will obtain an EPA Identification number if hazardous wastes are generated for off-site shipment, and will register the facility annually with UDEQ as a generator of hazardous wastes.

South Project employees will use correct procedures for recordkeeping, storage, containers, labels, and manifests, development of hazardous waste profiles, transportation and disposal in licensed facilities.

South Project employees handling hazardous and universal waste and materials will receive specific training on these topics.

ES.8.1.5 Cumulative Impacts

The BLM has identified a Cumulative Impact Analysis Area (CIAA) to support this assessment, which includes the areas affected by the Non-federal Connected Action – South Project, for purposes of evaluation of impacts to a certain extent. Because the BLM is without authority to approve or disapprove development of the South Project itself, however, no alternative ways of developing the South Project need be, nor are considered. Rather, the potential impacts of development of the South Project, as currently anticipated, have been incorporated into the cumulative impacts analysis as a reasonable foreseeable future action (RFFA). Finally, the effects of the South Project are not attributable to the Proposed Action of approving the Utility Project and do not count toward the significance of the Proposed Action’s impacts.

ES.8.1.5.1 Greenhouse Gases

The Utility Project would not contribute to cumulative effects for GHG emissions, as it is of relatively short duration, and limited GHG emissions. Future changes in climate would not affect the operation or purpose of the completed utility corridors. The existence of the utility corridors would not affect other projects in the region, or promote GHG emissions other than the South Project operation. Therefore, operation of the Utility Project would not affect or promote the growth in cumulative GHG emissions elsewhere in the Uinta Basin.

It is not possible to identify specific cumulative effects related to GHG emissions changes in a particular region or specific sector.

ES.8.1.5.2 Air Quality

Air pollutant emissions trends in the Uinta Basin and resultant air quality effects depend on many factors, the primary ones being increased trends in industrial activity, energy production, transportation fuel consumption, total use of fossil fuels, and population growth. But within this generalized framework, it cannot be predicted with quantitative certainty the extent to which oil shale development activities, either as individual projects or on a collective basis, will contribute to these air quality effects. Normal seasonal and year-to-year fluctuations are of greater magnitude than the incremental trends that could be attributed to specific projects.

The phenomenon of elevated wintertime ozone concentrations is an effect that is attributed to the regional growth in ozone precursor and particulate emissions sources. The oil and gas extraction sector is a substantial contributor to these emissions. The Utility Project would be an insignificant contributor to these regional ozone precursor emissions.

The South Project facility, which includes operation of non-road vehicles and other fuel-burning equipment, will likely contribute to the overall trends in Uinta Basin wintertime ozone. This potential can be evaluated by inclusion of these emissions, once they are defined, in the Air Resource Management Strategy (ARMS) photochemical model.

ES.8.1.5.3 Soil Resources

Cumulative effects of approving the Utility Project on soil resources would result from alterations to the natural environment and land surface that could increase the rate of soil erosion by water or wind. The implementation of Applicant-Committed Environmental Protection Measures (ACEPMs) and mitigation measures would minimize short-term impacts, such as ground-disturbing activities stemming from implementation of the Utility Project, past and other present projects, and RFFAs (including the South Project and the White River Research, Development, and Demonstration [RD&D] Mine. Other RFFAs, such as the establishment of new access roads to previously undisturbed areas crossed by the Utility Project, may result in long-term impacts on soil resources associated with increased public access.

Impacts associated with the No Action Alternative, under which only the South Project would be developed, may be greater than the Proposed Action depending on the alternative means chosen to obtain utilities. Since there is potential for trucking utilities in to the South Project and trucking product out to market, there would be a likelihood of greater impacts associated with heavy equipment and trucking, such as increased erosion and damage to soils, to occur on Dragon Road as on existing roads within the CIAA than would likely occur under the Proposed Action.

ES.8.1.5.4 Mineral Resources

The Utility Project and South Project lie within the Uinta Basin, an area known for its oil and gas exploration and development, Gilsonite mines, and oil shale and tar sands deposits. A potential cumulative effect is the loss of mineral resources.

On BLM-administered lands, areas allocated as open for future oil shale development are open only to RD&D leases (BLM 2008f). The BLM would issue a commercial lease only when a lessee satisfies the conditions of its RD&D lease and the regulations in the CFR. The White River Mine RD&D site is located west of the Utility Project. On private and State lands (e.g., the South Project), oil shale development is anticipated to occur in the foreseeable future. The cumulative impacts (e.g. loss of a mineral resource) on the development of oil shale by the Utility Project and the associated South Project connected action are expected to be significant.

The contribution of the Utility Project effects on mineral resources in addition to past and other present projects and RFFAs (including the South Project) could result in the potential for effects on mineral resources due to conflicts with developing a mineral resource. Implementation of the Utility Project could preclude other surface facilities and down-hole drilling to other oil and gas resources in the CIAA.

ES.8.1.5.5 Water Resources

There may be the potential for cumulative effects on water resources related to the Utility Project when added to past and other present projects and RFFAs (including the South Project). Ground disturbance from construction and operation of the Utility Project added to past and other present projects and RFFAs (including the South Project) has the potential for localized short-term, adverse cumulative effects on water resources in the CIAA. Short-term impacts could be attributed to degrading the quality of waters from sedimentation as a result of destabilization of sensitive soils and modification of upland, riparian, and wetland vegetation.

However, implementation of design features and mitigation measures, including reclamation of disturbed areas would minimize effects on water resources. As with the Utility Project, past and other present projects and RFFAs (including the South Project) are required to follow federal and state regulations requiring design features and mitigation measures to maintain compliance with regulations (refer to Section 3.2.5).

Development of any mining project, including an oil shale project, would typically include the construction of roads, pipelines, power lines, or other facilities. Adverse effects on water resources can include, but are not limited to, decreases in water quality as a result of sedimentation from construction of stream crossings, vegetation clearing including upland, riparian and wetland areas, modification of existing stream channels, and introduction of contaminants into surface water through accidental spills, if design features of the Utility Project and South Project and mitigation measures are not met. As a general rule, any areas with steep slopes in proximity to water resources raises the potential that ground disturbance resulting from the Project as well as past and other present projects and RFFAs (including the South Project) would result in sediment being discharged to waterbodies, subsequently decreasing water quality.

Setting aside the Utility Project, which is not, itself, anticipated to require withdrawal of water, except for limited needs associated with the construction phase, long-term impacts may occur as a result of past and other present projects and RFFAs (including the South Project) that may draw water from surface water bodies from underground aquifers, depending on their location, water availability, and water quality. In such a context, the withdrawal of surface water anticipated to be associated with development of the South Project, though not itself attributable as a cumulative impact of the Proposed Action, is included in this discussion.

Withdrawal from a surface water body, which might be employed for the South Project, would reduce flow and cause sediment deposition in the stream channel. In the case of streams receiving groundwater discharge (which generally has a higher dissolved salt content), the withdrawal can degrade the water quality of the stream down gradient from the point of withdrawal because the relative proportion of groundwater remaining in the stream would increase. Because of the generally poor groundwater quality, the receiving stream may incur increases of dissolved salt, selenium, and other metals. Withdrawal of water from local streams can inadvertently affect water temperature. With reduced flow, water depths in depleted streams would decrease and be more susceptible to warming due to solar radiation in summer time, while cooling of shallower stream water would be more rapid in cold weather. Diversions from small streams would have significantly greater overall impacts than diversions from larger rivers.

In addition, loss of water could result in modification of floodplains, wetlands, and riparian areas, which can result in direct and indirect impacts on these areas to maintain water quality and recharge groundwater systems.

Impaired waters in the CIAA are susceptible to past and other present projects and RFFAs (including the South Project). Protective measures mandated through the National Pollutant Discharge Elimination System (NPDES) would largely mitigate any adverse impacts on impaired waters from those projects, but given these waters have already been identified as impaired waters, limitations on allowable Total Maximum Daily Loads (TMDLs) of source pollutants contributing some level of impairment for 303(d) listed waters are already incorporated into the TMDL. These limitations restrict any new sources of impairment; levels of impairment should be either constant or declining as a result of the NPDES program.

Groundwater withdrawals from shallow aquifers, which might be employed for the South Project, depending on their location relative to recharge and discharge, may produce a cone of depression and reduce groundwater discharge to surface water bodies or to the springs or seeps that are hydrologically connected to the groundwater. The withdrawal could reduce stream flows, and the effects would increase with the amount of water withdrawn. Permanent changes to the groundwater flow regime due to mining and drilling could affect water rights to specific aquifers. The growth of a cone of depression may be time-delayed and affect water rights in the future.

ES.8.1.5.6 Vegetation

Cumulative effects from impacts associated with the construction and operation phase of the Proposed Action would be likely. The CIAA for impacts on vegetation resources includes consideration of impacts on vegetation resources within distinct watersheds that are collectively affected by ongoing resource management and energy extraction and are generally managed under the BLM Vernal RMP (2008f). Vegetation is removed by surface disturbing activities, such as construction of mining operations, refineries or processing facilities, roads, well pads, pipelines, power lines, compressor stations, water facilities, and other ancillary facilities. Other activities, such as livestock grazing, cross country driving, vegetation treatments, construction of utilities, and recreation sites have also resulted in the disturbance or removal of vegetation. Past oil and gas exploration in the CIAA has disturbed 19,738 acres of land, including vegetation (BLM 2008f). The RFFAs would create surface disturbances that would have similar impacts on vegetation in the CIAA as described for the Utility Project and South Project (the Proposed Action and No Action Alternative).

ES.8.1.5.7 Special Status Plants

Uinta Basin Hookless Cactus

The CIAA for Uinta Basin hookless cactus is the extent of Level 1 and Level 2 Core Conservation Area crossed by the Utility Project and within the South Project boundary. Within the CIAA there are a number of past and other present projects and RFFAs, including energy extraction projects such as mining and oil and gas projects, which would result in a greater potential for cumulative effects on special status plants, including *Sclerocactus*.

The types of potential effects on habitat from these cumulative actions include loss of Core 1 and Core 2 habitat from surface-disturbing activities, direct loss of individual plants, and reductions in reproductions due to fugitive dust and indirect effects on pollinators. Even taken together, the Utility Project and South Project would not contribute incrementally to disturbance of Core 1 and Core 2 habitat for the Uinta Basin hookless cactus. By comparison, under the No Action Alternative, development of the South Project alone would not contribute incrementally to disturbance of Core 1 and 2 habitat either.

Graham's Penstemon

The CIAA for Graham's beardtongue (penstemon) is the extent of Penstemon Conservation Agreement Areas (PCAA) crossed by the Utility Project and within the South Project boundary. There are a number of past and other present projects and RFFAs besides the South Project that would result in a greater potential for impacts son Graham's beardtongue. According to the (2014) Cooperative Agreement (State Institutional Trust Lands Administration [SITLA] 2014), potential threats to Graham's beardtongue include:

- plant mortality, habitat loss, and habitat fragmentation due to energy development, livestock grazing, road construction and maintenance, and off-road vehicles;
- indirect disturbance to the species and their pollinators from fugitive dust and invasive plant species;

- lack of range-wide protection;
- population vulnerability due to small population size, random events, loss of genetic diversity, and inbreeding;
- mortality, stress, or habitat loss due to climate change and drought; and
- cumulative interaction of the previous individual factors.

The implementation of the Proposed Action of approving the Utility Project and past and other present projects and RFFAs (including the South Project) would contribute incrementally to 5 acres of disturbance within Unit 4 of the PCAA, or 1 percent of the estimated total cumulative disturbance. No contribution to cumulative disturbance by implementation of the Utility Project and South Project within Unit 3 of the PCAA would be anticipated. Thus, the overall impact of the Proposed Action on habitat for Graham's beardtongue within the CIAA would be minor.

White River Penstemon

The CIAA for White River beardtongue is the same as Graham's beardtongue because the species share similar habitat.

Cumulative effects on habitat for the White River beardtongue within the CIAA would be the same as described for Graham's beardtongue.

Barneby's Catseye

The CIAA for Barneby's catseye is the extent of habitat crossed by the proposed rights-of-way for the Utility Project and occurring within the South Project boundary. Implementation of the Utility Project and South Project could also increase the potential for indirect and dispersed direct effects to this species, if present. Disturbances from construction could increase the potential for the invasion and establishment of noxious weed species. In addition, these disturbances could potentially increase wind erosion of disturbed areas, which creates airborne dust that could be transported into suitable habitat for this species. Specific habitat for Barneby's catseye is not available for the South Project portion of the CIAA, although individual plants were identified in 2013 (SWCA). It is likely that this species would be found throughout the South Project area and could be indirectly affected by ground-disturbing activities.

Sterile Yucca

The CIAA for sterile yucca is the extent of habitat crossed by the proposed rights-of-way for the Utility Project and occurring within the South Project boundary. Data from special status species inventories conducted in the Utility Project and South Project areas in 2013 were used to evaluate the presence of sterile yucca or habitat found to occur in the CIAA (SWCA 2013i).

Although potential habitat occurs in the study area for the Utility Project and South Project, no individual sterile yuccas were found to occur (SWCA 2013i). Therefore, even taken together, the Utility Project and the South Project would not contribute incrementally to cumulative effects on sterile yucca.

Strigose Easter-daisy

The CIAA for Strigose Easter-daisy is the extent of habitat crossed by the proposed rights-of way for the Utility Project and occurring within the South Project boundary. Implementation of the Utility Project, past and other present projects, and other RFFAs (including the South Project) could also increase the potential for indirect and dispersed direct effects to this species, if present. Disturbances from construction could increase the potential for the invasion and establishment of noxious weed species. In addition, these disturbances could potentially increase wind erosion of disturbed areas, which creates airborne dust that could be transported into suitable habitat for this species.

ES.8.1.5.8 Wildlife

Big Game

Big game (particularly mule deer) would be most predisposed to cumulative effects because past and present disturbances related to energy extraction has resulted in relatively substantial habitat loss, fragmentation, and displacement of wildlife throughout the CIAA. The extent of cumulative impacts is species specific and depends on a number of factors, including:

- status and condition of the individual or the population of wildlife species affected
- quality of habitats in the CIAA
- timing of disturbances
- surface disturbance types

In general, indirect effects associated with the Proposed Action of approving the Utility Project would be anticipated, including displacement due to increased human presence in the area and associated increased noise, traffic, dust, and increased invasion of non-native plants into suitable habitat. Invasion of riparian habitats by aggressive non-native species, particularly tamarisk (*Tamarix* species) also would impact big game species by reducing the quality and quantity of riparian habitat used by big game species. Other potential types of indirect effects on the species include decreased water quality and degradation of riparian vegetation due to erosion and sedimentation associated with surface disturbance.

Mule Deer

The CIAA for mule deer is the extent of habitat crossed by the Utility Project and occurring within the South Project boundary. The implementation of the Utility Project would contribute incrementally to 147 acres of disturbance within mule deer crucial winter habitat, or about 2 percent of the estimated total estimated cumulative disturbance. Further, the Utility Project would contribute incrementally to 103 acres of disturbance within crucial year-long habitat, or 3.5 percent of the estimated cumulative disturbance.

With the remaining available mule deer crucial winter range (14, 303 acres) and crucial yearlong habitat (2,877 acres), local populations within the CIAA would be likely to continue to occupy their ranges and to reproduce. Thus, the overall impact of the Proposed Action on habitat for mule deer within the CIAA would be minor.

Migratory Birds and Raptors

The CIAA for migratory birds and raptors is the extent of nesting or foraging habitat crossed by the Utility Project and within the South Project boundary. The effects on migratory birds of the Utility Project and South Project would include disturbance to habitat, including loss, alteration, and fragmentation, disturbances to seasonal patterns and nesting, and collision risks associated with transmission lines and towers, and vehicles during construction activities.

The removal and potential fragmentation of habitat attributed to the Utility Project and past and other present projects and RFFAs (including the South Project) could result in cumulative disturbance to seasonal patterns (nesting and migration), collision or electrocution mortalities, and an increase in collisions with vehicles. In addition, effects on golden eagles would include displacement caused by increased human activity, nest desertions and/or reproductive failure caused by project-related disturbances, increased public access and subsequent human disturbance resulting from new road construction, and temporary reductions in prey populations due to habitat fragmentation and alteration. Indirect impacts on golden eagles from the construction of the Utility Project and past and other present projects and RFFAs (including the South Project) could include an increase in automobile traffic, which would increase the potential for collisions.

Implementation of the Utility Project and past and other present projects and RFFAs (including the South Project) would contribute incrementally to cumulative effects on migratory birds and raptors. However, through compliance with spatial and seasonal avoidance stipulations, the effects of the Utility Project and past and other present projects and RFFAs (including the South Project) would be minimized.

ES.8.1.5.9 Special Status Wildlife

Western Yellow-billed Cuckoo

Within the CIAA, riparian habitat exists in the Utility Corridor, which could serve as western yellow-billed cuckoo habitat. Past and present actions that have affected yellow-billed cuckoo and habitat in the CIAA include oil and gas development, mining, and land management activities. Disturbances to riparian vegetation, which serves as nesting and foraging habitat, would occur under the proposed Utility Project. No direct effects on western yellow-billed cuckoo from the Utility Project would be anticipated (refer to Section 4.2.9.1.1.1). Indirect effects would be anticipated and would include displacement due to construction activities, an increase in human activity, an increase in noise, traffic, and fugitive dust, and increased invasion of non-native plants into suitable habitat. Invasion of riparian habitats by aggressive non-native species, particularly tamarisk (*Tamarix* species), would adversely impact the species. Other potential indirect impacts to the species include decreased water quality and degradation of riparian vegetation due to erosion and sedimentation associated with surface disturbance. Indirect effects would be temporary in nature.

However, through compliance with spatial and seasonal avoidance stipulations for western yellow-billed cuckoo, the effects of the Utility Project and past and other present projects and RFFAs (including the South Project) would be minimized.

Greater Sage-grouse

Important habitat areas for the Deadman's Bench greater sage-grouse population found within the CIAA include occupied, brood rearing areas, and wintering areas occur within the CIAA. In addition to the Utility Project and past and other present projects and RFFAs (including the South Project) identified within the CIAA for greater sage-grouse include energy extraction projects (oil and gas; mining), transmission lines, and land-management activities. Greater sage-grouse populations require large patches of continuous sagebrush habitat. Land clearing activities associated with any development could disturb existing sage-grouse habitat and may cause sage-grouse to displace to habitats that may not consist of adequate vegetative cover, which would indirectly increase the potential for predation. Indirect effects on sage-grouse would include temporary project-related noise from construction.

Within the CIAA, the implementation of the Proposed Action of approving the Utility Project would be anticipated to incrementally affect 446 acres, or 4 percent of the greater sage-grouse habitat within the CIAA. This number includes a combined total of impacts to occupied habitat, brooding, and winter habitat. The Utility Project is located within the GHMA as identified in the BLM Utah Greater Sage-Grouse Approved Resource Management Plan (2015c). Mitigation measures identified in this plan would apply to the Utility Project because project activities would result in habitat loss and degradation to sage-grouse GHMA. The Applicant would comply with mitigation measures for the Utility Project identified in Table 4-1 to achieve net conservation gain.

Black-footed Ferret

Cumulative impacts on black-footed ferret Primary Management Zone (PMZ) would occur as a result of the Proposed Action of approving the Utility Project. In addition to the Utility Project, past and other present projects, and RFFAs (including the South Project) identified within the CIAA for the black-footed ferret include oil and gas development, mining, and land management activities. Direct impacts of the

Proposed Action of approving the Utility Project would include habitat loss (by conversion) and impacts to prairie dog colonies, which could impact the ferret's primary food source. The addition of transmission lines would provide perching opportunities for raptors which would increase potential predation on ferrets and prairie dogs. No direct effects from the South Project on black-footed ferret PMZ would be anticipated. Implementation of mitigation measures for the Utility Project would reduce indirect effects of land disturbing activities significantly.

The additional habitat loss associated with future projects may have a substantial effect on the availability of suitable habitat for ferrets. Because of its direct effects, the Utility Project would contribute incrementally to cumulative effects on black-footed ferret.

Golden Eagle

Direct impacts to golden eagles include displacement caused by increased human activity, nest desertions and/or reproductive failure caused by project-related disturbances, increased public access and subsequent human disturbance resulting from new road construction, and temporary reductions in prey populations due to habitat fragmentation and alteration. Additionally, the addition of transmission lines would provide perching opportunities for raptors, which would increase potential risks for electrocution and collision. Because the Proposed Action involves many of these elements, direct impacts to golden eagles can be anticipated. In addition, temporary impacts on golden eagles from the construction of the Utility Project and South Project could include an increase in automobile traffic, which would increase the potential for collisions.

Implementation of the Utility Project, past and other present projects, and RFFAs (including the South Project) would contribute incrementally to cumulative effects on golden eagle within the CIAA.

Short-eared Owl

No direct effects from the Utility Project and the South Project on short-eared owls would be anticipated. Any impacts associated with the construction process would be temporary in nature and further mitigated by implementation of ACEPMs and mitigation measures for the Utility Project. Thus, the Utility Project, past and other present projects, and RFFAs (including the South Project) would not contribute incrementally to cumulative effects on short-eared owls within the CIAA.

Burrowing Owl

Habitat for the burrowing owl occurs in the Utility Project area within the CIAA. In addition to the Utility Project, past and other present projects, and RFFAs (including the South Project) identified within the CIAA for burrowing owl are the same as other special status species. Implementation of the Utility Project would have both direct and indirect adverse impacts on burrowing owls in the Utility Project study area. The adverse impacts would include a direct loss of nesting and foraging habitat; loss of prey and prey habitat; an increased risk of vehicle-related mortality; increased displacement due to increased noise and human presence; and increased habitat fragmentation and habitat modification. No active prairie dog colonies or burrowing owls were observed by surveys conducted in 2013.

Implementation of the Utility Project would result in minor incremental cumulative effects on burrowing owl taken together with past and other present projects, and RFFAs (including the South Project).

Ferruginous Hawk

Cumulative impacts to ferruginous hawks would be similar to those described for other raptors, including golden eagles. Indirect impacts would be similar to those described for all raptors.

Data from past raptor inventories conducted in the Utility Project area between 2012 and 2013 were used to evaluate the level of nesting activity for raptor species in the CIAA (SWCA 2013j; CH2M Hill 2012). No direct effects from either the Utility Project or the South Project on ferruginous hawks would be anticipated based on the data. Indirect effects would be temporary in nature and mitigated by implementation of ACEPMs and mitigation measures for the Utility Project. Therefore, the Utility Project, past and other present projects, and RFFAs (including the South Project) would not contribute incrementally to cumulative effects on ferruginous hawks.

Bald Eagle

Data from past raptor inventories conducted in the Utility Project area between 2012 and 2013 were used to evaluate the level of nesting activity for raptor species in the CIAA (SWCA 2013j; CH2M Hill 2012). Since no bald eagle nests were identified in the Project area, no direct effects from either the Utility Project or the South Project on bald eagles would be anticipated. Indirect effects would be temporary in nature and mitigated by implementation of ACEPMs for the Utility Project and the installation of raptor deterrents and measures according to the MLEA Avian Protection Plan.

Lewis's Woodpecker

Data from special status species inventories conducted in the Utility Project area between 2012 and 2013 were used to evaluate the presence or Lewis's woodpecker or habitat in the CIAA (SWCA 2013d; CH2M Hill 2012). Since no individual woodpeckers or habitat were identified in the Utility Project area, no direct or indirect effects from the Utility Project on Lewis's woodpecker would be anticipated. Even taken together, the Utility Project, past and other present projects, and RFFAs (including the South Project) would not contribute incrementally to cumulative effects on this species.

Long-billed Curlew

Data from special status species inventories conducted in the Utility Project area between 2012 and 2013 were used to evaluate the presence of the long-billed curlew in the CIAA (SWCA 2013d; CH2M Hill 2012). The data did not indicate that this species or habitat occurred in the Utility Project area. Since no individual curlews or habitat were identified in the Project area, no direct or indirect effects from the Utility Project or South Project on the long-billed curlew would be anticipated. Therefore, the Utility Project and South Project would not contribute incrementally to cumulative effects on the long-billed curlew.

White-tailed Prairie Dog

Within the CIAA, both active and inactive white-tailed prairie dog colonies occur. Data from special status species inventories conducted in the Utility Project area between 2012 and 2013 were used to evaluate the presence of the white-tailed prairie dog in the CIAA (SWCA 2013d; CH2M Hill 2012).

There may be the potential for cumulative effects on white-tailed prairie dogs related to the construction and operation of the Utility Project and past and other present projects and RFFAs (including the South Project). In addition to the Utility Project and South Project, other past, present, or other RFFAs identified within the CIAA for white-tailed prairie dog include energy extraction projects, transmission lines, and land-management activities.

Within the CIAA, direct impacts from implementation of the Utility Project would be estimated to affect 16 acres, or 16 percent of the estimated cumulative development with the CIAA. In the short-term, cumulative effects would be attributed to degrading the quality of habitat by removal of vegetation or disturbance by human activity. Indirect effects from the installation of transmission lines would increase predation and improvements to access roads and Dragon Road would increase the potential for collisions with automobiles.

Impacts would be reduced through implementation of BLM stipulations and mitigation measures for the Utility Project for general wildlife and special status species. Further, it is assumed past and other present projects and RFFAs (including the South Project) also would be required to comply with federal and state policies for the protection of white-tailed prairie dog habitat (refer to Section 3.2.9). Implementation of the Proposed Action of approving the Utility Project would result in minor incremental cumulative effects on white-tailed prairie dogs.

Spotted Bat, Fringed Myotis, Big Free-tailed Bat, and Townsend's Big-eared Bat

Data from special status species inventories conducted in the Utility Project area between 2012 and 2013 were used to evaluate habitat and presence of bats in the CIAA (SWCA 2013d; CH2M Hill 2012). Since no individual bats or specific habitat were identified in the Utility Project study area, no incremental or cumulative impacts from the Proposed Action of approving the Utility Project are anticipated. The impact of the South Project would also be minor, considered either alone under the No Action Alternative or with the past and other present projects and RFFAs.

Mountain Plover

Data from special status species inventories conducted in the Utility Project area between 2012 and 2013 were used to evaluate habitat and presence of mountain plover in the CIAA (SWCA 2013i; CH2M Hill 2012). No individual mountain plover were identified in the Utility Project area, although they could occur during migration. No direct or indirect effects from the Utility Project on the mountain plover would be anticipated. Therefore, the Utility Project, past and other present projects, and RFFAs (including the South Project) would not contribute incremental or cumulative effects on the mountain plover.

ES.8.1.5.10 Special Status Fish

In general, the listed Colorado River fish species (i.e., Colorado pikeminnow, razorback sucker, humpback chub, and bonytail chub) and BLM sensitive fish species (i.e., bluehead sucker, flannelmouth sucker, and roundtail chub) are indirectly impacted by activities that introduce erosion or sediment into aquatic habitats of the White River. Portions of the White River that occur within the CIAA provide specific habitat attributes required by the Colorado River endangered fish. Cumulative impacts associated with the Utility Project (construction), in addition to effects from other energy development, recreational activities, wildlife habitat management, and other land uses within the CIAA, would cumulatively reduce the quality and quantity of aquatic habitat for Colorado River endangered and sensitive fish species, although the increment of these impacts associated with development of the Utility Project would be minor.

Implementation of the Utility Project combined with past and other present projects, and RFFAs (including the South Project) in the CIAA could result in minor but adverse modification of designated critical habitat for the Colorado River fish by increasing erosion and sediment loads in the White River. Increased sediment intrusion from surface disturbing activities, such as realignment and improvements to Dragon Road where it currently crosses Evacuation Creek, related to development could lead to increased water temperatures, which could have an adverse effect on fisheries and other aquatic species. Sediment deposition may bury and suffocate fish eggs and larvae that may affect spawning and rearing. In addition, reduced visibility could impact feeding behavior. Due to existing surface disturbance, ongoing projects, and poor reclamation success of disturbed areas within the study area and surrounding region, increased erosion and subsequent sediment yield would likely occur.

It is anticipated that water depletions within the Colorado River system, including the Green and White rivers, would affect Colorado River fish and their habitat. Depletions from these river systems or water return to the rivers would create impacts on the listed fish. Water requirements for utility area activities would be acquired from permitted sources.

Depletion from other energy and mining development projects, ranching, commercial, and residential water use has the potential to substantially reduce flow in the Upper Colorado River Basin. In addition to reducing the quantity of water with sufficient quality in a specific location, water depletions can also reduce a river's ability to create and maintain the physical habitat for fish. These could include spawning, nursery, feeding, and rearing, or access to these habitats) and the biological environment (food supply, predation, and competition). Section 2.2.1.1 describes the water right and point of diversion for water use for the project. The Green River was selected for water withdrawal for the South Project since it has a significantly larger base flow year round than does the White River, therefore, it can more easily accommodate the 15 cfs water right. The maximum amount of water that can be used for industrial purposes is 10,739.75 acre-feet/year.

Impacts associated with the Utility Project would generally be temporary and minor in nature (i.e., associated with construction) and mitigated by implementation of ACEPMs and mitigation measures described for the Utility Project in Table 4-1. These include general wildlife measures 1-6 for special status fish resources as described below:

- Apply spill prevention technology to all pipelines that cross or are in proximity to rivers or streams with threatened or endangered aquatic species.
- The Applicant and its contractors would locate, handle, and store hazardous substances in locations that would prevent accidental spill or delivery to the White River or its tributaries. Transferring of liquids and refueling shall only occur in pre-designated locations at least 100 feet from all waterbodies and 200 feet from any water well as described in the Applicant's Plan of Operation.
- Pipelines crossing mapped 100-year floodplain, mapped riparian, or wetland areas would be routinely pigged and would have emergency shutoff valves.
- Natural gas pipelines that cross perennial, intermittent, and ephemeral stream channels would be buried below the predicted scour depth for an equivalent flood event. The construction requirements for each type of crossing would be determined on a site-specific basis and would consider the technical guidance of the document entitled, "Hydraulic Considerations for Pipeline Crossings of Stream Crossings," which is found in Appendix B of the Vernal RMP (BLM 2008).
- Natural gas pipelines that cross perennial, intermittent, and ephemeral stream channels would be buried at least 5 feet below the channel bottom.
- Implement the Spill Prevention, Control, Countermeasures and Reporting Plan (POD-Appendix F).
- Comply with Water Depletion from Off-Channel Locations Upper Colorado River Endangered Fish Recovery Program.
- Construction activities in designated critical habitat for Colorado pikeminnow and razorback sucker will not occur during active flooding events (when the water level rises more than 6 inches above the normal wetted channel). If construction materials are displaced by high flow, the Applicant will contact the FWS Utah Field Office as soon as possible to coordinate the least intrusive retrieval methods.

Implementation of the Utility Project would contribute incrementally to cumulative effects on Colorado River fish but even considered with the past and other present projects and RFFAs (including the South Project) would be minor.

ES.8.1.5.11 Cultural Resources

Direct impacts associated with the construction and operation phase of the Utility Project, past and other present projects, and RFFAs (including the South Project) are likely to result in cumulative impacts on cultural resources. Cultural resources could be destroyed by construction activities and ancillary facilities development. Disturbances from future developments and ground-disturbing activities could uncover or destroy unrecorded cultural resource sites. Future actions proposed on federal and/or state lands would require cultural resource evaluations and mitigation of affected significant historic properties prior to implementation. The resulting cultural resource documentation would increase the cultural resources knowledge base for the overall region; however, developments solely on private land are largely exempt from this requirement.

RFFAs, such as development of additional access corridors and rights-of-way, could increase access to previously inaccessible areas, leading to potential vandalism of cultural resource sites. There also could be cumulative effects from indirect impacts in the form of introduced visual, atmospheric, and audible elements that could detract from the cultural significance of potential traditional cultural properties (TCPs), or other significant cultural resources. These indirect impacts also could adversely impact historic properties, or sites that have the potential to be listed in the National Register of Historic Places (NRHP). The introduction of additional development could alter the setting and feeling of historic properties (e.g., habitation structures, open architectural sites, roads, and rock art).

As a result of the presence of existing development projects and proposed future actions, cultural resources and potentially significant cultural resources that may be encountered could be negatively affected throughout the Utility Project study area, specifically in the CIAA in general.

Overall, the addition of the Utility Project to past and other present projects, and RFFAs (including the South Project) would result in a greater potential for adverse effects on historic properties and other potentially significant cultural resources. Some of these are:

- Prehistoric rock art, historic mining sites, and the White River Stage Station site;
- Archaeological and historic cultural resources (especially those located along the White River, Evacuation Creek, Coyote Wash, and Dragon Road);
- Historic roads and trails (General Land Office [GLO] features);
- Native American concerns and potential TCPs.

The extent of potential effects on cultural resources could be reduced significantly through avoidance and implementation of mitigation measures. The effects on cultural resources, as a result of increased public access associated both with the Utility Project and other RFFAs (including the South Project), would be expected to be low.

Under the No Action Alternative, the Utility Project would not be built and the required utilities would be secured by alternative means; the South Project area would be developed to full build out on private lands owned by the Applicant. The types of potential adverse effects on cultural resources associated with the No Action Alternative – Non-federal Connected Action – South Project would be similar to the types of potential effects described for the South Project; however, without the construction associated with the Utility Project, the extent of the adverse effects on cultural resources would be lessened.

ES.8.1.5.12 Paleontological Resources

Paleontological resources can be affected directly by disturbance or destruction of buried, in-situ fossils as a result of ground-disturbing activities including construction of new access roads, improvement of existing access roads, excavation of tower sites, pipeline trenching, or mine excavation. Indirect impacts on paleontological resources include loss of a paleontological resource due to increased erosion, and increased potential for illegal collecting of fossils due to increased public access into previously difficult to access areas.

Within the CIAA, there are 15 different geologic units, seven of which have moderate to very high potential to contain paleontological resources. Most notable are the Uinta Formation and Green River Formation, which have produced paleontological resources in the past. The Utility Project's cumulative effects on paleontological resources could be reduced significantly through avoidance and implementation of mitigation measures, and the potential to reduce adverse impacts on these resources associated with ground-disturbing activities, and increased access is good. The types of impacts on paleontological resources in the CIAA related to the South Project under the No Action Alternative would be similar to those discussed for the Utility Project and South Project under the Proposed Action. However, fewer acres would potentially be affected.

ES.8.1.5.13 Visual Resources

Scenery

The area north of the White River, associated with the Red Wash/Kennedy Wash/Devil's Playground, Deadman's Bench, and Bonanza scenic quality rating units (SQRUs), has become increasingly visually dominated by industrial development including oil and gas extraction operations, the BPP, transmission lines, gilsonite mining, and pipelines.

The White River SQRU (Class A) is becoming increasingly developed on the plateau lands associated with this scenery unit, including oil and gas extraction operations. In contrast, the lands along the river have few visible modifications except at the Utility Project proposed crossing, where an existing pipeline (above-ground at the river crossing) and small transmission line cross the river. The introduction of the Utility Project and RFFAs would lead to this portion of the White River being viewed as a utility corridor due to the presence of several linear utilities crossing the river in the same location.

The area south of the White River, associated with the Southam, Hell's Hole, Long Draw, Park Canyon, and Weaver Canyon SQRUs, is increasingly being influenced by industrial development, including oil and gas extraction operations, pipelines, and gilsonite mining. This level of modification is not to the extent described north of the White River. The introduction of the Utility Project and RFFAs would lead to increasing industrialization of the portion of the landscapes located in proximity to these projects.

Viewing Locations

Views from KOP #1 – Atchees Wash Road are minimally affected by existing development. Due to topographic screening limiting visibility of the Utility Project, there would be minimal incremental Project cumulative effects. RFFAs, including the South Project, would begin to dominate views from this location due to the geometric landforms associated with the proposed mine and change in soil color resulting from excavation.

Views from KOP #5 – Highway 45/Dragon Road are generally intact except for intermittent views of an existing pipeline corridor. The addition of the Utility Project and RFFAs would lead to increase visibility of industrial development. In particular, the full build out of the South Project would begin to dominate views from this location.

Views from KOPs #7 – Fidlar/Little Bonanza and #8 – Kennedy Wash, both located north of White River, are becoming increasingly visually dominated by industrial development including oil and gas extraction operations, the BPP, transmission lines, gilsonite mining, and pipelines. The introduction of the Utility Project and RFFAs (including the Energy Gateway South Transmission Project) would intensify the industrialization of these views.

Views from KOP #9 – Duck Rock are visually influenced by existing development include an existing pipeline (above-ground at the river crossing) and smaller transmission line. The introduction of the Utility Project and RFFAs would lead to further industrialization of these views and the expansion of the area viewed as a utility corridor.

Due to the limited visibility of the Utility Project from the other identified KOP locations (#2 – Rainbow Ghost Road, #3 – Former Inventory Observation Point, #4 – White River, and #6 – Goblin City), cumulative effects on their viewsheds are primarily associated with past and present projects including oil and gas extraction operations, gilsonite mining, and pipelines.

Effects associated with the No Action Alternative would be less intense than those effects described for the Utility Project, on the White River SQRU and KOP #9 – Duck Rock, where the introduction of the Utility Project would have led to increasing industrialization of these areas. In the areas north and south of the White River, effects on scenery and views would be similar to those described for the Utility Project and South Project, even considered together.

ES.8.1.5.14 Lands and Access

No analysis was conducted for general developed land uses or future land uses as these projects are being used in the analysis as the past and other present projects and RFFAs. The predominant land use in the CIAA is grazing and rangeland.

Other RFFAs that may affect grazing allotments are the Enefit Resources Inc. land holdings and leases. There are no projects planned for these leases, but development of these areas may potentially increase disturbance of grazing allotments in the area. Overall, the effects on cultural resources, as a result of increased public access associated with the Utility Project, past and other present projects, and RFFAs (including the South Project), would be expected to be low.

ES.8.1.5.15 Travel Management

The Utility Project would use existing roads within the CIAA. The construction and operation of the Utility Project would not incrementally result in long-term impacts to access within the CIAA. Short-term incremental impacts to the existing transportation network may occur from the increase in heavy truck traffic associated with the construction of the project. No long-term impacts are anticipated from the operation, periodic maintenance activity, or employee use of these roadways. Impacts on travel management are discussed in Section 4.2.15.

Potential for impacts throughout the CIAA would be greater under the No Action Alternative due to the potential for trucking utilities in to the South Project and trucking product out to market. This increase in trucking would result in an increase in large trucks and heavy equipment along existing roads. This increase would increase the potential damage to roads and increase wear from heavy equipment and tanker trucks.

ES.8.1.5.16 Recreation

Recreation resources are minimal, but include OHV use and the Duck Rock recreation site (overlook to the White River). Prior projects, such as oil and gas development and other mining operations, have already resulted in the build-out of an existing road network throughout the area, which has reduced the character of primitive recreational activities. The Proposed Action is anticipated to have no cumulative effect on recreational activities. No direct physical impact would occur to the OHV use or the Duck Rock recreation site, nor would access to these areas be restricted.

ES.8.1.5.17 Social and Economic Conditions

In general, there are two types of effects that could have implications for cumulative effects on socioeconomic resources. Any construction activity has the potential to affect temporarily socioeconomic resources, economic activity, construction workforce effects on housing and public services, and social conditions. Cumulative impacts associated with the Utility Project would be most likely to occur where there are multiple projects proposed in an area that have overlapping construction schedules and/or project operations that could affect similar resources. Further, concurrent and similar projects could result in a demand for labor that cannot be met by the region’s labor pool, which could lead to an influx of nonlocal workers. Socioeconomic resources potentially affected could include the availability of housing and accommodations as well as the availability of public and social services to accommodate the temporary workers. However, there is no way to quantify the potential for impacts to socioeconomic conditions if this overlap were to occur in the CIAA.

Effects could also occur over a longer time period as in-migration of operations workforce impacts population trends in the area. Because population increases due to oil shale development and other similar projects can be quite rapid, local government entities often do not have proper time to plan for these changes. Rapid population growth resulting from in-migration of construction and operations workers could lead to the undermining of local community social structures as beliefs and value systems among the local population and in-migrants contrast, and consequently could lead to a range of changes in social and community life leading to social issues including increases in crime, alcoholism and drug use (BLM 2012d). Over the longer term, communities and individuals will be able to adjust to changes in population trends and address additional demands on housing, public services, and other social conditions. These impacts are likely to be short-term for the Utility Project, as they would be primarily associated with the Utility Project's construction.

Environmental justice populations are expected to benefit from increased development through jobs, income, and fiscal receipts to local governments. These populations are not anticipated to be disproportionately and adversely affected by the Utility Project or the South Project due the remote location of these facilities. Therefore, the Utility Project is not anticipated to cumulatively affect these populations. However, minority and low income populations may be impacted by disruptions in social conditions that could occur with a rapid increase in population growth due to in-migration of construction and operation workers due to multiple projects in the study area.

ES.8.1.5.18 Public Health and Safety

There are no cumulative effects to public health and safety as a result of solid waste or hazardous waste management associated with the Proposed Action. The current conditions within the geographic scope of the analysis do not exhibit significant effects that are the result of past activities. The Utility Project construction activities and the future construction and operation of the South Project occur over defined and controlled areas. The defined temporal and geographic nature of this activity will promote proper management of waste generation and proper transport and disposal in compliance with applicable regulations, which will mitigate contributions to cumulative effects.

Potential for impacts throughout the CIAA would be greater under the No Action Alternative due to the potential for trucking utilities in to the South Project and trucking product out to market. This increase in trucking would result in an increase in large trucks and heavy equipment along existing roads. This increase would increase the potential for spills and accidents, and may result in spill or solid and/or hazardous waste.

ES.9 Consultation and Coordination

Agencies and organizations having jurisdiction and/or specific interest in the Utility Project were contacted at the beginning of scoping, during the resource inventory, and prior to the publication of the EIS to inform them of the Utility Project, verify the status and availability of existing environmental data, request data and comments, and solicit their input about the Utility Project. Additional contacts were made throughout the process to clarify or update information. This section describes the consultation and coordination activities that have taken place throughout the NEPA process.

ES.9.1 Cooperating Agencies

In March 2013, the BLM sent formal letters inviting all agencies and the Northern Ute Tribe, whose jurisdiction and/or expertise are relevant to the Utility Project, to participate as cooperating agencies in the preparation of the EIS. The agencies that accepted the invitation to participate as cooperating agencies are listed below.

Federal

- EPA
- USACE
- FWS

State

- Utah Public Lands Policy Coordination Office

Local

- Uintah County

Meetings of the Agency Interdisciplinary Team, including the cooperating agencies, have been conducted two times to discuss the status of the Utility Project and EIS. The date and the purpose of each meeting are as follows:

- **August 5, 2014.** BLM introducing the Utility Project to the Agency ID Team, including outlining the purpose of and need for the Utility Project, the Utility Project description, scoping results, the EIS schedule, future coordination, agency actions and decisions, alternatives to be considered and the non-federal connected action, and issues to be addressed in the EIS.
- **June 2, 2015.** Reviewing and discussing comments on the administrative Draft EIS prior to its completion and release for public review.

Additional coordination efforts occurred through internal reviews that did not consist of formal cooperator meetings. Coordination with the Agency Interdisciplinary Team will continue through the completion of the EIS.

ES.9.2 Consultation

The BLM is required to prepare EISs in coordination with any studies or analyses required by the Fish and Wildlife Conservation Act, Endangered Species Act (ESA), and the National Historic Preservation Act (NHPA), as amended. Also, in accordance with Executive Order 13175, BLM must consult, government-to-government, with American Indians to ensure the tribes are informed about actions that may affect them.

ES.9.2.1 Biological Resources

The FWS has been involved in review of the document including preparation of the analysis. Under the provisions of Section 7(a) (2) of the ESA, a federal agency that carries out, permits, licenses, funds, or otherwise authorizes an activity must consult with the FWS as appropriate to ensure the action is not likely to jeopardize the continued existence of any species listed under the ESA or result in the destruction or adverse modification of designated critical habitat.

ES.9.2.2 Cultural Resources

Section 106 of the NHPA requires federal agencies to take into account the effect of their undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP. Regulations for the implementation of Section 106 are defined in 36 CFR Part 800 – *Protection of Historic Properties*. These regulations define how federal agencies meet their statutory responsibilities. The Section 106 process seeks to accommodate historic preservation concerns with the needs of federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties. These parties may include the American Council of Historic Preservation (ACHP), SHPO, American Indian tribes, Tribal Historic Preservation Officers, state and other federal agencies, and individuals or organizations with a demonstrated interest in the undertaking due to their legal or economic relation to the undertaking or affected properties, or their concern with the effects of undertakings on historic properties.

As lead federal agency for compliance with Section 106 of the NHPA with respect to the Proposed Action, the BLM initiated Section 106 consultation with the SHPO, Public Lands Policy Coordination Office, School and Institutional Trust Lands Administration, and others pursuant to 36 CFR Part 800.6 and 800.14(b) of the ACHP's regulations implementing Section 106 of the NHPA in 2013. The Section 106 process is separate from but often conducted in coordination with the preparation of an EIS. Consultation under Section 106 of the NHPA is ongoing.

ES.9.2.3 Government-to-Government Consultation

The United States has a unique legal relationship with American Indian tribal governments as set forth in the Constitution of the United States, treaties, Executive Orders (e.g., Executive Order 13175), federal statutes, federal policy, and tribal requirements, which establish the interaction that must take place between federal and tribal governments. An important basis for this relationship is the trust responsibility of the United States to protect tribal sovereignty, self-determination, tribal lands, tribal assets and resources, and treaty and other federally recognized and reserved rights. Government-to-government consultation is the process of seeking, discussing, and considering views on policy, and/or, in the case of this Utility Project, environmental and cultural resource management issues. For efficiency, government-to-government consultation activities often are combined with Section 106 tribal consultation activities.

Pursuant to 36 CFR Part 800.2, the lead federal agency must consult with American Indian tribes that attach religious and cultural significance to historic properties that may be affected by an undertaking. This requirement applies regardless of the location of the historic property. In such cases, the federal agency must notify the tribes potentially affected by the undertaking and give those tribes the opportunity to participate in the Utility Project as a concurring party should they wish to do so.

Federal legislation applicable to tribal consultation in the Utility Project area includes:

- NHPA), 16 U.S.C. 470; 36 CFR 800, specifically Section 106, directs federal agencies to take into account the effects of their actions on historic properties and provide the tribes a reasonable opportunity to comment.

- Archaeological Resources Protection Act, 16 U.S.C. 470aa to 470ee, authorizes federal land-management agencies to manage through a permit process the excavation and/or removal of archaeological resources on federal lands. The land-management agencies must consult with American Indian tribes with interests in resources prior to issuance of permits.
- American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996, requires federal lead agencies and/or federal land-management agencies to consult with affected American Indian tribes regarding federal actions that would pose potential conflicts with freedom to practice traditional American Indian religions.
- Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001-3002, provides a process through which federal agencies consult with affected Native Americans regarding the treatment and return of human remains, funerary objects, sacred objects, and items of cultural patrimony identified on federal lands as a result of a federal action.
- Executive Order 13007, issued in 1996, directs federal land-management agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of sacred sites. Where appropriate, agencies will maintain the confidentiality of these sites.
- Government-to-Government Relations with Native American Tribal Governments Memorandum, 59 *Federal Register* 22951 (May 4, 1994) directs federal agencies to consult, to the greatest extent practicable and to the extent permitted by law, with tribal governments prior to taking actions that affect federally recognized tribal governments. Federal agencies must assess the impact of federal government plans, projects, programs, and activities on tribal trust resources and ensure that tribal government rights and concerns are considered during such development.
- BLM Instruction Memorandum No. 2010-037: Tribal Consultation and Cultural Resource Authorities, provides an update on the BLM’s tribal outreach initiative, emphasizes the importance of tribal relations and partnerships for the BLM, and discusses revision of the national Programmatic Agreement the BLM maintains with the ACHP and National Conference of SHPOs. In addition, the SHPO for Utah is responsible for ensuring that laws applicable to tribal consultation are followed on lands under the jurisdiction of the state.

State of Utah statutes and guidelines include the following:

- Utah Administrative Code (UAC) Section 9-9-403 provides a process for the ownership and disposition of Native American human remains discovered on non-federal lands not state owned.
- UAC Section 76-9-704 provides the definitions and penalties for the abuse or desecration of a dead human body.
- UAC Section R212-4 requires that, if human remains are discovered in conjunction with a project subject to Section 106, the project proponent is responsible for all efforts associated with the excavation, analysis, curation, or repatriation of the human remains and for notifying the Utah SHPO.
- UAC Section 9-8-309 provides a process through which landowners or land-management agencies consult with the state regarding the treatment of human remains discovered on non-federal lands not state owned.

Consultation has not yet been initiated, but will be completed prior to issuance of the Final EIS, and will be conducted in conjunction with Section 106 consultation process.

ES.9.2.4 Scoping Process

The CEQ regulations for implementing the NEPA direct that, to the fullest extent possible, federal agencies must encourage and facilitate public involvement in decisions that affect the quality of the human environment and involve the public early on and throughout the process (40 CFR 1506.6). In response, the BLM prepared a public participation plan as part of the EIS Work Plan early in the NEPA process. The purpose of the plan is to serve as a guide for conducting public involvement activities integrated with the NEPA process.

The BLM published an NOI in the *Federal Register* on July 1, 2013, announcing preparation of the EIS to support decision-making regarding the Proposed Action. Publication of the NOI initiated the formal scoping period of 30 days and invited members of the public to provide input and to participate in the identification of the range, or scope, of issues early in the NEPA process that should be addressed in the EIS. This formal scoping period ended on August 1, 2013, a period of 30 days. During this period, two formal scoping meetings were held in Vernal and Salt Lake City, Utah, to introduce the Utility Project, explain the purpose of and need for the Utility Project, describe the Utility Project, explain the planning and permitting process, and solicit comments useful for the environmental analysis.

Written comments were accepted by the BLM in letters or comment forms at the scoping meeting, by email, and by U.S. mail. All comments received were analyzed and assisted in defining the issues to be analyzed in the EIS. A more detailed description of the scoping process, comments received, and results is presented in the *Enefit American Oil Utility Corridor Project Environmental Impact Statement Scoping Report* (BLM 2013), which is available for viewing at the BLM Vernal Field Office and on the BLM website at https://www.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do.

ES.10 Public Review of the Draft EIS

The BLM has announced the availability of this Draft EIS for review and comment through a BLM *Federal Register* Notice of Availability, press releases, newspaper notices, and the BLM website. The EPA Notice of Availability in the *Federal Register* marks the beginning of the 60-day review and comment period. The Draft EIS was posted on the BLM website and electronic copies were produced on CD-ROM for distribution. The Draft EIS has been distributed to agencies required to review the Draft EIS, and to other agencies, organizations, and individuals that requested copies.

During the 60-day review and comment period, the BLM will hold three public meetings in order for the BLM to receive comments on the adequacy of the Draft EIS. The meetings will be held in Vernal and Salt Lake City, Utah, and Rangely, Colorado. The meetings will be conducted to provide ample opportunity for the public to comment on the Draft EIS. Dates and addresses of the public meetings will be announced through local and news media and on the BLM website (https://www.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do) at least 15 days in advance of the meetings.

Chapter 1
Introduction

CHAPTER 1 – INTRODUCTION

1.1 Project Overview

This Environmental Impact Statement (EIS) is being prepared in response to five *Application(s) for Transportation and Utility Systems and Facilities on Federal Lands* (Standard Form 299), submitted by Enefit American Oil (Enefit) and Moon Lake Electric Association (MLEA) (collectively known as the Applicant) to the Bureau of Land Management (BLM) (Case File Nos. UTU-89449, UTU-89451, UTU-89452, UTU-89453 [MLEA], and UTU-91398) for the Enefit American Oil Utility Corridor Project (Utility Project). The applications were submitted and received on December 3, 2012, and April 3, 2013 (for MLEA). The BLM is preparing this EIS to evaluate and disclose the potential Utility Project-related environmental impacts that could result from implementation of the action proposed by the Applicant and alternatives to the proposed action.

The Applicant is seeking authorization to construct and operate 19 miles of water supply pipeline, 9 miles of natural gas supply pipeline, 11 miles of oil product line, 30 miles of single or dual overhead 138-kilovolt (kV) H-frame powerlines, and 6 miles of Dragon Road upgrade and pavement across BLM- and State-administered lands in the Vernal Field Office. The Utility Project would provide utilities and move processed oil from the Applicant's South Project, which is planned on private land and minerals owned by the Applicant. The South Project, a non-federal connected action, will include development of a 7,000- to 9,000-acre commercial oil shale mining, retorting, and upgrading operation in Uintah, County. The South Project is anticipated to produce 50,000 barrels of oil per day at full build out for a period of up to 30 years utilizing oil shale ore rock mined from the Applicant's private property holdings.

Approval or disapproval of the South Project is outside the BLM's authority because it is located on private lands and minerals. However, non-federal actions that potentially have a cumulatively significant impact together with the proposed action must be considered in the same National Environmental Policy Act of 1969 (NEPA) document (40 Code of Federal Regulations [CFR] 1508.25). Therefore, the South Project is considered a non-federal connected and cumulative action to the Utility Project and the potential indirect and cumulative effects associated with the South Project are analyzed and disclosed in this EIS.

The Utility Project area is located in the southern portion of Township 8-10 South, Range 24-25 East, Salt Lake Meridian, in Uintah County, Utah, approximately 12 miles southeast of Bonanza, Utah. Vernal, Utah, is the nearest major municipality, located approximately 40 miles north of the Utility Project study area. The community of Rangely, Colorado, is located approximately 25 miles northeast of the Utility Project study area (refer to Map 1-1 for the Utility Project study area).

After reviewing the project scope, the BLM, as the lead federal agency, determined the proposed Utility Project is a major federal action and would require preparation of an EIS in compliance with requirements of NEPA, as amended[1] and the Council on Environmental Quality (CEQ) regulations for implementing NEPA[2].

The BLM published a Notice of Intent (NOI) to prepare the EIS in the *Federal Register* (FR) on July 1, 2013. Three federal agencies, the U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (FWS), and the U.S. Environmental Protection Agency (EPA), along with the State of Utah and Uintah County, are participating as cooperating agencies in preparation of the EIS.

[1]U.S.C.: Title 42, Chapter 55, §4321 et seq.
[2]CFR: Title 40, Parts 1500–1508

This chapter is organized in the following sections:

- Section 1.2 – BLM's Purpose and Need for the Federal Action summarizes the BLM's purpose and need in responding to the Applicant's application for right-of-way across federal land.
- Section 1.3 – Decisions to Be Made describes the decisions to be made by the affected federal agencies.
- Section 1.4 – Applicant's Interests and Objectives summarizes the Applicant's statements regarding the purpose of and need for the Utility Project.
- Section 1.5 – Public Participation and Scoping of Issues summarizes the scoping process and other public involvement, issues identified and where they are addressed in the EIS, and issues considered but eliminated from detailed analysis.
- Section 1.6 – Relationships to Policies, Programs, and Plans describes the relevance of land-use plans of Uintah County and other agencies crossed by the alternative routes and lists the major authorizing laws, regulations, and permits (federal, state, and local) with which the federal agencies must comply and which could be required for the Utility Project.

1.2 Bureau of Land Management's Purpose and Need for the Federal Action

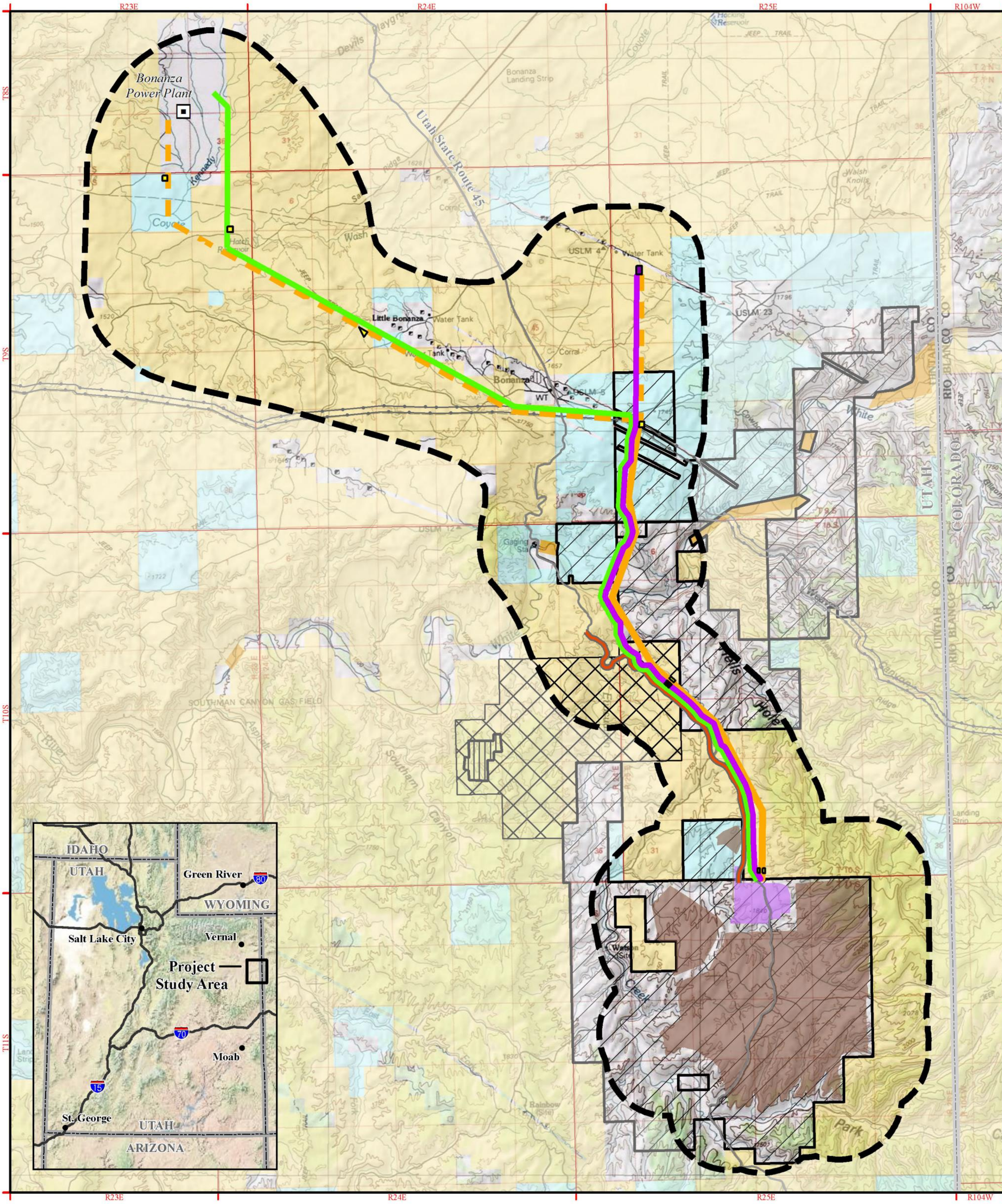
The BLM's purpose is guided by the Energy Policy Act of 2005[3], which recognized the need to improve domestic energy projection, develop renewable energy resources, and enhance the infrastructure for collection and distribution of energy resources across the nation. To this end, the BLM is charged with analyzing applications for utility and transportation systems on federal land it administers.

The need of this federal action is to respond to the Applicant's right-of-way applications for construction, operation, and maintenance of the Utility Project infrastructure across federal land. The purpose of the BLM stems from the overarching policy and direction in the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, and its mission, which is multiple-use, sustained-yield management of the National System of Public Lands. The FLPMA also provides the BLM with discretionary authority to grant use (i.e., right-of-way) of land they administer, taking into consideration impacts on natural and cultural resources (including historical resources). In doing so, the BLM must endeavor "to minimize damage to scenic and esthetic values and fish and wildlife habitat and otherwise protect the environment" through avoidance or mitigation (FLPMA Title V).

1.2.1 Scope of Analysis

The BLM Vernal Field Office conducted extensive internal and external coordination as described below in an effort to establish whether the South Project should be considered a connected action or cumulative action within the EIS.

[3]119 STAT. 606 P.L. 109–58—AUG. 8, 2005; also 42 U.S.C. §15927



Land Ownership

- Bureau of Land Management
- Indian Reservation
- State of Utah
- Private

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline
- Proposed Colocated Powerlines
- Dragon Road Improvements
- Proposed Switchyard
- Proposed Construction Laydown Areas

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- Enefit Land Holdings/Leases
- BLM Preferential Lease
- BLM RD&D Lease
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

Land Jurisdiction, BLM 2013;
Utility Project Features, Enefit 2013;
Dragon Road Improvements, Enefit 2014;
Power Plant as digitized by EPG, 2013;
Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013;
South Project Plant and Mine Site Areas, Enefit 2013

NOTES:
In most cases, linear project features are graphically depicted as individual lines but share centerline alignment in common areas.

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Map 1-1: Utility Project Study Area

ENEFIT AMERICAN OIL UTILITY CORRIDOR PROJECT EIS

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This coordination was initiated in April 2013, which resulted in an April 26, 2013 memo from the BLM Utah State Office (UTSO) Planning/NEPA Branch, containing the UTSO and the U.S. Department of Interior (USDI) Solicitor recommendations for proceeding with analysis of the South Project as a non-federal connected action. In December 2013, the Applicant was queried as to whether the two projects were connected to ensure the BLM had considered all points of view prior to making a final determination. Based on the above coordination and local knowledge, the BLM Vernal Field Office reached a conclusion documented in a July 15, 2014 Scope of Analysis summary that the South Project was a cumulative, non-connected action. The Scope of Analysis summary and supporting documentation was provided to the Cooperating Agencies, UTSO, BLM Washington Office, and USDI Solicitors for review.

Feedback on the Scope of Analysis summary was requested at a Cooperating Agency meeting on August 15, 2014. The Applicant attended the first portion of the meeting to allow attendees the opportunity to understand the project and ask questions. Following extensive debate on the applicable NEPA regulations and guidance, the Applicant agreed to provide a write-up summarizing the “independent utility” of the Utility Project and South Project. It was clear at the Cooperating Agency meeting that the BLM had not reached consensus internally regarding the connected action vs. cumulative action answer, so a final decision was deferred and an additional BLM-USDI Solicitor meeting was scheduled, so the BLM could reach internal consensus on the appropriate path forward after considering the Applicant’s additional data.

The Applicant prepared two letters, both dated August 19, 2014, summarizing the Utility Project and South Project connectedness and independent utility, and a subsequent BLM-USDI Solicitor conference call was held on August 22, 2014. Following extensive discussion, it was determined that the most prudent path forward was to consider the South Project as a non-federal connected action. Two more iterations of the Scope of Analysis document were made, one on September 30, 2014, and one on December 1, 2014, before consensus was reached on how to address the inherent lack of available information regarding the South Project plant site and mine plan.

The conclusions outlined in the December 1, 2014 Scope of Analysis document are as follows:

- Although the South Project is not within BLM jurisdiction for approval or denial, it has been proposed on a conceptual level. Also, the South Project appears to be a non-federal connected action to the Utility Project due to the South Project’s detailed design and engineering being delayed pending a BLM decision on the Utility Project. The detailed design and engineering required to fulfill the scope of facilities and target production are anticipated to be affected by the BLM’s decision.
- The Utility Project and the South Project are also cumulative actions.
- The South Project’s relationship to the Utility Project and the extent to which the South Project and its effects can be prevented or modified by the BLM decision-making on the Utility Project will be described in Chapter 2.
- Since some of the effects of the South Project can be modified by BLM decision-making, they will be analyzed as indirect effects of the Utility Project to the extent that those changes are known, given the preliminary stage of the South Project and its missing details regarding design and engineering. This is in accordance with the BLM NEPA Handbook H-1790-1, which states:

  > *If the connected non-Federal action cannot be prevented by BLM decision making, but its effects can be modified by BLM decision-making, then the changes in the effects of the connected non-Federal action must be analyzed as indirect effects of the BLM proposed action.*

- Those effects of the South Project that cannot be modified by BLM decision-making will be described in the cumulative impacts section to the extent that those effects are known, given the preliminary stage of the South Project and its missing details regarding design and engineering. This is in accordance with the BLM NEPA Handbook H-1790-1, which states:

  > *Effects of the non-Federal action that cannot be modified by BLM decision-making may still need to be analyzed in the cumulative effects analysis for BLM action if they have a cumulative effect together with the effects of the BLM action.*

- No alternatives regarding the South Project will be developed in accordance with the BLM handbook, which states:

  > *The consideration of a non-Federal connected action is limited in your NEPA analysis, because the NEPA process is focused on agency decision making (40 CFR 1500.1(c), 40 CFR 1508.18, 40 CFR 1508.23). You would not have to develop or present the purpose and need for the non-Federal action, and you are not required to consider alternatives available to the non-Federal party for its action.*

Wherever incomplete or unavailable impact information regarding the indirect or cumulative effects of the South Project is determined to be relevant to a reasoned choice among alternatives in the Utility Project EIS, the agency will obtain the information if the cost is not exorbitant. If the cost is exorbitant or the means to get the information are unknown, then the EIS will include: (1) a statement that the information is missing, (2) a statement of the relevance of the information, (3) a summary of credible scientific information relevant to the issue, and (4) the agency's evaluation of the impacts based on available information and/or scientifically accepted theoretical approaches or research methods (40 CFR 1502.22).

This guidance and approach has been followed in preparation of this EIS.

1.3 Decisions to Be Made

The decision to be made by the BLM is whether or not to grant the Applicant five rights-of-way to construct, operate, and maintain the proposed facilities on land they administer and under what terms and conditions. In so doing, the BLM, as lead agency, in coordination with the cooperating agencies, analyzes, through the EIS, the Applicant's plan for and the potential environmental impacts of constructing, operating, and maintaining the Utility Project. Based on the analysis presented in this EIS, the BLM will issue a Record of Decision (ROD) on whether or not to grant the requested rights-of-way on land administered by the BLM.

The South Project, an oil shale mining and a shale-oil production complex proposed in the Uinta Basin, is a non-federal, connected action that is outside of the BLM's authority for approval. Although the South Project would proceed regardless of the BLM's Utility Project decision, the detailed design and engineering of the South Project is pending and would be affected by the BLM's decision.

In accordance with 43 CFR Section 1610.0-5(b), actions that occur on federal lands administered by the BLM, including a decision to grant a right-of-way under Title V of the FLPMA, are guided by decisions specified in the existing BLM Resource Management Plan (RMP). The pertinent RMP for BLM-administered land potentially crossed by the proposed Utility Project is the *Vernal Field Office Record of Decision and Approved Resource Management Plan* (BLM 2008f).

Although not part of the BLM's decision on the Proposed Action, in accordance with *H-1790-1 National Environmental Policy Act Handbook,* the BLM will be analyzing and considering the indirect and cumulative effects of the South Project which includes the following: (refer to Section 2.3 for more detailed information):

- Oil shale mining operation
- Production plant
- Water storage
- Associated utility relocations

However, since the BLM has no jurisdiction over the South Project (neither the private minerals nor the private surface) no decision regarding the South Project will result from this EIS. To the BLM's knowledge, no mine plans for the South Project are currently filed with the State of Utah. If and when a mine plan is filed with the State, it would be reviewed and approved or denied by Utah Division of Oil, Gas and Mining (UDOGM). For further detail regarding the South Project development assumptions, refer to Section 2.3.

1.4 Applicant's Interests and Objectives

The Applicant's purpose and need for the Utility Project is to supply natural gas, electrical power, water, and other needed infrastructure through one or more utility corridors to produce and deliver shale oil from oil shale mined under the South Project by uninterrupted operation of an economically viable mining, oil shale retorting, and upgrading facility. The South Project is located on one of the largest tracts of privately owned oil shale property in the United States. The property, acquired by the Applicant, covers approximately 13,441 acres of oil shale containing approximately 1.2 billion barrels of shale oil.

In August 2005, Congress enacted the Energy Policy Act of 2005, 42 United States Code (U.S.C.) § 15927. Section 369 of the Energy Policy Act declares that oil shale and tar sands deposits are "strategically important domestic resources that should be developed to reduce the growing dependence of the U.S. on politically and economically unstable sources of foreign oil imports" and mandates that development of oil shale "should occur, with an emphasis on sustainability" to benefit the United Sates. (*Id* at § 15927(b)). To support this policy, the Energy Policy Act directs the Secretary to implement a series of action to, among other things, make public lands available to support oil shale development activities. The Applicant's request for granting of a right-of-way(s) from BLM supports the purposes underlying the above provisions of the Energy Policy Act.

In March 2011, Utah Governor Herbert released the document *Energy Initiatives & Imperatives, Utah's 10-Year Strategic Energy Plan* to serve as a structure and outline to guide the state's planning with regards to energy and transmission development, efficiency and conservation, economic development, and the development and application of new technology to promote energy independence and sustainability for Utah. The plan provided five guiding principles and ten goals for energy strategy in the state, and both the Utility Project and South Project are proposed with those principles and goals in mind in order to promote and sustain responsible energy and economic development in the State of Utah.

In February 2012, the State of Utah established the State of Utah Resource Management Plan for Federal Lands (URMPFL) by creating the Uintah Basin Energy Zone (UBEZ). Both the South Project and proposed Utility Project are located within the UBEZ. Specifically, Utah Code Ann. §63J-8-105.5(3)(b) of the URMPFL states, "the highest management priority for all lands within the [UBEZ] is responsible management and development of existing energy and mineral resources in order to provide long-term domestic energy and supplies for Utah and the United States." Further, Utah Code Ann. §63J-8 105.5(5)(c) and (d) indicate that the State calls upon federal agencies to "allow continued maintenance and increased development of roads, power lines, pipeline infrastructure, and other utilities necessary to achieve the goals, purposes, and policies described in this section" and "refrain from any planning decisions and management actions that will undermine, restrict, or diminish the goals, purposes, and policies for the [UBEZ].”

Furthermore, the production of shale oil would aid in fulfilling the energy policy of the State of Utah, which states that: “It is the policy of the state that Utah will promote the development of nonrenewable energy resources, including natural gas, coal, oil, *oil shale*, and tar sands…. Utah will promote the development of resources and infrastructure sufficient to meet the state’s growing demand, while contributing to the regional and national energy supply, thus reducing dependence on international energy sources.” Utah Code Ann. §63M-4-301(1)(b), (d) (emphasis added). Granting the federal rights-of-way and enabling development of the South Project would advance implementation of the goals of the State’s energy policy.

1.5 Public Participation and Scoping of Issues

1.5.1 Process Summary

The CEQ regulations for implementing NEPA, direct that to the fullest extent possible, federal agencies must encourage and facilitate public involvement in decisions that affect the quality of the human environment and involve the public early on and throughout the process[4]. In response, the BLM prepared a public participation plan as part of an EIS Work Plan. The purpose of the plan is to serve as a guide for conducting public participation activities integrated with the NEPA process.

The first opportunity for the public to be involved in the NEPA process was scoping. The purpose of scoping was to identify the range, or scope, of issues early in the NEPA process that should be addressed in the EIS. As mentioned previously, a NOI was published in the FR on July 1, 2013, announcing preparation of the EIS as well as announcing the opportunity for the public to participate in the process and provide input. Publication of the NOI on July 1, 2013, initiated the formal scoping period, which ended on August 1, 2013, a period of 30 days. During this period, two open-house meetings were held (July 16 and 17, 2013), in Vernal and Salt Lake City, Utah. These meetings were designed to inform the public about the Utility Project, NEPA process and to solicit input on the Utility Project and potential issues.

Written comments were accepted by the BLM at the scoping meetings, by email, and by U.S. mail. All comments received were analyzed and assisted in defining the issues to be analyzed for the EIS. A more detailed description of the scoping process, comments received, and results is presented in the Enefit American Oil Utility Corridor Project Environmental Impact Statement Scoping Report (BLM 2013c), which is available for review on the BLM NEPA Register (https://www.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do). Additional description of the public participation effort is presented in Chapter 5.

The range of issues, summarized in Section 1.5.2 and addressed in the EIS, was derived from the ongoing public involvement and scoping process. Activities that assisted in identifying the issues related to the Proposed Action are listed in Section 5.3.

1.5.2 Issues Addressed

The issues identified from scoping were used to identify, refine, and evaluate alternatives, and to direct the level of effort needed for each of the environmental resource studies. The issues are related to the Applicant’s interests and objectives, project description, climate and air quality, soil and water, vegetation, fish and wildlife, cultural resources, Native American concerns, paleontological resources, visual resources, wilderness characteristics, travel management, lands and realty, social and economic

[4] 40 CFR Part 1506.6

conditions, environmental justice, health and safety, solid and hazardous waste management, and indirect and cumulative impacts. Table 1-1 is a list of the issues raised during scoping and where each issue is addressed in the EIS.

Table 1-1
Concerns and Issues Raised by the Public and Government Agencies

Issue	Section(s) of the EIS Where Addressed[1]
Applicant's Interests and Objectives	
What technical data and information from the Applicant need to be included in the EIS to support the Applicant's purpose and need for the South Project and Utility Project?	1.4, 2.2
What potential sources of energy are available to displace or replace energy from oil shale development?	Issue is out of scope, and is eliminated from detailed analysis
What potential is there to use renewable energy sources for powering the Applicant's shale oil production operations?	Issue is out of scope, and is eliminated from detailed analysis
Project Description	
What design features, mitigation, and control measure can be employed as part of the Utility Project and the South Project to minimize and manage impacts?	4.1.3
What assurances can be implemented to ensure reclamation of areas disturbed by the Utility Project and the South Project to natural conditions?	2.2.8, 2.2.10
What are the federal agency's responsibilities to enable environmentally responsible development of the Utility Project and the South Project?	1.3
Climate and Air Quality	
What are the potential effects on air quality from South Project facility construction and oil shale mining and processing in the Uinta Basin?	3.2.2, 4.2.2,
What are the potential effects on air quality from South Project shale-oil refining in Salt Lake and Davis counties?	The activities of the refineries are not considered a connected action and are not subject to detailed analysis; issue is out of scope, and is eliminated from detailed analysis.
What are the potential effects on air quality from construction, operation, and maintenance of the utility corridors and what are the cumulative effects on air quality from the Utility Project, South Project, and other past, present, and reasonably foreseeable future actions (RFFA)?	3.2.2, 4.2.2.1,
What are the potential effects of the Utility Project and the South Project on climate change?	3.2.1, 4.2.1
Soil and Water	
What are the potential effects of the Utility Project and the South Project on existing water supply in the region?	3.2.5, 4.2.5, 4.2.5.1
What are the potential effects of the South Project on the quality of groundwater and surface water in the region?	3.2.5.4.3, 3.2.5.4.5, 4.2.5.1
What are the potential effects of the Utility Project on the quality of groundwater and surface water in the region?	3.2.5.4.3, 3.2.5.4.5, 4.2.5.1
Vegetation	
What are the potential effects on vegetation from the construction, operation, and maintenance of the Utility Project and the South Project mining activities?	3.2.6.2, 3.2.7.2, 4.26
What are the potential effects of fugitive dust from mining and emissions from Utility Project and the South Project shale-oil production on vegetation?	3.2.6.2, 3.2.7.2, 4.2.6

Table 1-1
Concerns and Issues Raised by the Public and Government Agencies

Issue	Section(s) of the EIS Where Addressed[1]
What is the potential for introduction and/or spread of noxious weeds and/or invasive plant species from construction and operation of the Utility Project and the South Project mining?	3.2.6.3, 4.2.6
Fish and Wildlife	
What are the potential effects of the Utility Project and the South Project mining on wildlife species and their habitats, including but not limited to: ▪ Big game ▪ Greater sage-grouse ▪ Raptors (e.g., golden eagle) ▪ Migratory birds ▪ Special-status wildlife species (including BLM-sensitive species)	3.2.8.2, 3.2.9.2, 3.2.10.2, 4.2.8, 4.2.9
Cultural Resources	
What are the potential effects of the Utility Project and the South Project on prehistoric and historic sites, and on traditional cultural properties?	3.2.11
Native American Concerns	
What involvement of affected American Indian tribes should there be in the preparation of the EIS?	5.2.2.3
What are the effects of the Utility Project and the South Project on Native Americans and/or American Indian tribes?	BLM will complete Native American consultation and include applicable information for the EIS as appropriate.
Paleontological Resources	
What are the potential effects of the Utility Project and the South Project on paleontological resources in the area?	3.2.12.2, 4.2.12
Visual Resources	
What are the potential effects of the Utility Project and the South Project on the visual landscape of the region?	3.2.13.2, 4.2.13.1
Wilderness Characteristics	
What are the potential effects of the Utility Project on lands with wilderness characteristics?	3.2.14
Travel Management	
What are the effects of opening the area for the Utility Project and South Project mining on travel management (off-highway-vehicle use)?	3.2.15, 4.2.15
Lands and Realty	
What are the effects of the Utility Project on existing utility infrastructure?	3.2.14, 4.2.14
What are the potential effects of the Utility on proposed oil and/or gas well pads?	4.2.14
What are the effects of the Utility Project being in a Section 368 utility corridor with known conflicts?	3.2.15
Social and Economic Conditions	
What are the effects of and the Utility Project and the South Project on existing and future economic growth in Uintah County?	4.2.17, 4.2.17.1.2.1, 4.2.17.1.1
What are the effects of the Utility Project and the South Project on the existing and future economy of the State of Utah?	3.2.17, 4.2.17
What is the availability of employment associated with the Utility Project and the South Project?	3.2.17
What are the effects of the Utility Project and the South Project on tourism and recreation in the region?	3.2.17

Table 1-1
Concerns and Issues Raised by the Public and Government Agencies

Issue	Section(s) of the EIS Where Addressed[1]
Environmental Justice	
What are the potential effects of the Utility Project and the South Project on any minority, low-income, and/or tribal communities in the geographic scope of the impact area?	3.2.17, 4.2.17.1.1.6
Public Health and Safety	
What are the potential health effects from the Utility Project and the South Project mining (dust) and shale-oil production emissions in the Uinta Basin?	3.2.18, 4.2.2
What are the potential health effects from the emissions associated with refining South Project shale oil in Salt Lake and Davis counties?	The activities of the refineries are not considered a connected action and are not subject to detailed analysis; issue is out of scope, and is eliminated from detailed analysis
What are the potential health and safety effects from a potential rupture of the product delivery pipeline?	4.2.3, 4.2.5, 4.2.18
What are the potential health effects from potential contamination of water from the South Project and/or a potential rupture of the product-delivery pipeline?	4.2.5, 4.2.18
Solid and Hazardous Waste Management	
What are the effects from the constituents that the Applicant plans to use in the extraction process for the South Project and release into the environment?	4.2.18
What are the potential effects and mitigation options for hazardous and solid wastes contained on the South Project?	3.2.18, 4.2.18
What will be the response and mitigation for clean up on unapproved releases of hazardous waste into the environment?	3.2.18, 4.2.18
Indirect and Cumulative Impacts	
What are the cumulative effects of the Utility Project and South Project in addition to reasonably foreseeable development and past and present development on air quality, water quality and quantity, and special-status species?	4.3.3

1.5.3 Issues Considered Out of Scope and Eliminated from Detailed Analysis

Several issues raised during scoping were determined to be beyond the scope of analysis for this EIS and therefore were eliminated from detailed analysis. Those issues included:

- What are the potential effects on air quality from South Project shale-oil refining in Salt Lake and Davis counties?
- What are the potential health effects from the emissions associated with refining South Project shale oil in Salt Lake and Davis counties?

While the potential for refining of South Project shale oil at refineries located in Salt Lake and Davis counties is feasible, it is an independent action that could occur regardless of whether the utility rights-of-way are approved, and is an independent action from the construction, operation, and maintenance of the proposed utilities. It is also feasible for the oil shale product to be shipped via rail line from Salt Lake and Davis counties to other refineries in the western United States. The activities of the refineries located in Salt Lake and Davis counties, approximately 150 miles west of the project area, are not considered a connected action to the proposed action as defined in BLM NEPA Handbook 1790-1 and 40 CFR 1508.25.

- What potential is there to use renewable energy sources for powering the Applicant's shale oil production operations?

The technical engineering and design specifications of the South Project are beyond the BLM's control and authority as it is located on private land and minerals, and does not require BLM's authorization to operate. Therefore this issue has been eliminated from detailed analysis.

In addition, there are currently no operating or proposed renewable energy sources in the Uinta Basin that could be used to supply the electrical loads of the South Project plant site.

- What potential sources of energy are available to displace or replace energy from oil shale development?

The BLM's decision, as defined in Sections 1.2 and 1.3, pertains to approval or denial of the five rights-of-way across federal land. Analysis of other alternative energy sources related to oil shale development is beyond the scope of analysis for this decision. Therefore this issue has been eliminated from detailed analysis.

1.6 Relationship to Policies, Programs, and Plans

Major federal actions that may have significant impacts on the human environment require preparation of an EIS. To this end, consideration of the Proposed Action is pursuant to NEPA and is consistent with federal guidelines for implementing NEPA, including the CEQ Regulations for Implementing the Procedural Provisions of NEPA outlined in 40 CFR Parts 1500-1508; USDI guidance in 43 CFR Part 46; and BLM policies and manuals (BLM NEPA Handbook H-1790-1).

1.6.1 Conformance with Bureau of Land Management Plans and Policies

BLM lands are administered with direction provided in land-use plans that establish the goals and objectives for the management of the resources and land uses. BLM RMPs must be prepared in accordance with FLPMA and regulations at 43 CFR 1600. The Utility Project area includes land administered by the BLM Vernal Field Office. The current land-use plan is the *Vernal Field Office Record of Decision and Approved Resource Management Plan* (BLM 2008f).

1.6.2 Consistency with Other Federal and Local Land Management Plans and Policies

The BLM reviewed the land-use plans for the State of Utah as well as Uintah County and considered the land-management objectives and policies established in the plans. A land-use plan directing land-use or resource management on the Uintah and Ouray Indian Reservation has not been prepared.

Because the South Project is to be developed on private land, there is no comprehensive State of Utah plan for the South Project area, and appropriate state and local government regulations will apply. Utah State Institutional Trust Lands Administration (SITLA) manages state land in the South Project area, and its mandate is to produce funding for the state's school system. SITLA makes surface land available for easements for roads, pipelines, power, and transmission lines.

The *Uintah County General Plan (2005)* encourages cooperative working relationships with federal and state government, neighboring counties, cities, and towns, public utility and service providers, and special-service districts. More than 60 percent of lands in the county are public lands. The county supports "multiple-use management practices, responsible public-land resource use and development, and improved public and private access to and across public lands" (Uintah County 2005).

The *Uintah County Land Use Plan (2010)* was adopted as part of the county's general plan pursuant to Section 3f.1 of the General Plan. "The land use plan reflects the appropriate locations for various land uses and helps to implement the county's policies concerning land use and development" (Uintah County 2010). The land use plan also recognizes federally administered land in the county. Federally administered land is classified as Recreation, Forestry, and Mining or Mining and Grazing. The Recreation, Forestry, and Mining designation is located primarily in northern Uintah County and was not analyzed in the land-use plan, but the Recreation, Forestry, and Mining designation will remain as previously designated before the 2010 *Uintah County Land Use Plan*. The Mining and Grazing classification is mainly on rural or open land, not used for agriculture. Again, much of this land is administered by the federal government. "Land owned in trust by the Ute Indian Tribe…" was not included in the land-use study because the county does not have jurisdiction over Indian-reservation lands.

The Approved Land Use Plan Amendments/Record of Decision for Allocation of Oil Shale and Tar Sands Resources on Lands Administered by the Bureau of Land Management in Colorado, Utah, and Wyoming and Final Programmatic Environmental Impact Statement (2013) approves the proposal to amend ten RMPs to designate certain public lands, managed by the BLM, as available for application for leasing and future exploration and development of oil shale and tar sands resources. This document was done under the authority of the FLPMA and in accordance with BLM planning regulations (43 CFR Part 1600). This effort was completed to support BLM's evaluation of the appropriate mix of allowable uses with respect to oil shale and tar sands leasing and potential development in light of Congress's policy emphasis on these resources.

This EIS also considers the relevant decisions or practices contained in other applicable federal, state, and local plans listed in, but not limited to, the reference section of the EIS.

1.6.3 Major Authorizing Laws and Regulations

This EIS is being prepared by the BLM in compliance with federal regulations and guidelines (Table 1-2), principally NEPA; CEQ regulations; other applicable regulations for implementing the procedural provisions of NEPA; and considering tribal, state, and county requirements.

Table 1-2
Major Federal Authorizing Laws, Regulations, and Policies

Law and Regulation	Reference
American Indian Religious Freedom Act of 1978	42 U.S.C. 1996
Antiquities Act of 1906	16 U.S.C. 431 et seq.
Archaeological Resources Protection Act of 1979, as amended	16 U.S.C. 470aa et seq.
Bald and Golden Eagle Protection Act of 1972	16 U.S.C. 668
BLM Land Use Planning Handbook H-1610-1 (2008)	BLM Manual Release 1-1693
BLM right-of-way regulations	43 CFR 2800
BLM NEPA Handbook H-1790-1 (2008)	BLM Manual Release 1-1710
Clean Air Act of 1963, and amendments in 1990	42 U.S.C. 7401 et seq., 40 CFR 60, 61 and 71
Clean Water Act of 1972	33 U.S.C. 1251 et seq.
Comprehensive Environmental Response, Compensation, and Liability Act of 1980	42 U.S.C. 9601-9675
Consultation and Coordination with Indian Tribal Governments	Executive Order 13084
Consultation and Coordination with Indian Tribal Governments	Executive Order 13175
CEQ's Regulations for Implementing the NEPA	40 CFR 1500 et seq.
USDI's implementing procedures and proposed revisions	65 FR 52211-52241
Departmental Responsibilities for Indian Trust Resources	512 Department Manual 2.1
Endangered Species Act of 1973 (ESA)	16 U.S.C. 1531 et seq.

Table 1-2 Major Federal Authorizing Laws, Regulations, and Policies	
Law and Regulation	**Reference**
Environmental Justice in Minority Populations and Low-income Populations	Executive Order 12898
Federal Compliance with Pollution Control Standards	Executive Order 12088
Farmland Protection Policy Act of 1981	P.L. 97-98, Subtitle I of Title XV, Sections 1539-1549
FLPMA	43 U.S.C. 1701 et seq.; 43 CFR 2800 (BLM FLPMA regulations covering special uses)
Floodplain management	42 U.S.C. 4321; Executive Order 11988
General Mining Law of 1872, as amended Surface Resources Act of 1955	30 U.S.C. 29; 43 CFR 3860
Indian sacred sites	Executive Order 13007
Materials Act of 1947, as amended	30 U.S.C. 601 et seq.
Memorandum for the Heads of Executive Departments and Agencies on Government-to-Government Relations with Native American Tribal Governments of 1994	Signed by President Clinton on April 29, 1994
Migratory Bird Treaty Act (MBTA) of 1918	16 U.S.C. 703 et seq.; Executive Order 13186
Multiple Surface Use Mining Act of 1955	30 U.S.C. 611
NEPA	42 U.S.C. 4371 et seq.; 36 CFR 800
NEPA, Protection and Enhancement of Environmental Quality	Executive Order 11512
National Historic Preservation Act (NHPA) of 1966 and regulations implementing NHPA	16 U.S.C. 470 et seq.; 36 CFR 800
National Trails System Act of 1968 (NTSA)	16 U.S.C. Sections 1241 et seq.
Native American Graves Protection and Repatriation Act of 1990 (NAGPRA)	25 U.S.C. 3001 et seq.
Noise Control Act of 1972, as amended	42 U.S.C. 4901 et seq.
Noxious weeds and invasive species	Executive Order 13112
Occupational Safety and Health Act of 1970	29 U.S.C. 651 et seq. (1970)
Oil Pollution Act of 1990	33 U.S.C. 2701
Paleontological Resources Preservation Act of 2009	16 U.S.C. 470aaa et seq.
Pipeline Safety Enforcement and Regulatory Procedures	49 CFR 190-199
Pollution Prevention Act of 1990	42 U.S.C. 13101 et seq.
Protecting Wilderness Characteristics on Lands Managed by BLM	Secretarial Order 3310, December 22, 2010
Protection and Enhancement of the Cultural Environment	Executive Order 11593
Protection of wetlands	42 U.S.C. 4321; Executive Order 11990
Rangeland Health and Standards and Guides for Grazing Administration	43 CFR 4180
Resource Conservation and Recovery Act of 1976	42 U.S.C. 6901 et seq.; 42 U.S.C. 6992k
Responsibilities and the Endangered Species Act	Secretarial Order 3206, June 5, 1997
Rivers and Harbors Act of 1899	33 U.S.C. 401, 403, 407
Safe Drinking Water Act of 1974	42 U.S.C. 300f et seq.
Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah	43 CFR 4180
Wild and Scenic Rivers Act of 1968	P.L. 90-542; 16 U.S.C. 1271 et seq.
Guidance on Incomplete or unavailable information	40 CFR 1502.22

1.6.4 Federal, Tribal, State, and Local Approvals

Table 1-3 is a list of the major federal, tribal, state, and local permits and approvals that could be required for construction, operation, and maintenance of the Utility Project.

Table 1-3
Summary of Potential Major Federal, Tribal, State, and Local Permits or Licenses Required and Other Environmental Review Requirements for Utility Construction and Operation

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
Federal			
Locating Facilities on Land under Federal Management			
Preconstruction surveys; construction, operation, maintenance	BLM	Right-of-way grant and temporary use permit (an approved Plan of Development (POD) would be a condition of approval to granting the right-of-way)	FLPMA P.L. 94-579+); 43U.S.C. 1761 et seq.; 43 CFR 2800
Grant right-of-way by federal land-management agency	FWS	Endangered Species Act compliance by consultation with FWS (may require permit for incidental take of listed species)	Endangered Species Act, as amended (16 U.S.C. 1531 et seq.)
Biological Resources			
Protection of migratory birds	FWS	Compliance	MBTA (16 U.S.C. 703 et seq.); 50 CFR 1; individual agency guidance; Memoranda of Understanding between federal land management agencies and FWS
Protection of bald and golden eagles	FWS	Compliance (may require permit for take of eagles)	Bald and Golden Eagle Protection Act of 1972 (16 U.S.C. 668), including the Final Eagle Permit Rule, or implementing regulations of September 11, 2009 (50 CFR 13; 50 CFR 22)
Protection of special status species	BLM	Compliance	BLM Policy Manual 6840; individual agency guidance
Ground Disturbance and Water Quality Degradation			
Construction sites with greater than 1 acre of land disturbed	EPA Utah Department of Environmental Quality (UDEQ)	Section 402 National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Activities (In Utah, Utah Pollutant Discharge Elimination System)	Clean Water Act of 1972 (CWA) (33 U.S.C. 1342)
Construction across water resources	USACE	General easement	10 U.S.C. 2668 et seq.
Crossing 100-year floodplain, streams, and rivers	USACE	Floodplain use permits	40 U.S.C. 961

Table 1-3
Summary of Potential Major Federal, Tribal, State, and Local Permits or Licenses Required and Other Environmental Review Requirements for Utility Construction and Operation

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
Construction in, or modification of, floodplains	Federal lead agency	Compliance	42 U.S.C. 4321; Executive Order 11988 Floodplains
Construction in, or modification of, wetlands	Federal lead agency	Compliance	42 U.S.C. 4321; Executive Order 11990 Wetlands
Potential discharge into waters of the state (including wetlands and washes)	In Utah, projects on non-reservation lands administered by UDEQ;. EPA administers certifications on Uintah and Ouray Reservation	Section 401 permit	CWA (33 U.S.C. 1344)
Discharge of dredge or fill material into waters of the U.S., including wetlands	USACE (In Utah, Utah Division of Water Rights administers GP-40)	USACE 404 Permit (individual or coverage under nationwide permit)	CWA (33 U.S.C. 1344); Utah Code Title 73-3-29
Placement of structures and construction work in navigable waters of the U.S.	USACE	Section 10 permit	Rivers and Harbors Act of 1899 (33 U.S.C. 403)
Protection of all rivers included in the National Wild and Scenic Rivers Systems	Affected land-management agencies	Review by permitting agencies	Wild and Scenic Rivers Act of 1968 (P.L. 90-542); 16 U.S.C. 1271 et seq.
Potential pollutant discharge during construction, operation, and maintenance	EPA	Spill Prevention Control and Countermeasure Plan (SPCC) for substations	Oil Pollution Act of 1990 (40 CFR 112)
Cultural Resources			
Disturbance of historic properties	Federal lead agency, State Historic Preservation Office (SHPO), Advisory Council on Historic Preservation (ACHP)	Section 106 consultation	NHPA (16 U.S.C. 470; 36 CFR 800)
Excavation of archaeological resources	Federal land-management agency	Permits to excavate	Archaeological Resources Protection Act (ARPA) of 1979 (16 U.S.C. 470aa to 470ee)
Potential conflicts with freedom to practice traditional American Indian religions	Federal lead agency, federal land-management agency	Consultation with affected American Indians	American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996)
Disturbance of graves, associated funerary objects, sacred objects, and items of cultural patrimony	Federal land-management agency	Consultation with affected Native American groups regarding treatment of remains and objects	NAGPRA (25 U.S.C. 3001-3002)
Investigation of cultural resources	Affected land-management agency	Permit for study of historical and archaeological resources	American Antiquities Act of 1906 (16 U.S.C. 432 et seq.)

Table 1-3
Summary of Potential Major Federal, Tribal, State, and Local Permits or Licenses Required and Other Environmental Review Requirements for Utility Construction and Operation

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
Investigation of cultural resources	Affected land-management agency	Permits to excavate and remove archaeological resources on federal land; American Indian tribes with interests in resources must be consulted prior to issuance of permits	ARPA (16 U.S.C. 470aa et seq.); 43 CFR 7
Paleontological Resources			
Ground disturbance on federal land or federal aid project	BLM	Compliance with BLM mitigation and planning standards for paleontological resources of public lands	FLPMA (43 U.S.C. 1701 et seq.); American Antiquities Act of 1906 (16 U.S.C. 431 et seq.)
Collection of paleontological resources from federal land	BLM	Permit to collect paleontological resources from federal land	Omnibus Public Lands Management Act of 2009 – Paleontological Resources Preservation; (P.L. 111-11, Title VI, Subtitle D, Sections 6301 et seq., 123 Stat. 1172); 16 U.S.C. 470aaa.
Use of Pesticides			
Use of pesticides or herbicides on federal lands	BLM	Pesticide use permit; Incorporate into right-of-way grant and temporary use permit	Carlson-Foley Act (43 U.S.C. 1241); Federal Noxious Weed Act of 1974 (P.L. 93-629) (76 U.S.C. 2801 et seq.), BLM Manual 9015
Air Traffic			
Location of towers and spans in relation to airport facilities and airspace	Federal Aviation Administration (FAA)	A “No-hazard Declaration” required if structure is more than 200 feet in height	FAA Act of 1958 (P.L. 85-726); 14 CFR 77
Air Quality			
Construction and operation	EPA Region 8 for new sources on tribal land	Prevention of Significant (PSD) Construction Permit, and Major Source (Title V) Operating Permit	40 CFR Part 61 and Part 71
State of Utah			
Noxious Weeds			
Construction and operation activities	Utah Department of Agriculture and Food	Compliance	Utah Administrative Code (UAC) Title R68-9
Permitting Process			
Proposed transmission line facility	Resource Development Coordinating Committee	Expedites review of permitting process for all state agencies	UAC Title 63J-4-501 and 63J-4-504

Table 1-3
Summary of Potential Major Federal, Tribal, State, and Local Permits or Licenses Required and Other Environmental Review Requirements for Utility Construction and Operation

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
Locating Facilities on State Land			
Encroachment on, through, or over state land	Utah Division of Forestry, Fire, and State Lands (FFSL), SITLA, and Utah Division of Wildlife Resources (UDWR)	Application approval; easement on state land (bond may be required)	Utah Code Title 65A-7-8 and UAC Title R652 for FFSL; Utah Code Title 53C and UAC Title R850 for SITLA; and Utah Code Title 23 and UAC Title R657 for UDWR
Cultural Resources			
Disturbance of historic properties	SHPO, Utah Division of State History	State historic preservation officer will comment on state-funded undertakings	Utah Code Title 9-8-404 and UAC Title R455
Discovery of graves, associated funerary objects, sacred objects, and items of cultural patrimony on non-federal-, non-state-administered land	Antiquities Section, Utah Division of State History	Consultation with state agency regarding treatment of human remains and funerary objects	Utah Code Title 76-9-704 and 9-9-403 to 9-9-405; UAC Title R203-1 and R455-4
Survey or excavation of archaeological resources on lands owned or controlled by the state	Governor's Public Lands Policy Coordinating Office	Permit to survey or excavate	Utah Code Title 9-8-305; UAC Title R694-1; and Utah Rule R212-4
Paleontological Resources			
Excavation and collection of paleontological resources from state lands	Utah Geological Survey, Utah Museum of Natural History, SITLA	Permit to excavate and collect paleontological resources from state land	Utah Code Title 79-3-501 and 79-3-502; Utah Code Title 63-73-11 through 63-73-19
Historical and Cultural Review			
Impact on historical sites	Division of State History	Notification of planning stage and before construction	Utah Code Title 9-8-404
Archaeological Resources			
Survey or excavation of archaeological resources on lands owned or controlled by the state	Utah Governor's Public Lands Policy Coordination Office	Permit to survey or excavate	Utah Code Title 9-8-305; UAC Title R 694-1
Ground Disturbance and Water Quality Degradation			
Construction and operation	Water Quality Board	Discharge permit, spills	UAC Section 19-5-101 et seq.
Potential discharge into waters of the state (including wetlands and washes)	In Utah, projects on non-reservation lands administered by UDEQ. EPA administers certifications on Uintah and Ouray Reservation	Section 401 permit	CWA (33 U.S.C. 1344)
Wildlife			
Modification of habitat	UDWR	Easement for use of state wildlife resource lands	Utah Code Title 23 and UAC Title R657

Table 1-3
Summary of Potential Major Federal, Tribal, State, and Local Permits or Licenses Required and Other Environmental Review Requirements for Utility Construction and Operation

Action Requiring Permit, Approval, or Review	Agency	Permit, License, Compliance, or Review	Relevant Laws and Regulations
Local			
Construction and operation of transmission lines	Uintah County	Conditional Use Permit	Uintah County Code of Ordinances 2011 – Chapter 17.28.030, 17.0
		Road Encroachment Easement and Permit	Uintah County Code of Ordinances 2011 – Chapter 12.04.010

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Chapter 2
Proposed Action and Alternatives

CHAPTER 2 – PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

Chapter 2 describes the alternatives developed regarding the BLM's Proposed Action for the Utility Project, which is to issue five rights-of-way for the Applicant to construct and operate 3 pipelines, 1 transmission line, and 6 miles of road improvements, all connecting to the Applicant's South Project on the adjacent non-federal land.

2.2 Proposed Action – Utility Project

As introduced in Section 1.1, the Utility Project, whose approval by the BLM has been requested by the Applicant, includes the following:

- Three subsurface pipelines
  - Approximately 19 miles of water supply pipeline
  - Approximately 9 miles of natural gas supply pipeline
  - Approximately 11 miles of product delivery pipeline
- Transmission line
  - Approximately 30 total miles of 138kV overhead transmission lines (one line approximately 19 miles long; the other line approximately 11 miles long)
- Improvements to Dragon Road
  - Widen, make minor realignments to, and pave the existing Dragon Road for approximately 6 miles

Table 2-1 summarizes the design characteristics of each pipeline and the transmission lines and the land that would be temporarily and/or permanently disturbed. Map 2-1 identifies the location for the typical rights-of-way associated with the temporarily and/or permanently disturbed areas. Table 2-2 summarizes the potential acres of disturbance by facility and land jurisdiction. The tables are followed by description of the various utility corridor facilities, including improvements to the existing Dragon Road.

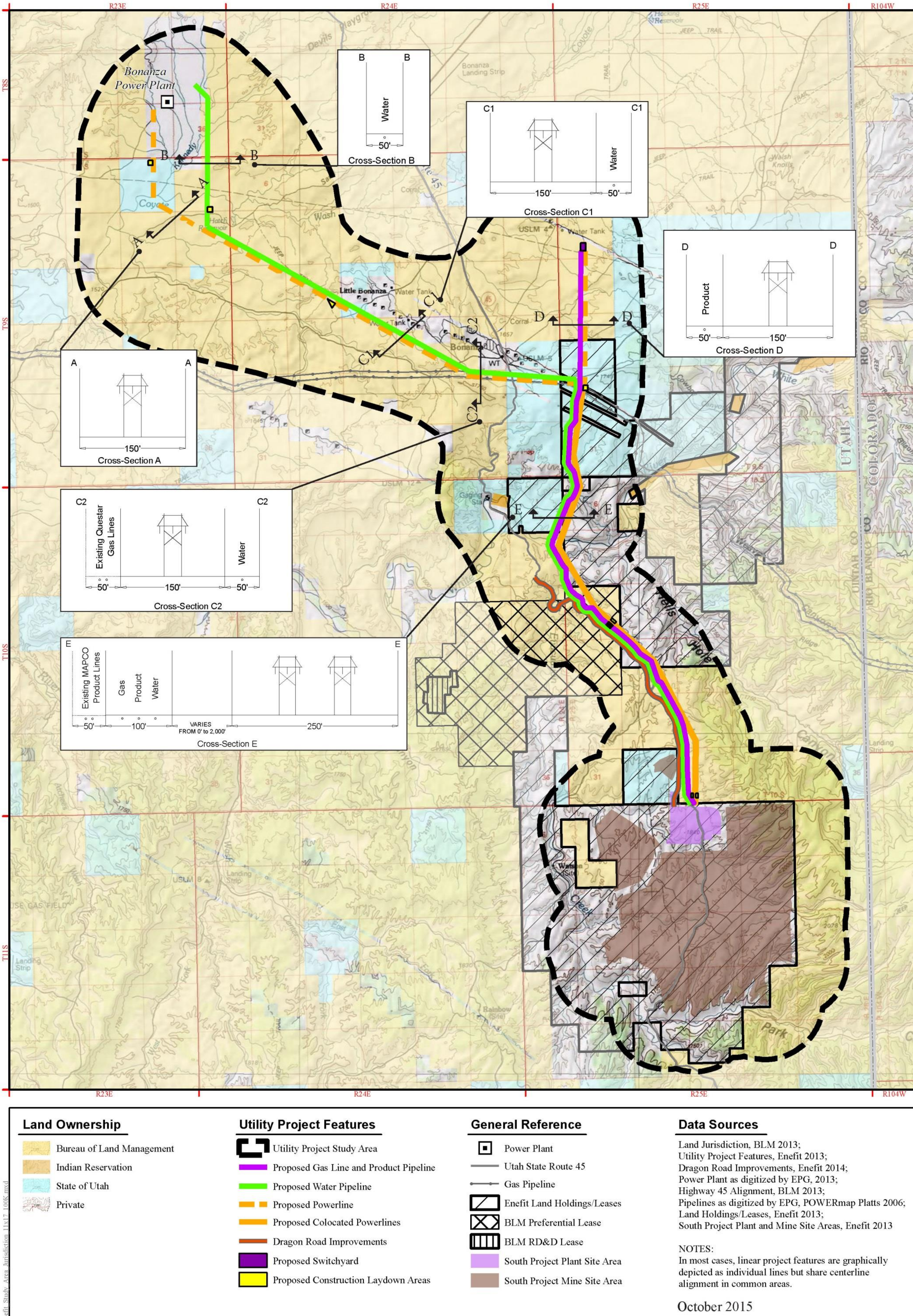
Table 2-1
Design Characteristics and Surface Disturbance of the Utility Corridor Facilities and Dragon Road Improvements

Feature	Description
Water Supply Pipeline	
Pipeline diameter	24 to 30 inches
Material	Welded steel
Right-of-way length and width	19.0 miles; 50 feet wide
Estimated permanent surface disturbance[1, 2]	116.0 acres
Water Intake Facilities on Green River	
Ranney Collector Well (RCW) expansion (2-3 wells)	6 acres
Natural Gas Supply Pipeline	
Pipeline diameter	6 to 8 inches (up to 12 inches)
Material	Welded steel
Right-of-way length and width	8.8 miles; 50 feet wide
Estimated permanent surface disturbance[1,2]	52.6 acres

Table 2-1
Design Characteristics and Surface Disturbance of the Utility Corridor Facilities and Dragon Road Improvements

Feature	Description
Product Delivery Pipeline	
Pipeline diameter	12 to 16 inches
Material	Welded steel
Right-of-way length and width	11.2 miles; 50 feet wide
Estimated permanent surface disturbance[1, 2]	68.3 acres[4]
Temporary Laydown Areas	
Estimated temporary surface disturbance[3]	31.2 acres
138kV Transmission Line and Associated Facilities	
Structure type	Wooden H-frame; galvanized steel dead-ends
Structure height	75-90 feet
Span length	600-900 feet between wooden structures; 1,300 feet between steel structures
Conductor material	Non-specular (dull finish) aluminum/steel
Structures per mile	6-9
Structure work area	250 feet x 250 feet (temporary); 50 feet x 50 feet (permanent)
Nominal voltage	138kV alternating current
Minimum ground clearance of conductor	23-feet, per Applicant standard practice
New switchyard	8.4 acres
Communication sites or microwave sites	None required
Pulling and tensioning sites	Required every 1 to 2 miles; 1.2 acres in size
Right-of-way length and width	30 miles; 150 feet-250 feet wide
Estimated temporary surface disturbance[3]	225 acres
Estimated permanent surface disturbance[1]	501.4 acres
Dragon Road Improvements	
Right-of-way length	5.7 miles
Right-of-way width	60 feet[5]
Estimated permanent surface disturbance[2]	41.7 acres
Total Temporary Surface Disturbance for Laydown Yards and Transmission Lines	
Estimated temporary surface disturbance[3]	256.2 acres
Total Permanent Surface Disturbance for Pipelines, Transmission Lines, and Dragon Road Improvements	
Estimated permanent disturbance	728.1 acres
Total Disturbance	
Estimated permanent and temporary disturbance	1,037.2 acres

SOURCE: Enefit 2014
NOTES:
[1]Permanent surface disturbance is associated with the proposed rights-of-way and other areas where project components would occupy land over the long term.
[2]The typical construction of the pipelines and Dragon road utilizes construction from the center of the right-of-way, such that temporary disturbance is confined to the permanent right-of-way width.
[3]Temporary surface disturbances are areas outside of the proposed rights-of-way to facilitate the construction of the project components including pulling and tensioning sites, wire splices sites, structure work areas, laydown areas, access roads, and extra work spaces.
[4]52.6 acres of the estimated surface disturbance associated with the product delivery pipeline would be anticipated to overlap with the estimated disturbance associated with the natural gas pipeline (i.e., the two pipelines share the same 50-foot-wide corridor for the entirety of the natural gas pipeline alignment).
[5]Existing road right-of-way width is 45 feet, proposed road right-of-way width would be 60 feet.



Map 2-1: Typical Right of Way Configuration

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Table 2-2
Miles Crossed, Permanent Surface Disturbance Acreage, and Percentage By Land Jurisdiction for Each Utility Corridor Facility

Utility Corridor Facility	Total Miles/Acres[1]	Land Jurisdiction		
		Bureau of Land Management	State of Utah	Private
Water Supply Pipeline (50-foot-wide right-of-way)				
Miles	19.0	12.8	3.5	2.7
Acres	116.0	77.7	21.9	16.4
Percentage of acres	–	67%	19%	14%
Water Intake Facilities				
Miles	–	–	–	–
Acres	6.0	–	–	6.0
Percent of acres	–	–	–	100%
Natural Gas Supply Pipeline (50-foot-wide right-of-way)				
Miles	8.8	4.6	2.0	2.2
Acres	52.6[2]	28.6	11.0	13.0
Percentage of acres	–	54%	21%	25%
Product Delivery Pipeline (50-foot-wide right-of-way)				
Miles	11.2	6.3	2.7	2.2
Acres	68.3	38.4	16.6	13.3
Percentage of acres	–	56%	24%	20%
Transmission Line No. 1 (150-foot-wide right-of-way)				
Miles	10.4	6.5	2.8	1.1
Acres	187.9	117.3	50.8	19.8
Percentage of acres	–	62%	27%	11%
Transmission Line No. 2 (150-foot-wide right-of-way)				
Miles	2.4	1.6	0.8	0.0
Acres	44.0	29.7	14.3	0.0
Percentage of acres	–	67%	33%	0%
Colocated Transmission Lines No. 1 and 2 (250-foot-wide right-of-way)				
Miles	8.6	4.2	1.6	2.8
Acres	261.2	128.8	48.3	84.1
Percentage of acres	–	49%	19%	32%
New Switchyard				
Miles	–	–	–	–
Acres	8.4	8.4	–	–
Percentage of acres	–	100%	–	–
Dragon Road Improvements				
Miles	5.7	5.23	–	0.85
Acres	41.7	38.05	–	6.27
Percentage of acres	–	86%	–	14%
Totals				
Miles	60.4	36.0	13.4	11.0
Acres	728.1	428.9	162.9	146.6
Percentage of acres	–	59%	21%	20%

SOURCE: Enefit 2014
NOTES:
[1]Number of miles is approximate and acreage calculations are based on Applicant provided data, and then rounded to the nearest 0.1.
[2]52.6 acres of the estimated surface disturbance associated with the product delivery pipeline would be anticipated to overlap with the estimated disturbance associated with the natural gas pipeline (i.e., the two pipelines share the same 50-foot-wide corridor for the entirety of the natural gas pipeline alignment).

2.2.1 Water Supply Pipeline

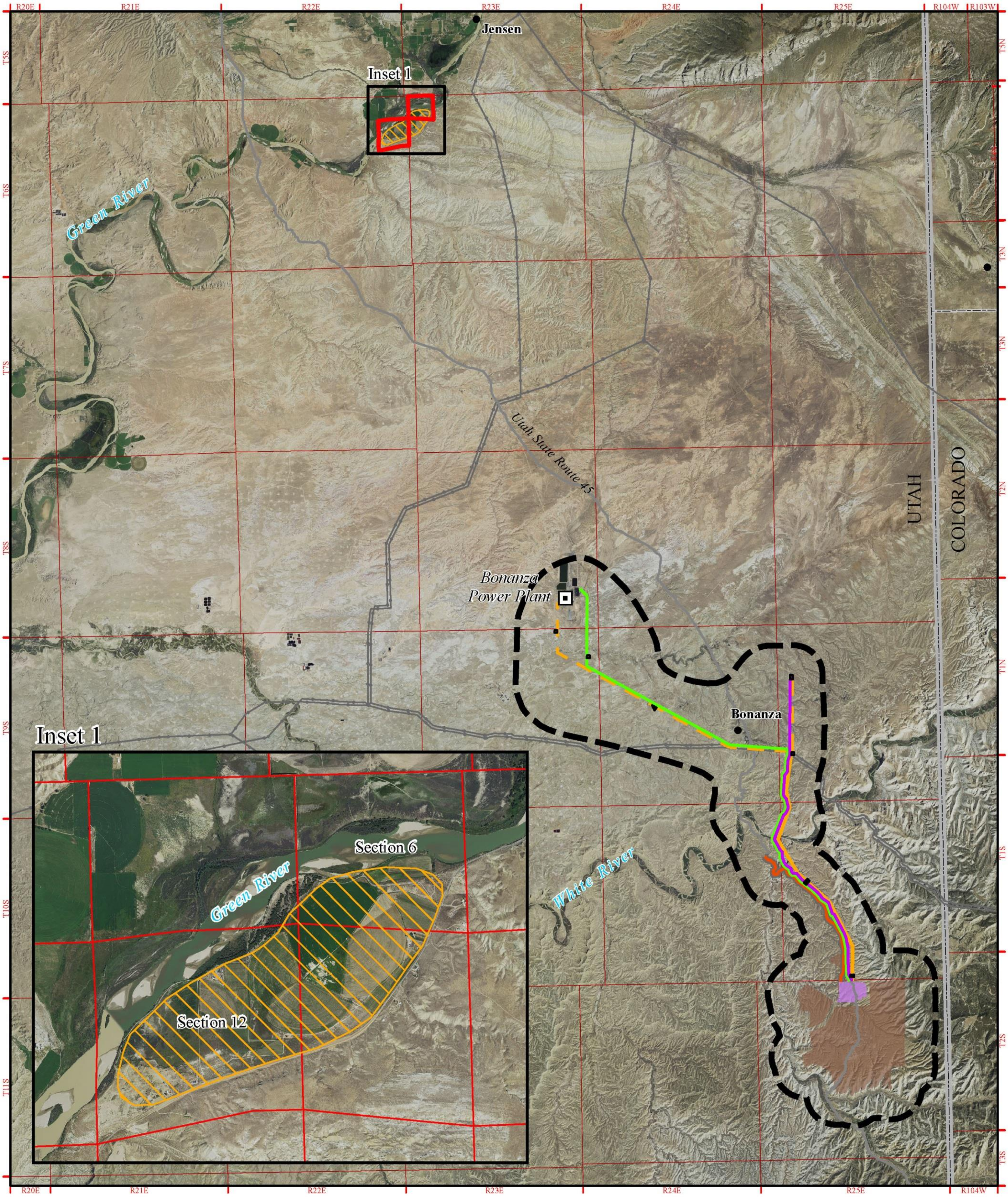
Water is needed for hydrostatic testing of pipeline utilities as well as various South Project processes, which are described in Section 2.2.12.1 under the non-federal connected action. To supply the South Project with water, the Applicant has an agreement to use the spare capacity in the Deseret Generation and Transmission Cooperative (DGT) existing water delivery pipeline, which terminates approximately 19 miles north-northwest of the proposed plant site at DGT's Bonanza Power Plant (BPP). The Applicant has agreed with DGT on conveyance of the Applicant's existing, approved water right of 15 cubic feet per second (cfs) from the Green River, transported through the DGT system, to a new buried pipeline that would be constructed from the DGT system termination point at the BPP to the South Project plant site. The Applicant would be the right-of-way holder and construct and own the new pipeline from BPP to the South Project site, while DGT would operate and maintain the new pipeline.

The water supply pipeline would be the longest of the pipeline utility routes, extending approximately 19 miles from the BPP to the South Project plant site. Engineering design is ongoing; however, preliminary evaluations indicate the water supply pipeline diameter would be between 24 and 30 inches and material would consist of welded steel (maximum size is a 30-inch diameter although it is possible through ongoing design work the pipeline diameter sizing may be nominally smaller). In segments where the water supply pipeline would be the only utility, a 50-foot-wide permanent right-of-way would be required. Table 2-1 presents the estimated surface disturbance associated with the water supply line. The water supply pipeline would be constructed during the initial field mobilization for right-of-way construction, as water is needed to allow construction activities to proceed on the South Project site.

2.2.1.1 Water Right and Point of Diversion

The Applicant has an existing senior water right for 15 cfs (#49-258, with a priority date of 1965) that allows for a point of diversion from either the White River or the Green River. The Green River location was chosen by the Applicant for two main purposes – reliability and minimization of environmental impacts. The Green River has a significantly larger base flow year round than does the White River; therefore, it can more easily accommodate the 15 cfs water right amount. The maximum amount of water that can be used for industrial purposes as part of this water right is 10,739.75 acre-feet/year. An existing pipeline system delivers water from a water well field (adjacent to the Green River) to the DGT's BPP and has spare capacity, as noted above, to transport the Applicant's 15 cfs water right. From the DGT BPP, the Applicant's portion of the water would be transported through the new proposed water supply pipeline to the South Project.

The first leg of delivery would be within the DGT existing water supply pipeline that begins at an existing water well field located in an upland/agricultural land setting adjacent to the Green River, near Jensen, Utah (refer to Map 2-2). The withdrawal facilities consist of multiple Ranney Collector Wells (RCWs) and associated filtration and pump stations on land owned by DGT, with perforated horizontal collector pipes extending out into the alluvium underlying the Green River. No direct river intake and/or screening from the river bank are proposed or occur.



Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline
- Proposed Colocated Powerlines
- Dragon Road Improvements
- Proposed Switchyard
- Proposed Construction Laydown Areas
- Existing DGT Well Field Area

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

Utility Project Features, Enefit 2013;
Dragon Road Improvements, Enefit 2014;
Power Plant as digitized by EPG, 2013;
Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013;
South Project Plant and Mine Site Areas, Enefit 2013

NOTES:
In most cases, linear project features are graphically depicted as individual lines but share centerline alignment in common areas.

October 2015

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Miles

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Map 2-2: Green River Water Intake Location

ENEFIT AMERICAN OIL UTILITY CORRIDOR PROJECT EIS

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However, these existing wells are not adequate to deliver the necessary water for the South Project. The Applicant would expand the existing RCW field with the addition of two to three new RCWs, requiring four to six acres total (2 acres per well) on adjacent private land owned by the Applicant. The final number of RCWs is dependent upon future test well pump yields. There would be an electric pump for each RCW and no generators are proposed. There is an existing overhead electric distribution line available at the well locations, which currently serves the existing DGT well field system. The new RCWs and associated filtration and pumping would be located in existing fallow/disturbed upland areas and would interconnect with DGT's existing pipeline system that feeds the BPP. From the DGT BPP, the Applicant's portion of the water would be transported through the new proposed water supply pipeline to the South Project.

There are 26 points of diversion associated with the Applicant's water right, which enables selection of preferred points of diversion but also the ability to retain backup options as needed to ensure reliability of the water supply system. Not all points of diversion in this area would be used; only those locations with adequate yield to withdraw 15 cfs from the Green River via the RCW system would be necessary. The Applicant anticipates using five of these points of diversion, which are located adjacent to private land owned by the Applicant and DGT near Jensen, Utah. The general location of the proposed points of diversion is depicted on Map 2-2. The final points of diversion will be filed with the State of Utah's Division of Water Rights (UDWaR) upon certification of putting the water to beneficial use and perfecting the appropriated water.

2.2.2 Natural Gas Supply Pipeline

The Applicant requires natural gas to supply a variety of functions at the South Project site, such as industrial processes, building heat, pilots for the flare system, supplemental duct firing, and upgrader complex function. The Applicant proposes to construct, own, and operate a new gas pipeline to connect to an existing Questar natural gas pipeline on SITLA lands that runs approximately 9 miles north of the South Project area. Routing of the natural gas supply pipeline was considered in conjunction with the water supply pipeline, and the two underground utilities would share a common right-of-way corridor for at least part of their distance. A new mainline tap and customer metering station would be constructed in and/or immediately adjacent to Questar's existing right-of-way. The inlet pressure required for the South Project, as currently designed, does not require a gas compressor station at the tie-in point. In the event a gas compressor at the tie-in point was needed (a reasonable and foreseeable development), it would consist of a skid mounted compressor unit, motor control center, appurtenant above ground valves, and a pig launcher for maintenance. The equipment would be contained within an enclosure and would require approximately 1.0 acre of land.

The natural gas pipeline would be the shortest of the pipeline segments, extending approximately 9 miles from the existing Questar pipeline tie-in to the South Project property boundary. The natural gas pipeline inside diameter would be 6 or 8 inches (may be as large as 12 inches) diameter and material would consist of welded steel. Table 2-1 presents the estimated surface disturbance associated with the natural gas supply line. Since natural gas is not required for the South Project construction, the natural gas pipeline would be installed shortly prior to the South Project start-up, or approximately 2 years after construction of the water supply pipeline.

2.2.3 Product Delivery Pipeline

In addition to the water and natural gas utility delivery requirements to the South Project, the Applicant proposes to construct, own, and operate a product delivery pipeline to carry the upgraded synthetic crude oil (SCO) offsite. The oil product produced would not solidify under normal climatic conditions. An onsite upgrader would be built as part of the South Project to process the raw shale oil in order to improve product quality and allow for pipeline transport. The SCO product is not similar to the Uintah Basin's usual waxy crude oil.

The Applicant plans to use an existing Chevron common carrier crude pipeline, which currently has available capacity and is located approximately 11 miles north of the South Project, located on BLM-administered lands. The Chevron pipeline system extends to Salt Lake City, where the first 25,000 barrels per day (BPD) of product delivery is planned. Negotiations with Chevron Pipe Line Company are ongoing, and the Applicant is working with Chevron to identify land requirements, interconnection facility design, and existing facility upgrade steps to support utilization of the common carrier pipeline.

The outgoing product pipeline would extend approximately 11 miles from the South Project property boundary to the tie-in with the existing Chevron common carrier line. The product pipeline inside diameter would be between 12 and 16 inches and material would consist of welded steel. As with the natural gas supply pipeline, the product delivery pipeline is not required for the South Project construction. Table 2-1 presents the estimated surface disturbance associated with the product delivery pipeline. The product delivery pipeline would be constructed concurrently with the natural gas pipeline, prior to the South Project startup, approximately 2 years after construction of the water supply pipeline.

The water supply pipeline 50-foot-wide right-of-way would be located adjacent to the natural gas and product delivery pipelines, beginning in the northwest quarter of Section 30, Township 9 South, Range 25 East and continuing south to the terminus at the South Project private property boundary. Through this portion of the utility corridor alignment, the combined water/natural gas/product pipeline alignments would create a contiguous 100-foot-wide right-of-way for underground utilities. Figure 2-1 depicts cross sections of the typical right-of-way where the three pipelines (water supply, natural gas, and product delivery) are adjacent.

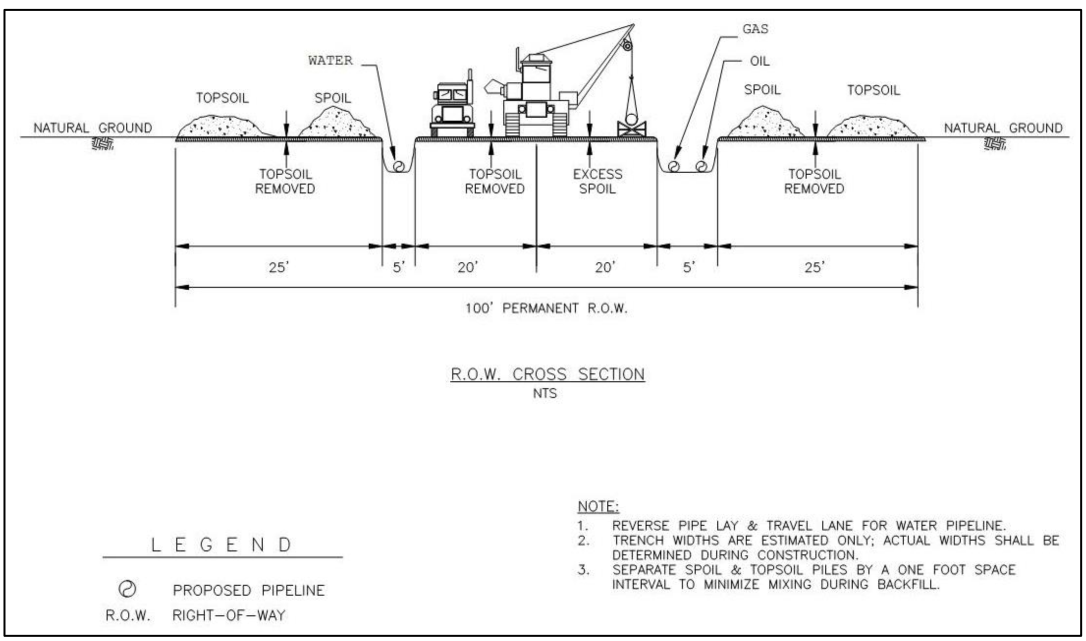


Figure 2-1 Typical Right-of-way Cross Section of Adjacent Pipeline Alignments

2.2.3.1 Spill and Leak Detection Equipment

A Supervisory Control and Data Acquisition (SCADA) system is proposed for the oil product pipeline, allowing for central control and monitoring of the pipeline pumps from the South Project plant site. Overall leak detection for the entire pipeline would be achieved by utilizing the flow meters on each end of the product pipeline. If crude oil flows do not match within a specified tolerance between the South Project flow meter leaving the facility and the flow meter located at the Chevron pipeline interconnection/custody transfer meter, then the entire product pipeline would be shut down and isolated until the leak is found and repaired. A buried fiber optic communications line would provide real-time flow data to the South Project central control room; therefore, variances in flows leaving the facility and arriving at the Chevron interconnection would be identified instantaneously.

Valves and leak detection facilities associated with waterbody crossings (i.e., White River and Evacuation Creek) are discussed in Section 2.2.8.11.6.

2.2.4 Overhead 138kV Transmission Line and Ancillary Facilities

The Applicant would require electric power delivery to the South Project during construction and start-up of industrial activities. Once the industrial facility is in operation, the Applicant would have the cogeneration capability to produce enough electric power to cover part or the facility's entire load (depending on the stage of development) with the facility planned to be a net exporter of electricity at full build-out. For reasons of electrical demand during construction and start-up, and export during operation, new transmission capacity would be required for the South Project.

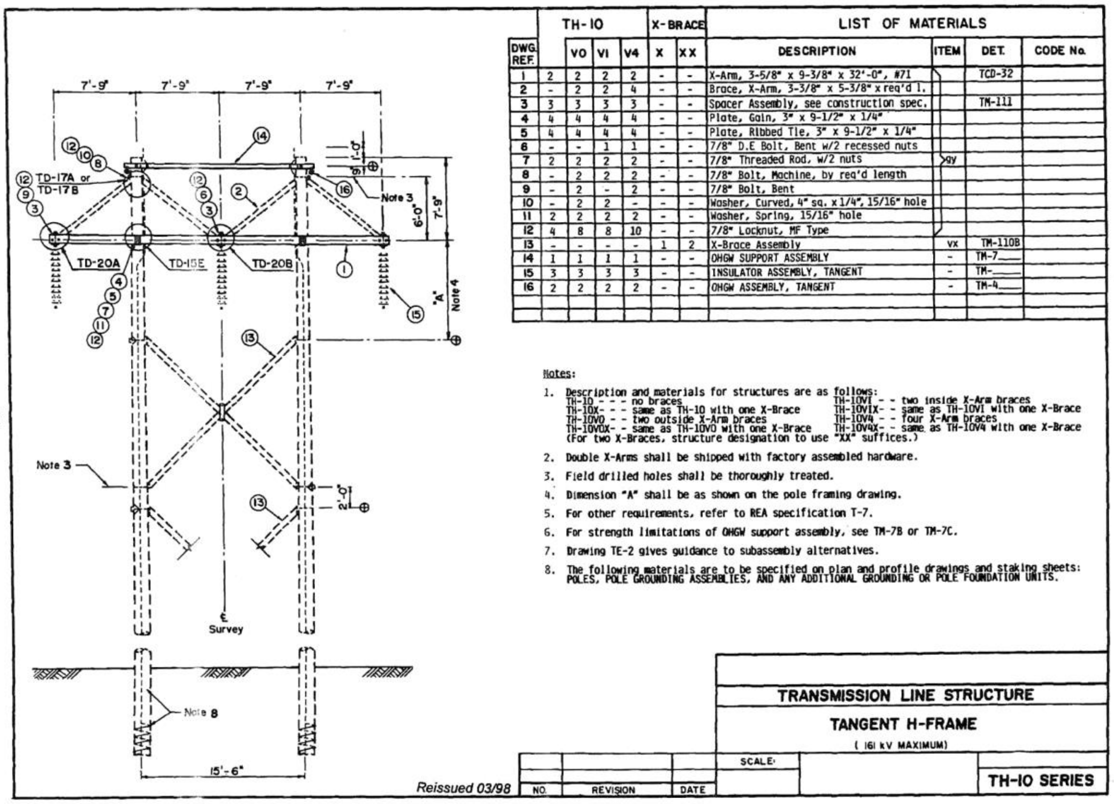
The South Project is located in the MLEA service area. The Applicant has initiated discussions with MLEA regarding extending transmission lines to the South Project private property. MLEA submitted a separate Standard Form 299 to the BLM Vernal Field Office in April 2013 to construct, own, and operate the transmission facility. The transmission line corridor would be located adjacent to the proposed underground pipelines for the majority of the project (refer to Map 1-1 and Map 2-1).

Based on the estimated construction and startup demand, as well as the ultimate net power production export capacity, the Applicant is anticipating implementation of a looped system consisting of dual 138kV transmission lines running to the site for reliability purposes. The overhead transmission lines would occur singly in some areas (i.e., a lone overhead transmission line circuit) and in tandem in other areas (i.e., side-by-side overhead transmission lines each with its own circuit) (refer to Map 1-1 and Map 2-1). Segments where a single overhead transmission line would occur would require a 150-foot-wide permanent right-of-way width while segments where tandem lines would occur would require a 250-foot-wide permanent right-of-way. The westernmost, longer transmission route (18.9 miles) running from the BPP to the South Project property would be constructed just prior to the onset of the South Project construction, while the easternmost, shorter transmission route (10.7 miles) running from the existing 138kV Bonanza-to-Rangely transmission line to the South Project private property would be constructed concurrent with the natural gas supply and product delivery pipelines just prior to the South Project facility startup. Table 2-1 presents the estimated surface disturbance associated with the transmission lines.

2.2.4.1 Structures

The majority of the proposed transmission structures would be a single-circuit, tangent, wooden H-frame structure (refer to Figure 2-2). Tangent structures are primarily used in straight line segments and would be the most common type of structure. Running angle towers would be used when the transmission line changes direction up to a specified angle threshold. Dead-end structures would be needed for long spans (i.e, White River crossing) or in highly varied terrain, or other specific locations. Dead-end structures would be made of galvanized steel, and are heavier and require larger foundations.

27



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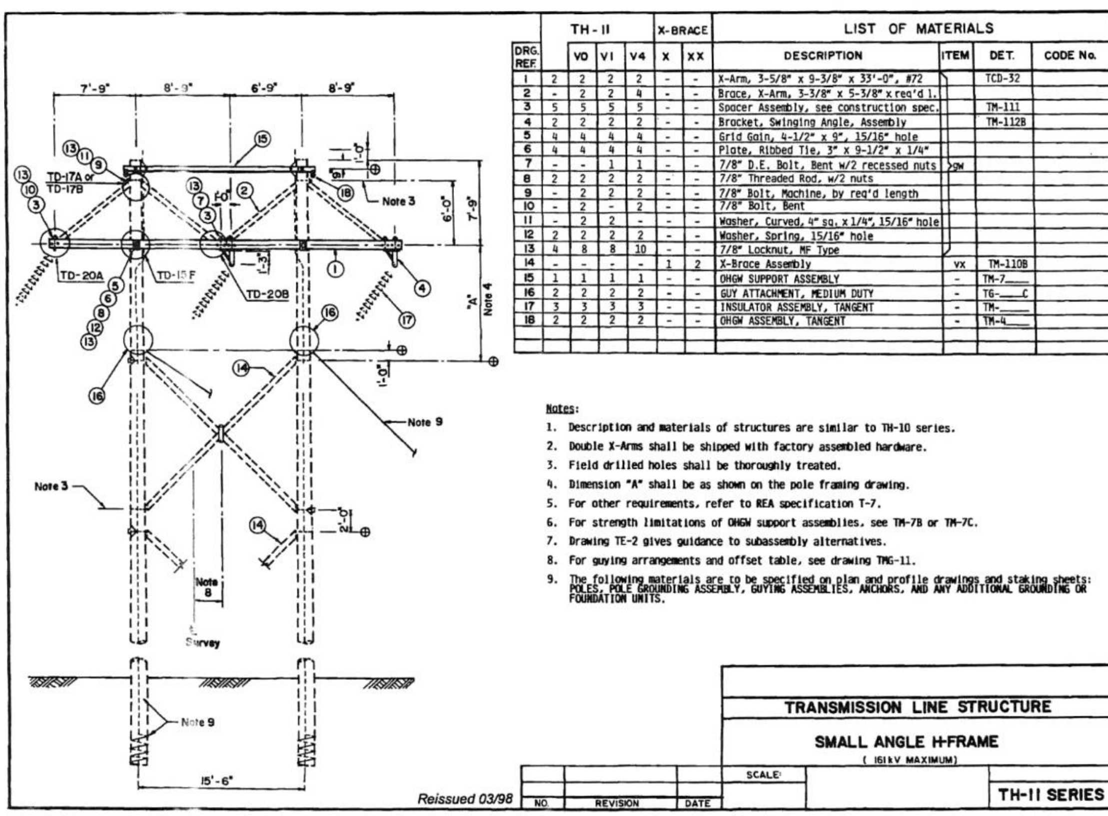
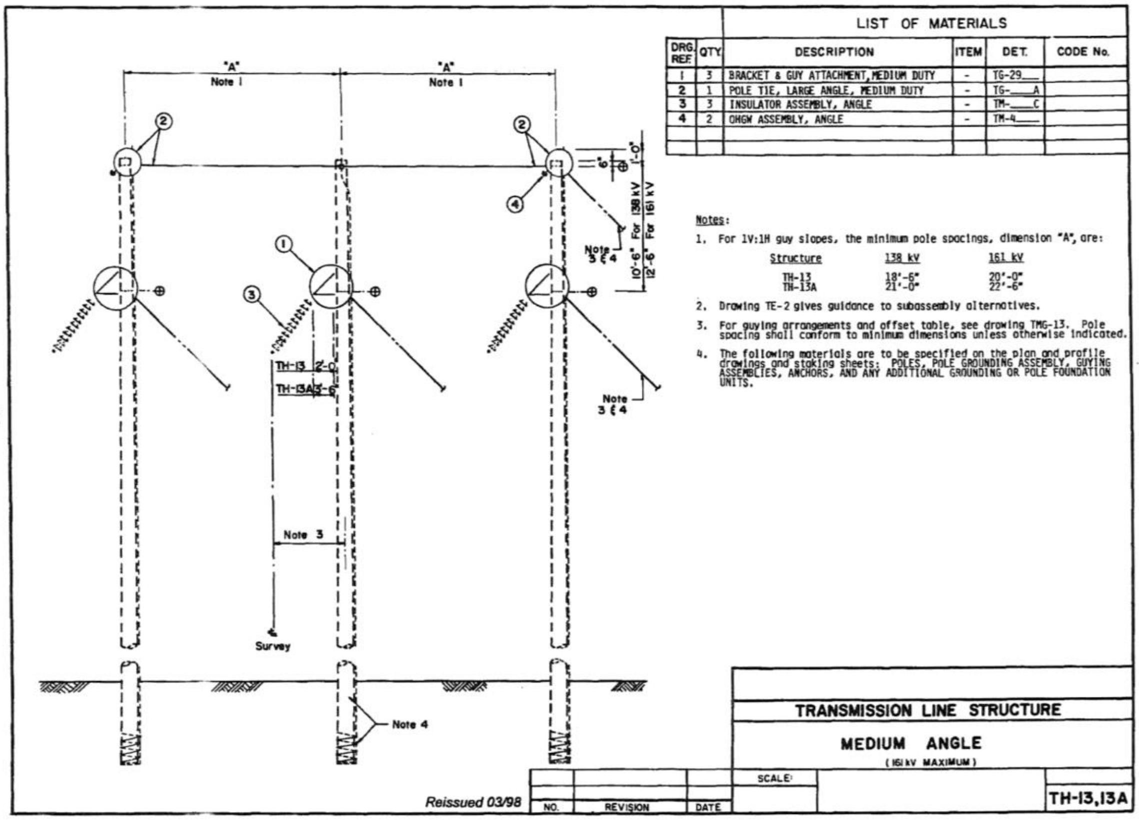


Figure 2-2 Typical 138kV Transmission Structures



LIST OF MATERIALS

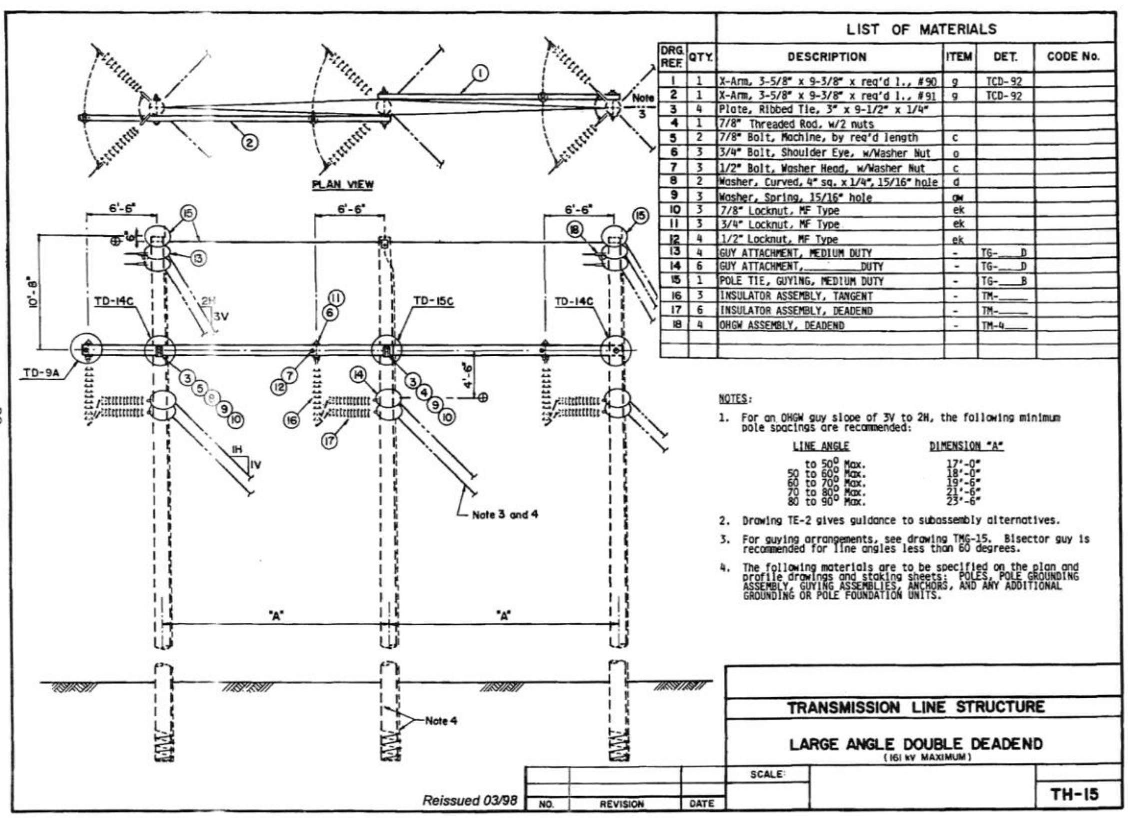
DRG. REF.	QTY.	DESCRIPTION	ITEM	DET.	CODE No.
1	3	BRACKET & GUY ATTACHMENT, MEDIUM DUTY	-	TG-29___	
2	1	POLE TIE, LARGE ANGLE, MEDIUM DUTY	-	TG-___A	
3	3	INSULATOR ASSEMBLY, ANGLE	-	TM-___C	
4	2	OHGW ASSEMBLY, ANGLE	-	TM-4___	

Notes:

1. For 1V:1H guy slopes, the minimum pole spacings, dimension "A", are:

Structure	138 kV	161 kV
TH-13	18'-6"	20'-0"
TH-13A	21'-0"	22'-6"

2. Drawing TE-2 gives guidance to subassembly alternatives.
3. For guying arrangements and offset table, see drawing TMG-13. Pole spacing shall conform to minimum dimensions unless otherwise indicated.
4. The following materials are to be specified on the plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHORS, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.



LIST OF MATERIALS

DRG. REF.	QTY.	DESCRIPTION	ITEM	DET.	CODE No.
1	1	X-Arm, 3-5/8" x 9-3/8" x req'd l., #90	g	TCD-92	
2	1	X-Arm, 3-5/8" x 9-3/8" x req'd l., #91	g	TCD-92	
3	4	Plate, Ribbed Tie, 3" x 9-1/2" x 1/4"			
4	1	7/8" Threaded Rod, w/2 nuts			
5	2	7/8" Bolt, Machine, by req'd length	c		
6	3	3/4" Bolt, Shoulder Eye, w/Washer Nut	o		
7	3	1/2" Bolt, Washer Head, w/Washer Nut	c		
8	2	Washer, Curved, 4" sq. x 1/4", 15/16" hole	d		
9	3	Washer, Spring, 15/16" hole	aw		
10	3	7/8" Locknut, MF Type	ek		
11	3	3/4" Locknut, MF Type	ek		
12	4	1/2" Locknut, MF Type	ek		
13	4	GUY ATTACHMENT, MEDIUM DUTY	-	TG-___D	
14	6	GUY ATTACHMENT, ________ DUTY	-	TG-___D	
15	1	POLE TIE, GUYING, MEDIUM DUTY	-	TG-___B	
16	3	INSULATOR ASSEMBLY, TANGENT	-	TM-_____	
17	6	INSULATOR ASSEMBLY, DEADEND	-	TM-_____	
18	4	OHGW ASSEMBLY, DEADEND	-	TM-4____	

NOTES:

1. For an OHGW guy slope of 3V to 2H, the following minimum pole spacings are recommended:

LINE ANGLE	DIMENSION "A"
to 50° Max.	17'-0"
50 to 60° Max.	18'-0"
60 to 70° Max.	19'-6"
70 to 80° Max.	21'-6"
80 to 90° Max.	23'-6"

2. Drawing TE-2 gives guidance to subassembly alternatives.
3. For guying arrangements, see drawing TMG-15. Bisector guy is recommended for line angles less than 60 degrees.
4. The following materials are to be specified on the plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHORS, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

Figure 2-2 Typical 138kV Transmission Structures (continued)

Conductor phase-to-phase and phase-to-ground clearance parameters would be determined in accordance with MLEA company standards and the National Electrical Safety Code (NESC). These standards provide minimum safe distances between the conductors and the ground; crossing points of other lines and the transmission support structure; other conductors; and minimum working clearances for personnel during energized operation and maintenance activities. Typical conductor clearance above ground is anticipated to be between 25 and 40 feet (23 feet minimum clearance) for the 138kV line.

The transmission line structures and designs are subject to the U.S. Department of Agriculture - Rural Utility Service standards. The Applicant also has an Avian Protection Plan (APP) in place that addresses structure design requirements to meet Avian Power Line Interaction Committee (APLIC) standards.

2.2.4.2 Switchyards

There are three planned switchyard facilities:

1. The 138kV Bonanza bus expansion/switchyard, which would be located at the existing BPP substation and origination point of the first transmission line and could be an expansion/addition to the existing plant switchyard or a separate/adjacent new switchyard;
2. The 138kV South Project substation, located at the north end of the South Project plant site; and
3. A power line tap point/switchyard located on BLM-administered land.

The proposed switchyard, or substation, on BLM-administered land is currently designed as 400 feet by 340 feet, or approximately 3.1 acres. It is anticipated to consist of a bank of transformers to step up/down voltage; a grounding system, to protect humans and wildlife from high voltages that may occur during a fault in the system; and circuit breakers, to interrupt any short circuits or overload currents that may occur in the system. Ancillary design features include concrete pads for mounting of equipment, a surrounding metallic security fence, and central control room/building (not permanently staffed; the switchyard will be remotely supervised and controlled). Fire protection and grounding would be industry standard, as required by the appropriate state/federal regulatory agency. The existing transmission line running between Bonanza and Rangely has a voltage of 138kV, and the proposed transmission line voltage is also 138kV. Access to the switchyard would be via an existing unpaved road that departs from Highway 45 in the northeast quarter of Section 10, Township 9 South, Range 24 East and courses east-southeast approximately 2.5 miles to the right-of-way. The switchyard/substation would require additional temporary workspace of up to 5 acres (for a total disturbance of just over 8 acres), although a portion of this acreage would “overlap” with the permanent right-of-way for the transmission line.

The switchyard would have the necessary equipment to allow for transmission of electricity into the South Project during industrial plant startup and maintenance periods, as well as outgoing from the South Project during full operation. At full operation, the South Project is anticipated to be a net exporter of electricity; therefore, the switchyards at the transmission interconnection points would need to be configured for both scenarios.

2.2.5 Temporary Laydown Areas

In addition to utility corridor rights-of-way, the Applicant would require nine temporary laydown areas, with each area about 3-4 acres in size. These areas have been identified for all utility corridor alignments to facilitate construction of the various corridor components. These areas would be used only during construction for storing pipe and fittings, for equipment parking, and for other temporary usage. Topsoil and subsoil stockpiling would generally occur along the right-of-way during construction, although some topsoil and subsoil stockpiling would occur with laydown areas as needed. The temporary laydown areas would be restored following construction. Table 2-1 presents the estimated surface disturbance associated with the temporary laydown areas, and Map 1-1 depicts the anticipated locations.

2.2.6 Access Roads

Proposed access roads that are needed for construction of the utility corridor are shown on Maps A-1a and A-1b (located in Appendix A of this EIS). The proposed access roads have been placed into three condition categories, and have also been classified by land ownership, with length (in miles) and approximate acreage of each classification provided in Table 2-3 below. Note that Highway 45 is not included as a formal access road, as this is an existing State highway regularly traveled by large vehicles. Highway 45 would serve as the primary access route to the general project area and is discussed further in Section 3.2.15.2 of this document. The following definitions apply to each of the general condition categories:

Table 2-3
Proposed Access Roads – Mileage, Acreage, and Land Jurisdiction Crossed

Access Road Type	Total Miles/Acres	Land Jurisdiction			
		BLM	State of Utah	Private	Tribal
Existing – No Improvement	36.0 miles 69.8 acres	29.3 miles 56.9 acres	1.5 miles 3.0 acres	5.1 miles 9.9 acres	0.0 miles 0.0 acres
Existing – Improvement	22.1 miles 2.7 acres	12.0 miles 1.5 acres	6.6 miles 0.8 acres	3.3 miles 0.4 acres	0.2 miles < 0.1 acres
New – Temporary	0.3 miles 0.5 acres	0.1 miles 0.20 acres	0.0 miles 0.0 acres	0.2 miles 0.3 acres	0.0 miles 0.0 acres

SOURCE: Enefit 2015

Existing – No Improvement. Access roads in this category are existing, are not expected to require grading, and are at least 12 feet in width (frequently greater, up to 30 feet width). The roads in this category are unpaved, with the exception of Deseret Power Plant Road and Stanton Road, which are paved roads. An average width of 16 feet was used to calculate the acreage of roads in this category. All roads in this category are expected to accommodate all types of construction vehicle/equipment traffic.

Existing – Improvement. Access roads in this category also exist, but have the potential to require some grading prior to construction to allow safe passage of construction vehicle/equipment traffic. These roads are typically 12 feet in width (with some locations as narrow as 10 feet or as wide as 16 feet) and are unpaved. An average width of 12 feet was used to calculate the acreage of roads in this category. Not all segments of all roads in this category will necessarily require improvement, depending on the road condition immediately prior to construction; however, portions of these roads are the most likely to require some degree of improvement. Following improvement, all roads in this category are expected to accommodate most types of construction vehicle/equipment traffic, although longer vehicles (such as pipeline stringing trucks or trucks hauling transmission tower poles) may not be able to use all of these roads.

New – Temporary. Access roads in this category do not currently exist and would be new, temporary access roads to reach the construction right-of-way. These roads would be unpaved with an average width of 12 feet, which was used for the acreage calculation, and would be primarily used for access to transmission tower locations. There are only two roads in this classification, one on BLM land and one on private land. The road located on BLM land would be reclaimed following construction, while the road on private land (land owned by the Applicant) could potentially remain as a permanent access road.

2.2.7 Dragon Road Upgrade and Pavement

Dragon Road, an existing Uintah County Class 1B (unpaved) road, would serve as the primary access road to the South Project. Dragon Road begins at Highway 45 in Section 12, Township 10 South, Range 25 East and courses generally south and east toward the South Project private property boundary. Dragon Road crosses BLM-administered land and private land between Highway 45 and the South Project private property, and it continues through the South Project private property under an existing Uintah County right-of-way.

To accommodate traffic during construction of the Utility Project (and the South Project), as well as general employee and supply traffic during operation of the South Project, the Applicant proposes to make improvements to Dragon Road. The Applicant would widen and make minor realignments to the existing Dragon Road, as well as pave Dragon Road to reduce dust emissions from traffic. The utility corridor routing is designed to run generally parallel with Dragon Road to improve construction access and minimize long-term maintenance disturbance.

The Applicant has conducted preliminary engineering and route alignment for the Dragon Road improvements, identifying the proposed new right-of-way width and the locations of the realignments. The new alignment of Dragon Road uses approximately 70 percent of the existing road alignment, with only 9.5 acres of the old Dragon Road alignment remaining following the upgrade. The remaining sections of original road would be left in place. The Applicant proposes to expand the existing right-of-way from 45 feet to 60 feet, and the road would be designed to meet the minimum requirements of the Uintah County Class 1B (paved) road typical section (i.e., minimum paved width of 28 feet of pavement including 20 feet of travel width [10 feet per lane] and 3 feet of paved shoulder on each side). Specifically, the Applicant proposes a modified typical section of 42 feet of pavement, including 30 feet of travel width (15 feet per lane) and 6 feet of paved shoulder on each side.

Dragon Road would require minor realignments for grade control and speed control at several locations. These realignments would allow Dragon Road to have a maximum grade (or road slope) of 5.3 percent and maintain a 45 miles-per-hour design speed. The majority of these realignments are only a few hundred feet in length and in departure from the existing Dragon Road centerline with the exception of the initial reach of road near Highway 45 and the Evacuation Creek Bridge. To use the existing Uintah County Bridge over Evacuation Creek, and thereby minimize construction impacts on the creek itself, the proposed alignment would depart up to approximately 500 feet on the north/west side of the creek and approximately 2,000 feet on the south/east side of the creek from the existing Dragon Road centerline, respectively. Maps A-1a and A-1b present the existing and proposed Dragon Road routes. Figure 2-3 presents the estimated surface disturbance associated with the proposed Dragon Road improvements.

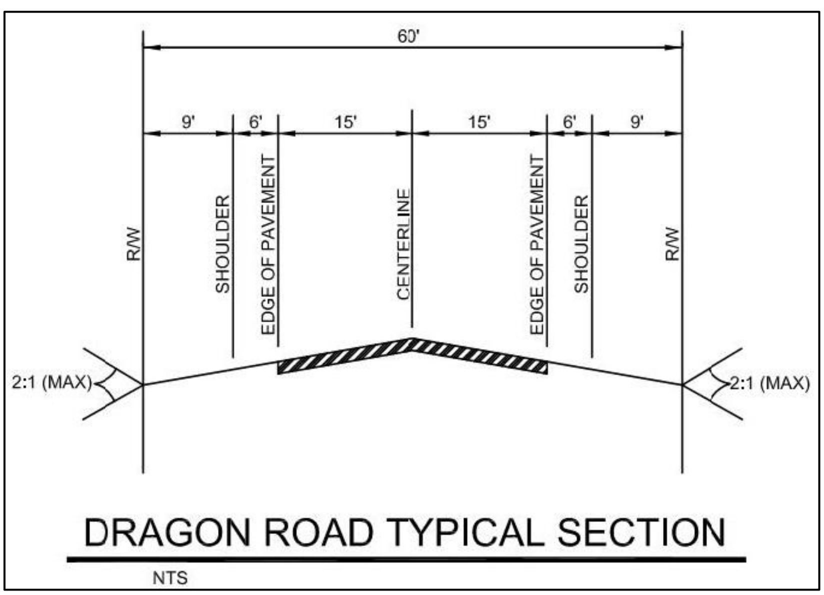


Figure 2-3 Dragon Road Typical Section

2.2.8 Construction of the Right-of-way Facilities

This section describes the technical activities associated with construction of the Utility Project. The activities described in this section would be refined by the Applicant during detailed design and engineering.

BLM requires a POD for implementation and maintenance of the Utility Project. The Applicant has submitted a Preliminary POD (2013) and Detailed POD (2014) to BLM for consideration as part of the right-of-way application. The POD provides direction to the Applicant's construction personnel, construction contractor(s) and crews, environmental monitors, and agency personnel regarding the specifications of the Utility Project construction. A general Compliance Inspection Contractor will not be required, however, resource specific inspectors will be involved in construction activities as necessary. The POD also contains a project description, resource protection, best management practices and mitigation measures; specifies environmental compliance field activities; provides a description of construction and operation activities; specifies land use and access requirements; and provides mapping of sensitive resources. In addition, the following documents would be appendices to the POD and describe the mitigation measures and environmental protection measures that the Applicant and its construction contractor(s) will follow during construction, operation, and maintenance of the Project:

- *Upland Erosion Control, Revegetation, and Maintenance Plan* – This plan provides a framework for reclamation treatments to be applied to the Project upon identification of construction-related disturbance, prevent unnecessary degradation of the environment during construction, rehabilitate temporary use areas, and reclaim disturbed areas.
- *Noxious Weed Control Plan* – This plan includes noxious weed management practices, monitoring, and the use of pesticides/herbicides.
- *Traffic and Transportation Management Plan* – This plan addresses regulatory compliance, traffic management practices, levels of right-of-way access, and mitigation measures to help reduce impacts related to transportation and the construction of temporary and long-term access within the vicinity of the Project.
- *Spill Prevention, Containment, and Countermeasures and Reporting Plan (SPCC)* – This plan provides mitigation and preventative measures to minimize the environmental impact associated with spills or releases of fuel, lubricant, or hazardous materials, during construction and refueling activities and during special refueling activities within 100 feet of waterbodies, wetland boundaries, or within municipal watersheds.
- *Stormwater Pollution Prevention Plan Framework* – This plan framework provides an overview of proposed construction activities and includes procedures that will be implemented during construction activities to prevent or reduce pollutants in stormwater discharges.
- *Historic Property Treatment Plan* – This plan is a confidential appendix that contains the Historic Properties Treatment Plan, which outlines the treatment of cultural resources during operation and maintenance of the Project.
- *Blasting Plan Framework* – This plan framework outlines methods to mitigate risks and potential impacts associated with blasting procedures that may be required for construction of the Project.
- *Plant and Wildlife Species Conservation Measures Plan* – This plan includes information on regulatory requirements related to biology resources and concerns and mitigation, including priority concerns and measures to specifically address key biological resources to support the design, construction, and operation of the Project.
- *Dust Control and Air Quality Plan* – This plan addresses regulatory compliance, environmental concerns, mitigation recommendations, and monitoring.

- *Emergency Preparedness and Response Plan Framework* – This plan framework provides an overview of methods to be implemented if the need for emergency management is required.

The POD (also referred to as a Construction, Operation, and Maintenance Plan (COM Plan)) and supporting appendices would be finalized and incorporated into the right-of-way grants for the Project, if approved. The POD and other supporting documents containing details of project construction and operation may be found in the BLM's project administrative record, which is housed at the BLM Vernal Field Office.

2.2.8.1 Construction Planning and Surveys

Prior to construction of the Utility Project, preconstruction activities would include (but would not be not limited to) land surveying, coordinating with land owners and other affected interests, coordinating with users of existing utility corridors, procuring any outstanding non-federal rights-of-way, finalizing engineering design, procuring and storing materials, and selecting construction contractors.

Detailed right-of-way and property surveys would be conducted for alignments selected for construction staking purposes. Permission would be obtained, as necessary, prior to entering any private property to conduct a survey.

During preconstruction staking, the centerline and outside right-of-way boundaries, including extra temporary laydown areas, would be staked and flagged. The Blue Stakes one-call system would be used to notify and locate the presence of existing underground utilities, and those existing utility locations would be flagged as necessary to avoid impacts during construction. Centerline and offset staking would be installed to accommodate pipeline installation. In addition, staking would be provided at temporary laydown areas and existing access routes, as needed.

2.2.8.2 Clearing and Grading

The BLM would be contacted at least seven days prior to the anticipated start of construction and/or surface-disturbing activities on BLM-administered land. Vegetation in the right-of-way (permanent surface disturbance) would be removed to provide a safe working area during construction. Trees, brush, other woody material, and rocks cleared from the right-of-way and other ancillary facility areas would be placed to the side in the right-of-way (or in a temporary workspace, if needed), beyond areas needing to be graded, to impede unauthorized vehicle traffic and for later use in reclamation, or they would be disposed of as directed by the BLM or landowner in accordance with applicable laws and regulations. Also, during clearing and grading, existing utilities would be hand-exposed, marked, and protected, and temporary erosion control measures would be installed.

Topsoil would be removed from the working areas of the right-of-way and temporary laydown areas to protect it from compaction during pipeline and transmission line installation. Topsoil removal of the entire right-of-way would be anticipated for the pipeline construction areas, whereas only topsoil in the vicinity of a given tower would be removed for the transmission line construction areas. Topsoil removed during clearing and grading operations would be segregated from subsoil. Where available, typically the first 2 to 6 inches of surface soil would be separated. Topsoil and subsoil would be placed in separate rows along the edges of the right-of-way for subsequent restoration activities on the right-of-way. Topsoil segregation would follow the procedures outlined in the Applicant's Upland Erosion Control, Revegetation, and Maintenance (Reclamation) Plan and Noxious Weed Plan to be included in the POD, and are included in the EIS as Appendices A and B.

Equipment traveling over moist or saturated soils, including ungraveled access roads, could cause rutting. The Applicant would monitor for rutting conditions and, in the event rutting is greater than 4 inches and has the potential to mix topsoil and subsoil, would evaluate alternate access routes to avoid rutting. Ruts that reach depths greater than 4 inches would be repaired as soon as practical. Also, some drilling and blasting (prior to trench excavation) may occur during the grading phase to provide safe, level access for machinery and other construction vehicle travel along the Utility Project right(s)-of-way.

Fences crossing the right(s)-of-way would be braced, cut, and temporarily fitted with gates to permit passage of construction traffic. During construction, the opening would be controlled, as necessary, to prevent the escape of livestock. No gates or cattle guards on established roads over public lands would be obstructed or damaged by construction activities.

All survey monuments located in the right(s)-of-way would be protected during construction activities. Survey monuments include, but are not limited to, BLM cadastral survey corners, reference corners, witness points, and recognizable civil survey monuments. All survey monuments would be located and described in the event that it proves necessary to disturb or remove any of them. If such disturbance occurs, the appropriate agency would be contacted. Where BLM right-of-way monuments or references are removed during construction, the services of a registered land surveyor or a BLM cadastral surveyor would be employed by the Applicant to restore the monuments in accordance with standard, established procedures. Each such survey would be duly recorded with Uintah County and/or other jurisdictional agencies, as appropriate.

2.2.8.3 Trench Excavation

Excavation of pipeline trenches would be conducted with the use of wheel ditchers supplemented by conventional, track-mounted trackhoes or trenching machines. Where rock or rock formations are encountered, tractor-mounted mechanical rippers or rock-trenching equipment could be used to facilitate excavation. In areas where rippers or trenchers are not practical or sufficient, blasting could be required. Trackhoes would then be used to clean the trench after ripping or blasting. Excess rock would be removed from rights-of-way and be strategically scattered over the disturbed right-of-way to support reclamation efforts and blend in with the surrounding area. Areas where revegetation or reseeding occurs will be avoided. Adequate precautions would be taken to ensure livestock and wildlife could reach water sources despite open trenches and pipe strung along the trench. Such precautions would include contacting livestock operators, providing adequate crossing facilities, and other measures as needed.

The exact duration that pipeline trenches would be open is not known at this time. Open trench durations are heavily dependent upon local construction conditions such as slope, soils, weather, etc. and are anticipated to vary across the construction area from a few days to several weeks. Some smaller and less mobile wildlife could potentially be entrapped in trenches or inadvertently killed by construction equipment. The Applicant would minimize this impact by limiting the length of trench open at any one time to the extent possible and by inspecting the open trenches for trapped wildlife on a daily basis. Environmental inspectors would visually inspect open trench segments for trapped wildlife each morning prior to equipment operation commencing. If wildlife is found trapped in the trench, the environmental inspection team would remove and relocate the animal away from the trench (if feasible) or install a temporary ramp to allow it to exit the trench on its own. Pipeline segments would also be capped at the end of each workday to prevent animals from entering.

In addition to daily inspections, another precaution to minimize impacts to wildlife would include installation of silt fence and hay bales along portions of the right-of-way. While silt fence and hay bales would primarily be installed as a stormwater pollution prevention measures, they would also serve as a temporary physical barrier to movement in order to reduce the likelihood of small mammals entering the right-of-way during construction. The location and extent of silt fence and hay bale placement has yet to be determined, although they would generally be associated with areas of higher runoff potential, such as ephemeral washes.

The depth of the excavated pipeline trench would vary with the conditions encountered and with the specific pipeline diameter. A typical trench would be excavated approximately 60 inches deep with the depth from the top of the pipe to ground level generally being 30 to 40 inches (slightly less in the case of the water supply pipeline). In all instances, pipeline burial depths would be in conformance with the requirements of the Utah Department of Transportation (UDOT) pipeline safety regulations. Occasionally, the trench would be excavated to depths greater than the values specified above to allow the pipeline to pass under road crossings, intermittent streams, existing utilities, and where necessary for field bends to conform to the terrain or other obstructions. During excavation of the trench along the entire pipeline, the subsoil would be removed and stockpiled separate from the topsoil.

2.2.8.4 Stringing and Bending

Stringing operations involve moving pipe segments from storage yards to the pipeline right(s)-of-way. Stringing operations would be coordinated with trenching and installation activities to properly manage the construction time at a particular tract of land. Gaps would be left at road and utility crossings and would allow crossing of the right(s)-of-way. As construction proceeds, some of the pipe and stringing equipment may be temporarily stored at approved temporary laydown areas along the right(s)-of-way.

After the joints of the pipe are strung along the pipeline trench, individual joints of the pipe would be cold bent to accommodate horizontal and vertical changes in direction. Such bends would be made by using a bending machine that has a hydraulically operated shoe to make the bend. In some areas where grading cannot be achieved to a contour consistent with the allowable cold bending radius, hot bending and/or prefabricated elbow segments would be used.

2.2.8.5 Welding

After the pipe joints are bent, the pipes would be lined up end-to-end and clamped into position. The pipeline would then be welded in conformance with 49 CFR Part 192, Subpart E, Welding of Steel in Pipelines and American Petroleum Institute 1104 – Standard for Welding Pipelines and Related Facilities (latest edition). Welds would be visually inspected by a qualified inspector and would be subject to radiographic inspection in conformance with UDOT requirements. A qualified non-destructive examination (NDE) contractor would inspect the welds using radiography or other qualified NDE technique to assess the integrity of the welds. Any defects would be repaired or removed, as necessary, under the specified regulations and standards.

2.2.8.6 Coating

Project specifications would require the individual sections of pipe be externally coated prior to delivery. After welding, field joints would be coated with field-applied girth-weld coating to protect the welded areas from corrosion. Before the pipe is lowered into the trench, the pipeline coating would be visually and electronically inspected, and any faults or scratches would be repaired. Cathodic protection devices, which could include impressed current rectifiers and anode ground beds, would protect the pipeline from corrosion.

2.2.8.7 Pipe Laying and Backfilling

Once the pipe has been welded and inspected, the pipeline would be lowered into the trench. Sideboom tractors would be used to lift the pipe, position it over the trench, and lower it in place. Construction management personnel would conduct an inspection to verify the minimum cover is provided, the trench bottom is free of items such as rocks or debris, the external pipe coating is not damaged, and the pipe is properly fitted and installed in the trench.

Backfilling would begin after the pipeline has been successfully placed in the trench; tied in at crossing locations (e.g., roads, railroads, existing utilities), side bends, and gaps left for construction traffic/operations; and final inspection has been completed. Backfilling would be conducted using a pipe padding machine, padding shaker bucket affixed to a trackhoe, or other suitable equipment. Backfill would generally consist of material from original excavation. No crushed rock would be used for padding materials, regardless of size, due to potential pipe coating damage. In rocky areas, borrowed padding material and/or a rock shield may be used to protect the pipe. Backfill would be graded and compacted, where necessary for ground stability, by being tamped or walked in with a wheeled or tracked vehicle. The soils would be replaced in a sequence and density similar to preconstruction conditions; thus, subsoils would be backfilled first, followed by stockpiled topsoil. Where possible, clean surplus soils not needed for backfill of the trenches would be spread out over the right-of-way to restore the original contours, support reclamation activities, and to avoid off-site disposal. Any excess excavated materials or materials unfit for backfill would be reused elsewhere in the Utility Project or would be properly disposed of in conformance with applicable laws and regulations, as well as landowner or jurisdictional agency requirements.

2.2.8.8 Hydrostatic Testing

Hydrostatic pressure testing involves testing the integrity of the pipe with pressurized water over a specified length of time. The pipe would be tested in accordance with the appropriate UDOT standards for water, natural gas, and product pipelines, as appropriate. The source for hydrostatic test water would be the terminal point of the existing DGT water delivery system at the BPP, under the aforementioned existing water right. Water used for hydrostatic testing would not be treated before use and would not require post-use treatment; however, because of high-discharge rates from the pressure tested pipelines, hydrostatic test water would be discharged to an energy dissipation device to prevent erosion and offsite sediment transport. The discharge location would be at least 0.5 mile from any perennial stream with a flow greater than 1 cfs. The discharge location would be nearly level or gently rolling, vegetated upland areas to prevent erosion issues.

The volume of water estimated at this time for use in the hydrostatic testing is 1.23 million gallons during the first construction mobilization for the water supply pipeline. During the second mobilization, the estimated quantity of water is 247,000 gallons for natural gas and product pipelines. A Hydrostatic Test Plan would be developed for each pipeline as engineering design progresses.

2.2.8.9 Cleanup and Final Reclamation

Cleanup and reclamation would occur as soon as practical following the completion of construction. Trash, surplus materials, or other waste debris would be removed from the construction area and disposed of in accordance with federal, state, and local requirements, as well as landowner preferences. Subsoil would be returned to the trench, natural contours reconstructed, and topsoil redistributed over the disturbed area.

Post-construction activities would follow the Applicant’s Upland Erosion Control, Revegetation, and Maintenance Plan and Noxious Weed Plan included as Appendix B and C. Both temporary and permanent erosion control structures would be installed during construction to minimize potential for soil loss due to wind and water erosion. Temporary structures may include sediment barriers, silt fence, culverts, pocking, and erosion control matting and would be used until permanent revegetation is deemed successful or other permanent structures have been installed. Permanent structures could include pocking, culverts, rock check dams or other flow-energy dissipaters, and riprap. Surfaces would be roughened to reduce potential for wind and water erosion and to facilitate moisture capture.

Reclamation practices would include measures to achieve the following goals:

- Construct the utility corridor and reclaim disturbed areas to a uniformly high standard along the entire right-of-way
- Restore approximate original contours (unless otherwise directed by the BLM Authorized Officer or other landowner) to blend with the adjacent landscape
- Provide erosion and sediment control as required
- Discourage weed growth and control noxious weeds and pests
- Use adapted native and non-invasive non-native species for revegetation to reduce the visual effect of the corridor and provide a self-sustaining cover compatible with post-construction land uses
- Implement site-specific and comprehensive erosion control and reclamation procedures on sites with lower reclamation potential, including steep slopes, areas subject to water erosion, or other sites where additional measures may be necessary to achieve reclamation objectives
- Restore drainage channels
- Discourage unauthorized use of the right-of-way by off-highway vehicles
- Maintain and monitor revegetation and erosion/sediment control structures and practices

Prior to reseeding, the trees, brush, and other woody material cleared from the right-of-way prior to topsoiling would be distributed across the right-of-way and temporary laydown areas. Rocks removed from the trench excavation would be used to block the right-of-way from future vehicular traffic or would be randomly scattered across the right-of-way. Placement of the trees, brush, woody material, and rocks would obstruct unauthorized vehicular traffic but not interfere with the natural water pathways.

The Applicant would reseed the utility corridor footprint through a combination of drill seeding, mechanical seeding, and hand broadcasting. Areas accessible to a tractor would be disked or harrowed to loosen soils and break soil clods and then drill seeded. Locations inaccessible to tractors (e.g., steep slopes and side hills) would be hand-broadcast. All seed mixtures would be certified weed-free.

Use of fertilizers or other soil amendments is not anticipated as fertilizers tend to promote weed growth. If initial reclamation proves unsuccessful, the Applicant would consult with the BLM and other landowners and would reevaluate the need for fertilizers.

The Applicant would be responsible for monitoring reclamation success along the right-of-way. Monitoring would also be conducted to ensure that erosion control, weed management, and revegetation efforts continue to meet the objectives of stabilization and productivity along the right-of-way. The Applicant would adhere to the Green River District Reclamation Guidelines (BLM 2009) to ensure slope stability and topsoil integrity; provide 75 percent basal cover; restore drainage patterns; minimize visual disturbance; control noxious weeds; manage waste; and conduct monitoring.

2.2.8.9.1 Seed Mixtures

A general seed mixture has been developed for the right-of-way, as shown in Table 2-4. Additional, site-specific seed mixes could be developed for restoration of riparian and/or floodplain areas, depending on the selected crossing methods at these locations. The seed mix listed in Table 2-4 would be checked for availability prior to preparation of the seeding schedule, and any revisions would be made in consultation with BLM. All disturbed areas would be reseeded in accordance with the specifications outlined in Table 2-4. The right-of-way would be reseeded at the end of construction or at the next prescribed seeding season, whichever would afford the highest likelihood of reclamation success. Any seed mix modifications would consider erosion control, forage availability, production rate, elevation and aspect, soil, vegetation community composition, and precipitation.

Drill seeding would plant seed at a depth of approximately 0.25 to 0.50 inch. Where broadcast seeding would be employed, a cyclone-type or similar seeder would distribute seed. In areas where vegetation would only be scalped during construction (i.e., cut at the surface but not further removed or disturbed), the area would be broadcast seeded so as not to further disturb the soil surface. Seed generally would be applied between August 1 and December 15, pending weather and the construction schedule.

Table 2-4
Seed Mixture for Utility Corridor Project Reclamation
(semi-desert big sagebrush communities, 8 to 12 inches of precipitation per annum)

Species	Seed Mix Options (pounds/acre)	
	A Sandy	B Clayey
Grasses		
Siberian wheatgrass (*Agropyron fragile*)	3.00	2.00
Russian wildrye (*Psathyrostachys juncea*)	2.00	5.00
Indian ricegrass (*Achnatherum hymenoides*)	2.00	2.00
Sand dropseed (*Sporobolus cryptandrus*)	0.25	0.00
Crested wheatgrass (*Agropyron cristatum*)	0.50	0.50
Needle-and-thread grass (*Hesperostipa comata*)	0.50	0.50
Thickspike wheatgrass (*Elymus lanceolatus*)	2.50	1.00
Subtotal, grasses[1]	**10.75**	**11.00**
Forbs		
Globemallow (*Sphaeralcea coccinea*)	0.25	0.25
Subtotal, forbs[1]	**0.25**	**0.25**
Shrubs		
Fourwing saltbrush (*Atriplex canescens*)	2.00	2.00
Shadscale (*Atriplex confertifolia*)	1.00	1.00
Winterfat (*Krascheninnikovia lanata*)	0.50	0.50
Wyoming big sagebrush (*Artemisia tridentata var. wyomingensis*)	0.50	0.50
Subtotal, shrubs	**4.00**	**4.00**
Total pounds per acre	**15.00**	**15.25**

Note: [1]More pounds of native grass and forb species may be necessary after coordination with the BLM reclamation team.

2.2.8.9.2 Noxious Weeds

All project vehicles, including personal vehicles and equipment, would be required to arrive at the work site clean and weed-free. Prior to being allowed access to the right-of-way or any other work area, the environmental inspection team would ensure vehicles and equipment are free of soils and debris capable of transporting weed seeds, roots, or rhizomes. The Applicant would require the construction contractor thoroughly clean the equipment to remove seeds, roots, and rhizomes prior to transport off any weed-infested work area.

Noxious weed-free certification would be required for all straw or hay bales used for erosion control, mulch, or reclamation. Certification standards are set by the State of Utah (where the straw/hay is used) and not by the state from which the material originates.

To reduce spread and proliferation of noxious weeds, weed populations in a growth stage responsive to effective herbicide control would be identified and appropriate herbicides would be applied to them prior to construction. Noxious weed control during and following construction would be in accordance with the Noxious Weed Control Plan (Appendix C). Any use of pesticides would comply with applicable federal and state laws and would only be used in accordance with their registered uses. Any restricted-use pesticides would be applied by State of Utah-certified applicators, and any application on BLM-administered land would be under prior authorization of that agency. Post-construction control measures may also include mechanical methods and/or herbicide application.

Mechanical methods rely on equipment to disc weed populations, and disked areas would be subsequently reseeded with the approved project seed mix to stabilize soils and slow potential reinvasion of weeds.

2.2.8.10 Transmission Line-Specific Construction Procedures

Many of the construction activities associated with the transmission lines are similar in nature to those associated with the pipelines, including preconstruction planning, surveying, and marking the right-of-way, clearing and grading, and cleanup and restoration. However, excavation and installation of foundations, assembling and erecting towers, and stringing conductors and shield wires have different procedures.

2.2.8.10.1 Excavation and Installation of Foundations

Because of the nature of erecting stable, secure electric transmission towers, foundations must be established for each tower. Geologic evaluation and geotechnical investigation would be performed as part of final engineering to evaluate potential hazards and determine specific requirements (e.g., ground conditions, soil types, depth to rock, soil strength properties, etc.) for foundation design and construction.

The self-supported steel tower structures would typically be supported by cast-in-place drilled concrete pier foundations. For these structure types, vertical excavations for foundations would be made with power drilling equipment. Typically, truck- or track-mounted augers of various sizes, depending on the diameter and depth requirements of the hole to be drilled, would be used. Foundations for the guyed structures (e.g., at points of inflection) would typically be small precast or cast-in-place concrete pedestals. The precast pedestals would be hauled to the structure site on a flatbed truck and set in a small excavation dug by a backhoe or similar.

In rocky areas, the foundation holes may require excavation by drilling or blasting, or installation by special rock anchor or micro-pile type foundation. The rock anchoring or micro-pile system would be used in areas where site access is limited, or where adjacent structures could be damaged by blasting. If hard rock is encountered within the planned drilling depth for the structure foundation, blasting may be required to loosen or fracture rock.

Foundation holes temporarily left open or unguarded during construction would be covered with plywood or other similar rigid flat material to prevent wildlife from falling into the holes. The covering size would be adequate to cover the entire hole, plus a minimum of 6 inches beyond the hole, and the material would be heavy enough to prevent shifting or movement due to wind. Coverings would be checked daily by the environmental inspection team until poles are installed. If practical and/or deemed necessary, fencing may also be used. Reinforced-steel anchor bolt cages may be installed after excavation and prior to structure installation. These cages would be designed to strengthen the structural integrity of the foundation and would be inserted into the hole prior to pouring concrete. The excavated holes containing the reinforcing anchor bolt cages would be filled with concrete. Concrete would be delivered to the right-of-way in concrete trucks with concrete being provided by local contractors.

While a concrete batch plant is not needed for the construction of the utility corridors, it could be used to supply concrete for tower installation in the event that it is logistically more practical and less impactful from a travel and traffic standpoint than sourcing concrete from a local vendor. The concrete batch plant would be erected and operated on the South Project private property prior to the second utility corridor construction mobilization, since it would require a water and power supply to operate. The concrete batch plant would be a standard concrete batching facility consisting of mixers; conveyors; stackers; silos, bins and hoppers; heaters and chillers; control systems; and dust collection systems. The batch plant would be constructed to meet the requirements of the South Project industrial operations. Since the facility is not yet designed, emissions from the batch plant are not known at this time, but emissions from the batch plant are anticipated to be part of the air emissions permitting process for the South Project.

2.2.8.10.2 Assembling and Erecting Structures

Bundles of steel members and associated hardware would be transported to each structure site along the right-of-way by truck. Wood blocking would be hauled to each location and laid out, and tower steel bundles would be opened and laid out for assembly by sections and assembled into subsections of manageable size and weight. Typically, the leg extensions for the structures would be assembled and erected by a separate crew with a smaller crane to make ready for setting of the main structure assembly. The assembled subsections would then be hoisted into place by means of a large crane and fastened together to form a complete H-frame tower. A follow-on crew would then tighten all of the bolts in the required joints.

2.2.8.10.3 Stringing Conductors and Wires

Insulators, hardware, and stringing sheaves would be delivered to each structure site. The structures would be rigged with insulator strings and stringing sheaves at each ground (shield) wire and conductor position. Pilot lines would be pulled (strung) from structure to structure by land-operated equipment (and potentially by helicopter for larger spans and/or steep terrain) and then threaded through the stringing sheaves at each tower. Following pilot lines, a stronger, larger diameter line would be attached to conductors to pull them onto towers. This process would be repeated until the shield wire or conductor is pulled through all sheaves.

Stringing would be conducted via powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment. Sites for pulling and tensioning equipment would be identified as engineering design progresses. Tensioners, pullers, line trucks, wire trailers, dozers, pickups, and tractors needed for stringing and anchoring the lines would be located at these sites. The tensioner, together with the puller, would maintain tension on the lines while they are fastened to the towers. Once each wire has been pulled in, the tension and gage would be adjusted, stringing sheaves would be removed, and the conductors would be permanently attached to the insulators.

Tension would be maintained on all insulator assemblies to ensure positive contact between insulators and avoid sparking. Caution would also be exercised during construction to avoid scratching or nicking the conductor surface.

2.2.8.11 Other General Construction Procedures

2.2.8.11.1 Construction Workforce

Approximately 85 to 110 workers would be required during each of the construction mobilization periods, including onsite management, equipment operators, welders, inspectors, and laborers. Parking for workers' personal vehicles would be allowed only in the right-of-way limits or along existing roads in a manner that would not disrupt existing traffic patterns or cause safety hazards. Additional construction personnel associated with the South Project would also be present in the area; and it is possible that, during the second utility corridor construction mobilization, the Applicant would provide bus service from Vernal and Rangely, and/or would provide temporary onsite construction housing for the larger body of workers on private land.

Utility corridor construction would generally occur on a single 12-hour shift during daylight hours, although some 24-hour construction may occur to move past sensitive areas, such as the White River or natural resource protection areas, more quickly.

2.2.8.11.2 Solid Waste

Sanitary conditions would be maintained at all times on the right-of-way. Solid waste materials generated by the Utility Project (e.g., discarded matter, human waste, trash, garbage, refuse, filters, welding rods, etc.) would be promptly disposed of offsite at a permitted solid waste disposal site. Portable toilets would be provided and cleaned/removed regularly. Disposal of all solid waste produced during construction of the right-of-way would be done in an approved manner so it would not impact air quality, soils, water quality, vegetation, or wildlife.

2.2.8.11.3 Hazardous Materials Management

Potential sources of hazardous waste during construction of the Utility Project include gasoline, diesel fuel, and propane; coolant/antifreeze; lubricants and motor oil; paints; and solvents. Other hazardous waste that cannot be sent to a landfill or transfer station could include anything flammable, toxic, reactive, or corrosive, such as pesticides, herbicides, and batteries.

No chemicals subject to reporting under the Superfund Amendments and Reauthorization Act Title III in an amount equal to or greater than 10,000 pounds annually would be used, produced, stored, transported, or disposed of in association with the construction of the Utility Project. Further, no extremely hazardous substances in threshold-planning quantities, as defined in 40 CFR Part 355, would be used in association with the Utility Project. Any potentially hazardous materials associated with construction would be trucked offsite to various State of Utah-approved disposal facilities.

2.2.8.11.4 Dragon Road Paving Procedures

Pavement design for Dragon Road improvements would be based on Uintah County Class 1B (paved) road design standards, utilizing the UDOT's Pavement Management and Pavement Design Manual for determining paving thickness. Recommended pavement thickness was calculated based on anticipated average daily traffic of up to 200 single trailers (with a gross vehicle mass of 93,000 pounds each) and a 20-year road design life. The pavement thicknesses were adjusted slightly from the UDOT prescribed thickness to meet the Uintah County typical road cross section as follows; 6.5 inches of asphalt, 7 inches of base course, and 19 inches of granular borrow.

Industry standard methods and paving procedures for installation of asphalt on rural paved county roads would be followed, in accordance with Uintah County Roads Department requirements for Class 1B (Paved) roads.

2.2.8.11.5 Dust Control

Water for dust suppression on dirt and gravel access roads would be sourced from the same location as that for hydrostatic testing (refer to Section 2.2.8.8) and/or the onsite raw water storage tanks, depending on availability during construction. The construction right-of-way, access roads, and other disturbed areas would be routinely sprayed with water to reduce fugitive dust generated by traffic and construction-related activities (e.g., clearing and grading, trenching, etc.). Water would not be treated before use and would not require post-use treatment as the water would either infiltrate or evaporate from the ground surface. The Applicant will utilize approved water rights (refer to Table 3-9, Water Right numbers: 49-258; 49-1272; 49-2330) for surface water in the Utility Project area.

Water used for dust control would be distributed by spray tanker trucks which range from 500 to 1,200 gallons in capacity. Effective dust control in arid areas generally requires cumulative daily application of 600 or more gallons per acre (typically in two or more sprinkling passes). At 5 miles per hour (mph) with a 10-foot spray width, a water truck can cover about 6.1 acres per hour. Table 2-5 below outlines the anticipated volume of water for dust control per construction mobilization.

Table 2-5
Anticipated Volume of Water for Dust Control

Activity	Volume of Water
Initial Mobilization– approximately 637.9 acres disturbed ▪ Construction of water supply pipeline and pumping station ▪ 138kV transmission line construction from BPP to South Project site ▪ Dragon road improvements and paving	765,468 gallons of water
Second Mobilization – approximately 457.2 acres disturbed ▪ Construction of natural gas supply pipeline, product delivery pipeline ▪ Construction of second 138kV transmission line and switchyard ▪ Re-use of temporary laydown areas	548,688 gallons of water
SOURCE: Enefit 2014	

2.2.8.11.6 Waterbody Crossings

The Applicant prepared a report describing the crossing of the White River, titled White River Crossing: Technical Pre-Feasibility Study (Enefit 2014). The report described a range of potential construction methods (and locations) as well as a recommended crossing location and construction method. The proposed method of crossing the White River for the pipelines is a trenchless construction method called micro-tunneling, and an overhead, aerial span crossing for the 138kV transmission lines.

Trenchless construction requires the use of special tunneling equipment to cross beneath the White River. The use of microtunneling equipment has been identified as the most practical method to handle the difficult subsurface conditions that are expected. Trenchless construction involves some risks compared to standard open cut construction, because work must take place beneath the ground using equipment that must cut through materials as the trenchless head is advanced. These methods are best used in materials that are relatively consistent, such as sands and gravels or even bedrock. Problems occur when “mixed” conditions are encountered. Mixed conditions could include sand and gravel, mixed with large boulders or bedrock outcroppings. These materials can interfere with the advancement of tunneling equipment and even render the crossing impossible with these methods.

The primary advantage of this method is that it can significantly reduce, and even avoid, impacts to the river aquatic and riparian environment. Disadvantages include much higher cost and risks associated with unknown subsurface conditions. These risks can be managed through the development of a detailed geotechnical baseline study trenchless methods, and to define the conditions that may be expected so that they can be planned for in advance by a contractor.

Two separate crossings are anticipated for the buried pipelines. The smaller lines, including natural gas and product pipelines, would be combined into a single cased crossing to save time and reduce risk. The larger 30-inch water line would require a separate cased crossing. Figure 2-4 depicts the proposed alignment across the White River.

The proposed alignments across the White River were identified by the Applicant based on the following criteria:

- Existing access for construction and long term operations and maintenance from both sides of the river.
- Gradual slopes on either side of the White River in this area would provide a stable long term corridor for the buried pipelines.
- Good compatibility with the overall utility corridor as the crossing is relatively in line with the planned path of the utilities between BPP and the South Project site.
- Crossing location occupies the same general area of the river as existing underground and overhead utilities.

- Consolidating the utility crossings to this common area of the river would help minimize visual and environmental impacts to other areas of the canyon.
- Based on results of archaeological resource surveys, there is one known sensitive cultural resource site at the crossing of the White River.

The overhead 138kV transmission lines would utilize standard construction methods to install towers on either side of the canyon adjacent to the existing power line alignment. The 138kV lines would easily span the required distance across the White River canyon.

The proposed 138kV transmission line alignment was selected by the Applicant because it has the shortest crossing of the White River canyon and parallels the existing overhead utility crossings to minimize the visual and upland impacts. The alignment also generally follows the pipeline utility alignments which would allow the Applicant to maintain a relatively continuous utility corridor.

The Utility Project also would cross several ephemeral drainages. It is expected flowing water would not be encountered in ephemeral drainages during construction as these drainages only convey water during precipitation events. All drainages would be restored to their preconstruction condition or better at all crossing points.

In the event water is present in one of the ephemeral drainages at the time of construction, the Applicant would use the Federal Energy Regulatory Commission's (FERC) Wetland and Waterbody Construction and Mitigation Procedures (FERC 2013) as guidance for crossing drainages flowing at the time of construction. Although not a FERC-regulated project, the construction and mitigation procedures are broadly applicable to general pipeline installation. The Applicant would use standard dry-ditch pipeline crossing techniques, such as dam-and-pump, to maintain flow and not disturb regional hydrology in consultation with FWS. Certified weed free seed mixes for semi-desert big sagebrush communities would be used and site specific seed mixtures will be developed for these riparian locations in consultation with the BLM or landowner.

Transmission line tower placement would be such that towers would be set back a minimum of 50 feet from the edge of the drainage, and transmission lines would span the drainage to preclude any disturbance.

2.2.8.11.6.1 Spill and Leak Detection Equipment

Per 49 CFR 195.260 Valves: Location, subsection (e), "A valve must be installed…[o]n each side of a water crossing that is more than 100 feet (30 meters) wide from high-water mark to high-water mark…". The White River is approximately 120 feet wide from high-water mark to high-water mark at the proposed crossing location (distance measured normal to the flow channel; pipeline course is oblique at the crossing location); therefore shutoff valves are required for the White River crossing. Evacuation Creek is approximately 20 feet wide from high-water mark to high-water mark at the proposed crossing location (normal to flow channel) and does not require shutoff valves under 49 CFR 195.260. However, because Evacuation Creek discharges to the White River approximately 1.7 river miles downstream from the proposed Evacuation Creek crossing location, the Applicant is also proposing shutoff valves for this crossing, resulting in two separate isolation valve systems.

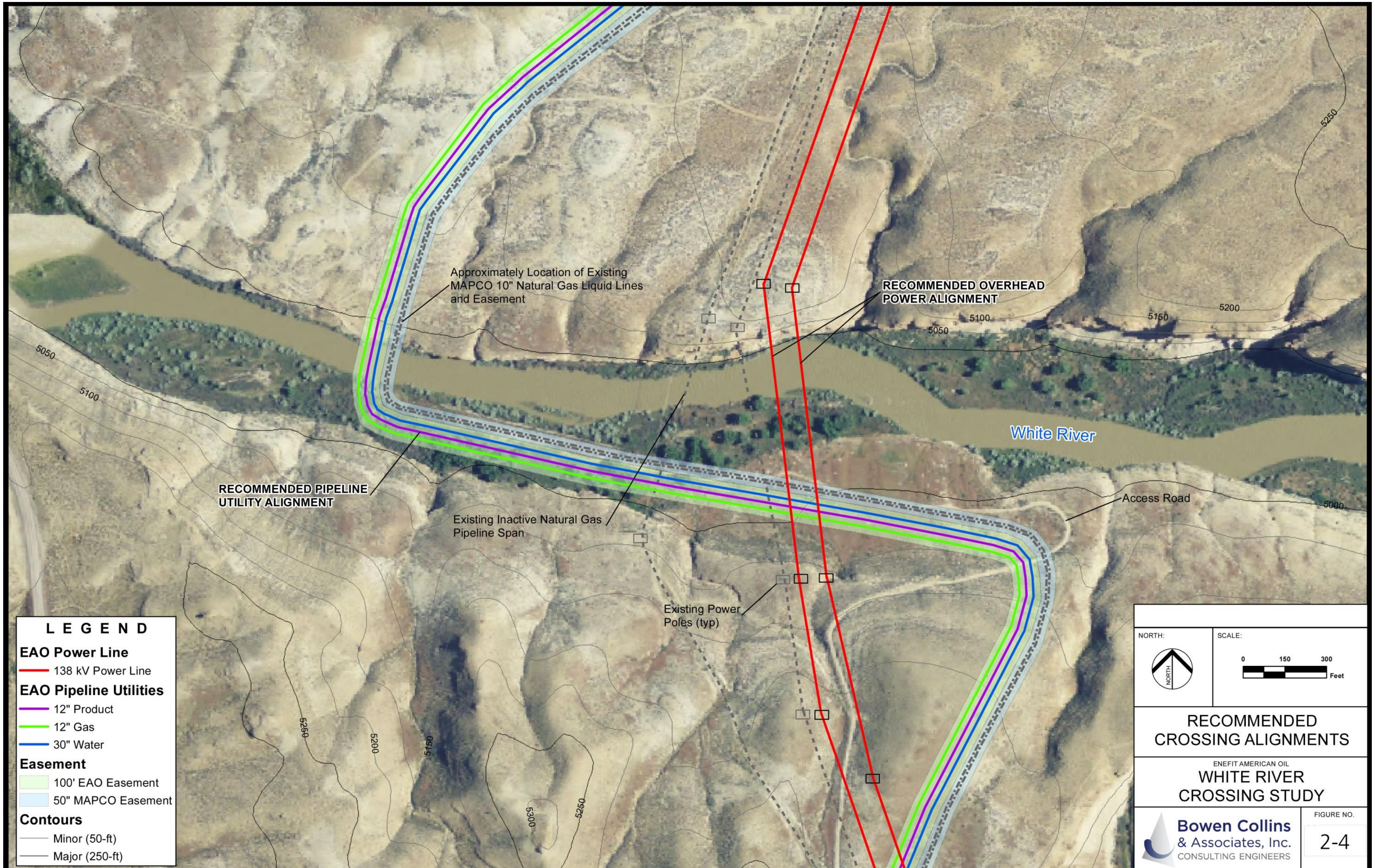


Figure 2-4 Recommended Crossing Alignments

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Leak detection would be provided at each crossing by implementing pressure switches on each side of the river crossing, which would detect abnormal differential pressures and automatically close the main product line valves. The valves would be powered by natural gas actuators, where the natural gas supply would be provided by valve taps from the adjacent natural gas pipeline. The main product line valves would be located in valve vaults on either side of the water crossings. These valves would be installed in accessible precast concrete vaults below grade, with a total of four required – two each for the White River and Evacuation Creek. The valve vault dimensions would be approximately 12 feet wide by 12 feet long by 12 feet high. The valve vaults would be located on higher ground to minimize potential flooding by the river water. Due to steep adjacent cliffs, the Evacuation Creek valve vaults would be elevated approximately 90 feet above and set back approximately 1,000 feet from the channel bottom, resulting in a 2,000-foot spread between shutoff valve locations. The White River valve vaults would be spaced more closely, set back approximately 400 feet from the center of the river, for a total spacing width of 800 feet between shutoff valve locations. The vault on the south side of the river would be located approximately 10 feet above the river, while the vault on the north side would be located approximately 60 feet above the river.

2.2.8.11.7 Bedrock Construction and Blasting

Where rock or rock formations are encountered, tractor-mounted mechanical rippers and/or rock trenching equipment would be used to facilitate excavation and to minimize environmental disturbances. In areas where rippers or trenchers are not practical or sufficient, blasting may be employed. Based on the geology in the Utility Project study area, it is unlikely that blasting would be necessary; however, if blasting is required, strict safety precautions would be taken. Padding material or rock shield (a polyethylene protective material) would be used to protect the pipe and the pipeline coating in rocky areas. Disturbed slope tops would be reconstructed, as nearly as possible, to their original contours. Additional detail on blasting and associated mitigation efforts will be outlined in the Blasting Plan as part of the Utility Project's COM Plan.

2.2.8.11.8 Utility Project Construction Schedule and Duration

Commencement of construction on the Utility Project is dependent on receipt of all permits, approvals, and authorizations for the Utility Project and the South Project. Utility corridor construction would occur in two separate mobilizations, separated by approximately 2 years—an initial mobilization for construction of the water supply pipeline and first transmission line, followed by a second mobilization for construction of the natural gas supply and product delivery pipelines and second transmission line. All utility corridor construction is anticipated to be complete prior to startup and commissioning of the South Project mineral processing facilities. Table 2-6 provides an outline of the schedule and durations anticipated.

Table 2-6 Preliminary Construction Schedule, Activities and Duration Anticipated	
Activity	**Duration Anticipated**
Initial Mobilization ▪ Construction of water supply pipeline and pumping station ▪ 138kV transmission line construction from BPP to South Project site ▪ Dragon Road improvements and paving	12 months total ▪ 3 months ▪ 9 months ▪ 5 months (initiated after completion of water supply pipeline)
Second Mobilization ▪ Construction of natural gas supply pipeline, product delivery pipeline ▪ Construction of second 138kV transmission line and switchyard	Begins 18 months after completion of first transmission line; 19 months total ▪ 9 months ▪ 9 months (initiated one month after completion of pipelines)
SOURCE: Enefit 2014	

Transmission line construction would be closely coordinated with MLEA as the ultimate transmission facility would be owned, operated, and maintained by MLEA. Construction may be undertaken by either Applicant to increase efficiency and minimize mobilization cost; however, it is unlikely that construction responsibility would materially affect the design and/or disturbance associated with the transmission facility.

Dragon Road improvements would be completed during the initial utility corridor field mobilization to facilitate construction of both the utilities and the South Project and to reduce fugitive dust emissions from construction traffic access during the same. The Dragon Road improvements would commence immediately following completion of the water supply pipeline and would be anticipated to last approximately 5 months.

2.2.9 Operation and Maintenance of the Facilities

The water, natural gas, and product pipelines would be operated and maintained by the Applicant. This would allow the Applicant to maintain a centralized safety and reliability monitoring program concurrent with other South Project elements (e.g., mine, retort, and upgrader) to ensure all facilities are functioning as designed. Scheduled or unanticipated maintenance on any one of the facilities could have significant effects on multiple other aspects of the overall right-of-way and the South Project, and the Applicant would seek to minimize any adverse effects of facility outage by implementing administrative control measures over all facilities. The water supply system (i.e., the point of diversion, pumping system, and existing pipeline from the Green River to the BPP) would be operated and maintained by DGT.

Upon successful completion of hydrostatic pressure testing and assessment, the pipelines would be determined to be ready for service. The pipelines would be tied into the existing interconnecting systems, purged of air, packed with water/natural gas/product, and leak-checked. The Applicant would maintain operations, maintenance, and emergency response standard operating procedures, including performance standards and procedures for the operation, maintenance, and inspection of the pipeline system and emergency response. The pipelines also would be maintained in accordance with UDOT standards for pipeline safety, minimizing potential hazards resulting from pipeline emergencies. These procedures would be detailed in the COM Plan and generally would provide for:

- Receiving, identifying, and classifying emergency events that require immediate response;
- Establishing and maintaining communications with appropriate fire personnel, police, and other public officials;
- Identifying personnel, equipment, tools, and materials that may be needed in the event of an accident;

- Taking measures to protect people and property, including emergency shutdown and isolation of the pipeline system;
- Training of the appropriate operation personnel to ensure their knowledge of the emergency procedures;
- Maintaining liaison with appropriate fire personnel, police, and public officials to coordinate mutual assistance during emergencies; and
- Restoring service safely.

The Applicant would also conduct routine pipeline inspection and maintenance activities. A basic description of operation and maintenance procedures includes:

- The pipeline centerlines would be clearly marked with pipeline markers throughout the entire right-of-way and at all public roads and other locations specified in applicable regulations. These markings would help reduce the possibility of damage to the pipelines as a result of construction or other activities.
- The pipelines would be protected from third-party damage through participation in the Blue Stakes one-call system. Upon completion of construction, routine patrols would be conducted to monitor the success of restorative measures, the integrity of the pipelines, and any encroachments.
- Surface travel generally would be limited to periodic valve inspections, corrosion surveys, leak surveys, right-of-way maintenance, and pipeline repairs needed.
- The frequency of patrols would conform, at a minimum, to the requirements of UDOT pipeline safety regulations.
- Qualified field operations personnel would make regular visits to the right-of-way. During these visits they would:
    - Inspect the facilities and conduct routine maintenance in conformance with established procedures, and
    - Inspect the right-of-way and aboveground facilities for external threats or other conditions that could impact the integrity of the pipelines.

Pipelines would be maintained in accordance with safety and reliability as set forth by the UDOT, Pipeline and Hazardous Materials Safety Administration (PHMSA) and other applicable federal, state, and local regulations. Access for maintenance of the water, natural gas, and product pipelines, as well as the affiliated overhead transmission lines, would primarily occur via existing roads and along a permanent centerline right-of-way access road. It is expected that a single permanent centerline right-of-way access would be sufficient to access all parts of the utility corridor and would be used by the Applicants, as well as potentially other parties where the right-of-way utility corridor(s) parallel existing features. Width of permanent right-of-way is described in Table 2-1, Table 2-2, and Section 2.2.3.

2.2.10 Termination and Rehabilitation

Rehabilitation of the construction right(s)-of-way would occur immediately following the completion of construction (i.e., reclamation in the form of regrading and revegetation would occur as part of construction activities). It is anticipated that revegetation would be completed to standards at or near pre-project conditions within 5 years.

The right(s)-of-way as currently planned would continue for at least 30 years; at a minimum, the water, natural gas, product, and transmission lines would be in place for that duration. It is anticipated that on termination of the right-of-way Project, and in the event no other existing, proposed or reasonably foreseeable projects are forthcoming that could use the infrastructure, the facilities would be abandoned in place to avoid additional surface disturbance. Upon abandonment in place, the pipelines would be purged with inert gas, such as nitrogen, and all water, natural gas, and product would be removed.

The Applicant would coordinate with the BLM and landowners regarding the removal of surface facilities.

2.2.11 Applicant-Committed Environmental Protection Measures

In order to avoid, minimize, and mitigate impacts to the human and natural environment, the Applicant has identified several actions that would be undertaken for the Utility Project. Those actions are described in this section and reiterated in Table 4-1.

2.2.11.1 Cultural and Paleontological Resources

SWCA (2013g) identified two sites in the Utility Project area that are potentially eligible for listing under the NHPA. Because of the relatively small area occupied by both of these sites, it is anticipated that the utility corridor(s) could be micro-sited during final engineering (i.e., minor adjustments made to the final alignment of the utility lines) to fully avoid impacts to either site. In the event these sites could not be fully avoided, the Applicant would work in consultation with the BLM Vernal Field Office to determine appropriate mitigation activities to document these sites prior to construction and monitor the area during construction. In addition to these potentially eligible cultural resource sites, SWCA (2013h) identified several significant and non-significant fossil localities on BLM-administered land. All significant fossils, on the surface, were collected. As a result, the Applicant has identified selected areas in the proposed utility corridor(s) where paleontological monitoring (including cultural monitoring of the above-referenced locations) would be conducted during excavation activities. During excavation, the trench and spoils pile, and the excavation material from tower structures, would be spot-checked by a qualified paleontologist for significant vertebrate fossils and plant fossils. Spot-checking would only occur in areas designated in paleontological surveys as having known fossils or a high likelihood of fossils. The results of spot-checking would be summarized in a written report by the inspecting paleontologist and submitted to the BLM. A more complete description of spot-checking procedures is provided in BLM Handbook 8270 (BLM 1998).

The Applicant would educate their contractors and employees about the relevant federal regulations intended to protect cultural and paleontological resources. All vehicular traffic, personnel movement, construction, and restoration activities would be confined to areas cleared by the site inventory and to existing roads. In the event unanticipated discovery of cultural or paleontological resources occurs, operations in the immediate area would be suspended until written authorization to proceed is issued by the appropriate surface management agency Authorized Officer. An evaluation of the unanticipated discovery would be made by the Authorized Officer to determine appropriate actions in order to prevent the loss of significant cultural or paleontological resource values. Appropriate mitigation measures would be determined by the Applicant in consultation with the BLM.

2.2.11.2 White River Crossing

Within the White River Stage Station cultural resource area, the Applicant would employ a 25-foot-wide permanent and construction right-of-way. This right-of-way width is specific to this cultural resource site and would serve to minimize the surface disturbance within the resource area. This 25-foot-wide right-of-way would be utilized for approximately 1,700 linear feet in crossing the resource area from west to east, and the right-of-way would be located on the south side of, and immediately adjacent to, the existing Mapco natural gas liquids pipeline right-of-way. Mapco owns two existing 10-inch-diameter natural gas liquid pipelines at this location, which also cross the White River Stage Station cultural area. The Applicant evaluated the alternative of locating the proposed utility corridor right-of-way closer to the toe of the slope to the south (i.e., not immediately adjacent to the Mapco right-of-way); however, this would result in the right-of-way coursing close to a rock art feature, as well as being exposed to high-energy stormwater runoff from several drainages. By locating adjacent to the Mapco right-of-way, the Utility Project right-of-way would avoid new disturbance of mature woody vegetation in the floodplain (several large trees occur near to the toe of the slope), and stormwater runoff would be allowed to dissipate energy across the alluvial fan prior to reaching the Utility Project right-of-way, thus reducing the potential for sediment loading to the White River. The standard construction and permanent right-of-way widths would be deployed outside of this 25-foot-wide cultural resource protection right-of-way. Figure 2-5 depicts a cross section of the mitigation proposed.

2.2.11.3 Biological Resources

2.2.11.3.1 Graham's Beardtongue and White River Beardtongue

Graham's beardtongue (*Penstemon grahamii*) and White River beardtongue (*Penstemon scariosus v. albifluvis*) were proposed by FWS for listing as threatened pursuant to Section 4 of the ESA on August 6, 2013. FWS simultaneously proposed designated critical habitat for both species. Since October 2013, the Applicant has cooperated with the FWS, BLM Vernal Field Office, Uintah County, SITLA, the State of Utah, and other private parties as part of the multi-agency conservation agreement intended to identify, avoid, minimize, and mitigate potential threats to Graham's and White River beardtongues and their habitats and to promote the species' long-term persistence, thereby preventing the need for listing either species.

SWCA (2013f) reported that suitable white shale habitat for Graham's beardtongue and White River beardtongue was identified within the Utility Project area. However, no individuals were observed in the proposed utility corridors, and it is not anticipated that direct impacts to Graham's or White River beardtongue individuals would occur as a result of the Utility Project.

In August 2014, the FWS withdrew their proposal to list the Graham's and White River beardtongues as threatened under the ESA as well as the proposal to designate critical habitat. In its place, a conservation agreement titled Conservation Agreement and Strategy for Graham's Beardtongue (*Penstemon grahamii*) and White River Beardtongue (*P. scariossu var. albifluvis*) (SITLA et al., 2014) was established in July 2014 that included the identification of conservation areas for these plant species, none of which are affected by either the Utility Project or the South Project. The conservation agreement establishes specific conservation areas and mitigation measures to be followed within each conservation area type. The Applicant intends to comply with the conservation agreement during implementation of both the Utility Project and the South Project, including in non-conservation areas as directed by the agreement. Both species remain on the BLM Vernal Field Office special-status species list, requiring preconstruction surveys, protection from impacts, and mitigation for unavoidable impacts.

2.2.11.3.2 Raptors, Burrowing Owls, and Other Migratory Birds

SWCA (2013e) identified several active and inactive raptor nests in the vicinity of the Utility Project area, with the majority of the active nests occurring near the White River. SWCA (2013e) also identified several nesting burrowing owls, a BLM sensitive species, in the vicinity of the BPP and near the northwestern terminus of the proposed location of the water supply pipeline and westernmost transmission line.

FWS (2002a) identifies several mitigation measures for raptor nests, including seasonal and spatial avoidance, nest deterrents, and habituation to increased disturbance and noise. The Applicant's primary mitigation method would be to follow the spatial and/or seasonal avoidance windows provided by FWS guidelines (2002a).

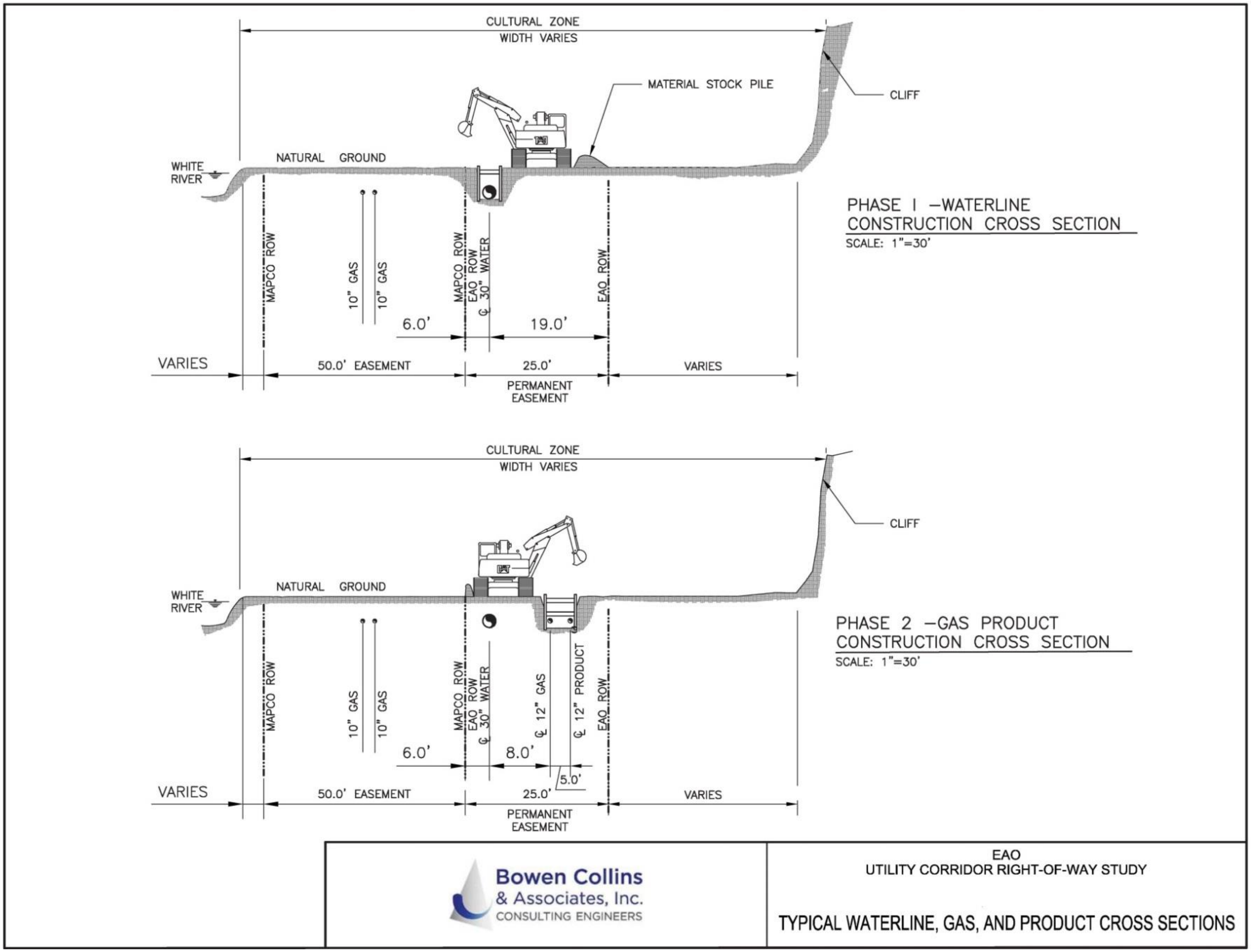


Figure 2-5 White River Crossing – Waterline, Gas, and Product Cross Sections

As such, the Applicant would perform two pre-construction surveys separated by approximately two months (anticipated as March for early nesting raptors and May for late-nesters) during the spring nesting season immediately preceding the start of construction in the selected utility corridors for raptors and burrowing owls. If the spatial and/or seasonal windows could not be met for active nests identified during those surveys, the Applicant would consult with BLM and FWS to identify site-specific mitigation measures for individual active raptor nests. Characteristics of individual nest locations, including line-of-sight from construction areas, species of raptor, and nest productivity, would be considered in identification of site-specific measures.

In relation to the 138kV transmission lines, the Applicant will install raptor deterrents and implement measures according to the application, previously submitted to BLM. The power lines are designed with adequate clearances for raptor protection.

2.2.11.3.3 Greater Sage Grouse

The Proposed Project is located within the General Habitat Management Area (GHMA) as identified in the BLM Utah Greater Sage-Grouse Approved Resource Management Plan (2015c). Mitigation measures identified in this plan would apply to the Utility Project because project activities would result in habitat loss and degradation to sage-grouse GHMA. The Applicant would comply with mitigation measures identified in Table 4-1 to achieve net conservation gain.

2.2.12 Non-federal Connected Action – South Project

This section provides a brief description of the non-federal connected action – the Applicant's South Project – that is outside of the BLM's authority because it is located on private lands and minerals. As stated in Section 1.1, because the South Project is a connected and cumulative action to the Utility Project, the effects anticipated to result from development of the South Project are discussed in this EIS as indirect effects of the Utility Project.

The Applicant has provided BLM with all the information it has for the South Project mine plan and is unwilling to expend further resources to develop the mine plan and engineering specifications until it receives a decision on the utility corridor rights-of-way application due to the different design requirements between the Proposed Action and No Action Alternatives. To BLM's knowledge, no mine plans for the South Project are currently filed with the State of Utah. If and when a mine plan is filed with the State, it would be reviewed and approved or denied by UDOGM.

2.2.12.1 South Project

The South Project is a private project planned to develop oil-shale mining and a shale-oil production complex located in the Uinta Basin approximately 12 miles southeast of Bonanza in Uintah County, Utah (Map 1-1). The South Project will produce approximately 28 million tons of raw oil shale ore rock per year and 50,000 BPD of premium quality, refinery-ready shale oil from the Green River Formation at full build-out. The South Project is located on one of the largest tracts of privately owned oil-shale property in the U.S. The property, acquired by the Applicant, covers approximately 13,441 acres of oil shale containing approximately 1.2 billion barrels of shale oil. The nearest major municipality is Vernal, Utah, located approximately 40 miles north of the Utility Project site. The community of Rangely, Colorado, is located approximately 25 miles northeast of the South Project site.

Shale oil will be produced from multiple surface retorts with onsite upgrading of the raw shale oil. The mining, retorting (heating the shale in a closed system), and upgrading (of the raw shale) operation at the South Project will all take place on land privately owned by the Applicant. The production plant and related infrastructure will be located in the northern portion of the South Project property on a site approximately 320 acres. The production complex will consist of raw material handling, the retorting and oil-recovery unit(s), raw shale-oil upgrading facility, power block, wastewater treatment unit, storage yard, and administration buildings.

2.2.12.1.1 Mining

Oil shale will be extracted from an approximately 7,000- to 9,000-acre area through a combination of surface and underground mining methods on South Project private land. Mining is expected to commence in the northeast and east portions of the Utility Project area, where the target formation is at its shallowest (i.e. outcrop or minimal overburden). Approximately 300 to 500 acres will be actively mined at any given time. Reclamation of the mined areas, including pit backfilling, recontouring, and revegetation, will begin approximately two to three years after commencement of mining in an area and will proceed concurrently with progressing mining activities. It is anticipated that the mining method will transition from surface mining to underground mining as ore extraction proceeds to the northwest of the private property, where the overburden zone becomes thicker.

2.2.12.1.2 Production Plant

The production plant and related infrastructure will be located in the northern portion of the South Project private land, in Section 3, Township 11 South, Range 25 East, on an approximately 320-acre site (plant size may change based on arrangement and optimization of plant components). The production complex will consist of raw material handling, the retorting and oil recovery unit(s) pyrolysis process, raw shale oil upgrading facility, power block, wastewater treatment unit, storage yard, and administration buildings. The Applicant will continue to study optimizations of both the retort and upgrader as project design progresses.

The mining, retorting, and upgrading operation is being designed to produce SCO and potentially other semi-refined petroleum products, as well as potentially marketable byproducts, such as anhydrous ammonia, on the privately owned South tract. The South Project would be constructed and commissioned in multiple development phases, totaling a target production capacity of 50,000 BPD at full build-out. The 50,000-BPD operation is planned to continue for 30 years, using oil shale ore rock mined from the Applicant's southern private property holdings (Map 1-1). It is possible ore from other areas in the Applicant's resource holdings would be processed in the facilities located on the Applicant's private land; however, this scenario is not currently contemplated and would be addressed in the future as a separate project, if applicable.

At full production, the mining operation would generate approximately 28.5 million tons per year of raw oil shale for delivery to and processing at the industrial plant. The industrial facility in turn would produce approximately 50,000 BPD of shale oil product and would consist of the following major process units:

- Crushing/material preparation
- Retorts
- Common shale gas plant
- Hydrogen plant
- Raw shale oil upgrading (i.e., hydrotreater) plant
- Product storage tanks
- Wastewater treatment plant
- Utility plant
- Power generation facility

Depending on the final number of development, construction, and commissioning stages, the industrial plant would consist of one or multiple trains of these major process units.

The South Project mining and mineral processing facility is currently planned to have a power demand or load of between 125 and 200 megawatts (MW). At full build out and operation, the facility would be capable of exporting between 50 and 100 MW, and thus a net exporter of electrical power.

2.2.12.1.3 Air Emissions

Emissions data associated with the South Project are not available at this time, as the level of engineering detail required to support an emissions inventory for the South Project is not anticipated to be completed until following the completion of the Utility Project NEPA analysis. The availability of utilities to the Applicant may influence certain mining and mineral processing design considerations and decisions, which in turn may affect the emissions profile of the South Project facilities. The Applicant anticipates the emissions from the South Project will exceed thresholds for major sources (as defined by the EPA) regardless of the utilities available, thus will be required to apply for a CAA PSD permit from EPA Region 8. Further, engineering by the Applicant is on hold until a decision is reached by BLM, therefore, the modeling to support a PSD permit is not available to be referenced or support analysis in this EIS as it will be prepared after engineering of the South Project is completed.

The South Project is located on lands that are designated as "Indian Country;" therefore, the South Project's air emissions (i.e. emissions generated by the mineral processing facility, mine operation, and other sources located on private land) are anticipated to be regulated by the EPA's Region 8 under their PSD permitting process. The PSD permit is not subject to NEPA, since it is specifically exempt per the Energy Supply and Environmental Coordination Act of 1974 (ESECA Section 7(c)(1)).

2.2.12.1.4 Water

In addition to the water supply pipeline, the Applicant would construct two raw water storage tanks sized to hold a 10-day-capacity per tank (assuming 2,700 gallons per minute consumption rate). Raw water will also be treated onsite to produce the higher purity water needed for the hydrotreater unit and for use as potable water at the production complex.

The Applicant is still in the planning and preliminary engineering design process for the South Project mining and mineral processing; therefore, water supply amounts for various construction and operation processes are only available as preliminary estimates at this time, and include:

- First Phase (first four years of operation)
  - Mining – 2.33 cfs (including 1.46 cfs treated water reuse and 0.87 cfs raw water)
  - Retorting and Upgrading – 0.74 cfs
  - Utility and Power Generation – 0.88 cfs
  - Other Uses – 0.09 cfs
- Full Build Out (30 years of operation)
  - Mining – 4.33 cfs (including 3.04 cfs treated water reuse and 1.29 cfs raw water)
  - Retorting and Upgrading – 1.78 cfs
  - Utility and Power Generation – 1.63 cfs
  - Other Uses – 0.09 cfs

These water use estimates for 34 years are preliminary and subject to change based on ongoing engineering of the South Project. Water would be used for the following activities associated with operation of the South Project: earth compaction and dust suppression during initial construction and sanitary use, mining activities, product upgrading, and spent shale/ash handling.

2.2.12.1.5 Federal, State and Local Permits

The South Project would be subject to a number of federal, state, and local regulatory mechanisms. Those regulations are anticipated to include the following, at a minimum:

- PSD from the EPA Region 8 for air emissions from new major sources;
- Title V Operating Permit from EPA, for air emissions from operating major sources;
- NPDES Permit from the EPA, for stormwater management;
- Large Mine Operation Permit from the UDOGM, for mine operations;
- Stream Alteration Permit from UDWaR, for dredge and fill of a state-regulated drainage; and
- Conditional Use Permit from Uintah County, for mining and industrial operations.

2.3 Alternatives Considered

2.3.1 No Action Alternative – No Utility Project

Under the No Action Alternative, BLM would deny the Applicant's rights-of-way proposal to construct, operate, and maintain the Utility Project facilities on land they administer. No activities would occur on BLM administered lands.

2.3.1.1 No Action Alternative – Non-Federal Connected Action South Project

In the case of a No Action decision, the Applicant would seek to develop the South Project by alternative means. Alternative means could include:

- Natural gas supply
  - Contract with existing natural gas pipeline provider(s), such as Summit MidStream, which currently has a 6-inch diameter natural gas pipeline within the South Project site, or Mapco, which has two existing 10-inch diameter natural gas pipelines with the South Project site. This is the supply method assumed by the BLM under the No Action Alternative.
  - Use trucks to provide daily/weekly delivery of natural gas.
  - (Note the quality, quantity, and rate of delivery for those existing facilities is unknown at this time, therefore this option was dismissed from the assumptions under the No Action Alternative.)
- Water supply
  - Use of existing groundwater right (point of diversion changed to South Project property), and/or
  - Pursue additional groundwater rights, and/or
  - Convert existing groundwater monitoring wells to supply wells (if technically or economically feasible)
    (Note: Based on BLM's knowledge of hydrography in the area, BLM does not believe this activity would be sufficient to meet water demands. This issue is discussed further in Section 4.2.5, so these options were dismissed from the assumptions under the No Action Alternative.)
  - Use trucks to provide daily/weekly delivery of water.
    (Note the quality, quantity, and rate of delivery of these water supply methods may vary from the Proposed Action, although the degree of variance is unknown at this time. However, assumptions have been made for analysis purposes.)

- Electricity
    - Generated onsite via several portable diesel fired generators for construction demand of 5 MW.
    - Generated onsite via natural gas combustion of between 125 to 200 MW for facility operation.
- Product delivery
    - Develop a new pipeline trans-loading terminal in the region such that product oil could be trucked a short distance and off-loaded into an existing pipeline (such as Chevron). This is the option assumed for analysis purpose under the No Action Alternative.
    - Convert an existing natural gas pipeline (owned by Summit MidStream or Mapco) located within the South Project area to an oil liquids transport pipeline.
    - Note the technical feasibility and willingness of these facility owners of this conversion is unknown. Therefore this option was dismissed from the assumptions under the No Action Alternative.
- Dragon Road
    - No improvements would be made to Dragon Road. The existing Dragon Road would be used as is.

2.4 Alternatives Considered But Dismissed From Analysis

In the preparation of this document, an initial evaluation was made of a full range of alternatives. All reasonable alternatives were given further consideration. Alternatives that were (1) ineffective (i.e., did not meet the agencies' purpose and need), (2) technically or economically infeasible, (3) inconsistent with the basic policy objectives of the management of an area (e.g., land use plans), (4) remote or speculative (i.e., could not be analyzed), or (5) substantially similar in design or effects to another alternative being analyzed were eliminated from further consideration.

2.4.1 Section 368 West Wide Energy Corridor (#126-258 and #126-217)

A comment during the scoping period identified the potential use of the Section 368 West Wide Energy Corridors on BLM lands as an alternative for consideration. The nearest West Wide Energy Corridors (#126-258 and #126-217) are approximately 6 miles north of the BPP and traverses BLM lands in an east-west alignment, south of U.S. Highway 40. The location of the Utility Project and associated non-federal connected action, South Project, are located too far south to make feasible use of the West Wide Energy Corridor. For this reason, this alternative was considered and dismissed from further analysis in the EIS.

2.4.2 Alternative Routes for Pipelines and Transmission Line

2.4.2.1 Applicant's Pre-Application Consideration of Alternative Routes

In developing the alignments for the water, natural gas, and product pipelines and overhead transmission lines incorporated in its application for FLPMA rights-of-way, the Applicant evaluated a number of alternative alignments for each utility, from the interconnection point with existing infrastructure to the terminus at the proposed plant site located on the South Project property (Stantec 2012). Existing data used to inform the analysis included physical and environmental information from the BLM, the Utah Natural Heritage Program, the Utah Automated Geographic Reference Center (AGRC), the Utah Geological Survey, and Uintah County.

The Applicant's preliminary route selection was completed based on existing constraints, with physical constraints (e.g. topography, construction workspace) providing the majority of the preliminary route control. Preliminary route selection was further guided by following existing features (e.g. roads, pipelines, and transmission lines) where possible. Two main constriction points occur between the BPP and the terminus at the proposed plant site – the crossing of the White River and the crossing of Evacuation Creek. Because of the steep canyon walls associated with each, crossing locations determined to be feasible from an engineering standpoint were severely limited, with only two viable crossing options for each feature within the study area. Although this did not materially affect the development of preliminary route selection for the alignments as a whole, it did determine the approach angles and departures of the pipelines and transmission lines in the immediate vicinity of the crossing locations.

For the detailed comparative analysis of the routes in order to identify a preferred corridor, the Applicant considered the following physical environment criteria:

- BLM-administered land, where routes crossing less BLM land were favored;
- Existing road crossings, where fewer crossings were favored;
- Available width, where adequate space for construction was favored;
- Maximum slope, where routes with less severe localized hill slopes were favored;
- Average slope, where routes with less severe average slopes over the total length of the segment were favored;
- Gilsonite mine crossings, where routes with fewer gilsonite mine trench crossings were favored (gilsonite mine trench crossings may represent areas of specialized construction techniques and/or higher hazard pipe classification due to exposed pipe segments);
- Construction access, where areas with better accessibility via existing roads were favored;
- Utility crossings, where segments with fewer crossings of existing pipelines and transmission lines were favored;
- Roadway corridors, where segments following existing roadways were favored due to access and minimization of visual disturbance (this category was considered jointly with the construction access category); and
- Drainage crossings, where routes with fewer mapped drainage crossings were favored.

In addition to physical environment criteria, the Applicant also considered environmental resource evaluation criteria, which were weighted in two categories – primary and secondary. Primary evaluation criteria were defined as those criteria that could represent significant implications on utility line construction and/or where the area should be avoided altogether to avoid environmental impacts. Secondary criteria were those that should be avoided to the extent practical but did not necessarily represent fatal flaws in the route alignment.

Primary environmental evaluation criteria included the following:

- High Consequence Areas, which are defined by PHMSA and are areas that must be accounted for in emergency response planning;
- Areas of Critical Environmental Concern, which are BLM-designated lands;
- Wild and Scenic Rivers (WSR);
- Large wetland complexes;
- Large water bodies;
- Permit-sensitive lands, such as Department of Defense lands or lands with tribal ownership;
- Properties listed in the National Registry of Historic Properties or identified by the SHPO;

- Habitat for federally listed threatened and endangered species; and
- Wildlife refuges.

Secondary environmental evaluation criteria included the following:

- Source water or wellhead protection areas;
- Water/river crossings;
- Wetland crossings;
- Sensitive habitats and special-status species mapped occurrences;
- Rural communities;
- Shallow, unconfined aquifers; and
- Residences and associated features.

Between 2012 and 2014, the Applicant reviewed several overall alternative routes for their proposed utility corridors comprised 16 different segments. *Enefit Routing Alignment Comparison Based on Plans of Development Dated November 26, 2012 and April 23, 2014* and a memo titled *EAO Response to Enefit Routing Alignment Comparison* documents that review process. Both documents conclude that the routes for the Utility Project now reflected in the Proposed Action are the least environmentally damaging overall of the routes initially identified for consideration, and the application(s) submitted to the BLM were updated to reflect this conclusion.

2.4.2.2 Alternative Routes Considered but Dismissed by the BLM

2.4.2.2.1 Alternative Route Alignments

In 2014 and 2015, BLM reviewed the Applicant's route comparison documentation, along with analysis prepared by BLM's third-party contractor of the alignments. In addition, BLM compared those documents and conclusions to various in-house resource GIS data sets. Initial screening resulted in elimination of alternatives that were (1) ineffective (i.e. did not meet the Utility Project purpose and need), (2) technically or economically infeasible, (3) inconsistent with the basic policy objectives of the management of an area (e.g. land use plans), (4) remote or speculative (i.e. could not be analyzed), or (5) substantially similar in design or effects to another alternative. See Appendix D for detail regarding alternative route alignment comparison.

2.4.2.2.2 White River Crossing Alternatives

Ten crossing location alternatives and three different construction methods considered by the Applicant for crossing the White River were documented in the *White River Crossing Technical Pre-Feasibility Study September 2014* and *EAO Response to Enefit Routing Alignment Comparison (segments "G to I" and "H to I")* in Appendix D of this EIS. The BLM considered an analysis prepared by the BLM's third-party contractor of the two most feasible alternatives presented in the Applicant's document. This review considered both alternative crossing locations and alternative methods for crossing the river.

2.4.2.2.2.1 Pipeline and Powerline Crossing Locations

Ten possible crossing locations in five separate regions were analyzed in the Pre-Feasibility Study. The ten locations were compared by the Applicant against their goals for the crossing: providing balance of cost and risk, minimizing environmental impact and permitting requirements, and providing a reliable and stable crossing for operation and maintenance. The ten routes were then ranked according to Engineering and Construction Factors, Environmental Impact and Permitting Factors, and Cost and Operation Factors to identify the recommended pipeline crossing location. The Utility Project alignment was determined to have the best access for long term operation and maintenance on both sides of the river, the best topography, good alignment with the rest of the proposed routes, and consolidated the Applicant's proposal with other pipeline and powerline crossings; therefore, the Applicant submitted this proposal to the BLM for right-of-way approval.

Preliminary route comparison consisted of review of GIS data to identify the presence of sensitive resources along the proposed alternative route. A summary of BLM's findings from their internal data review of the alternative routes considered is summarized in Table 2-7.

Based on the review of both documents, BLM has determined the following:

- That the various potential routes considered by the Applicant were appropriate given the objective of moving utilities from existing sources to their private land and moving their product from their private land to existing transmission facilities. Any routes further to the east or west would move into areas with greater topographical challenges or resource issues. They would also be out of alignment with the rest of the Utility Project.
- The route carried forward as the Proposed Action is the shortest route available and also the widest and flattest route (topographically) available, which minimizes cut and fill during construction. All other segments identified as possible alignments are substantially similar to the Proposed Action in impacts. However, all other considered segments are longer, equally or more topographically challenging, and have an equal or higher occurrence of resource issues. Specifically, the route that would parallel Highway 45 is narrow and would result in significant cut and fill to fit the utilities into the narrow canyon navigated by Highway 45. Therefore, BLM determines that the other segments, including paralleling Highway 45, can be eliminated from detailed analysis as they would not improve the range of alternatives, especially as they relate to minimizing impacts expected from those alternatives.
- Further, no issues were identified by the BLM, the public during public scoping, or BLM's cooperators that necessitate the detailed review of any of the other preliminary routes.

2.4.2.2.2.2 Pipeline Construction Methods

Three possible construction methods were identified as potentially feasible for the proposed White River crossing: open cut, trenchless (microtunnel) and overhead utility bridge. The Applicant concluded that due to the size of bridge required to support the three proposed pipelines, the overhead utility bridge was unlikely to be feasible due to high costs and visual impacts. They concluded that open cut construction methods are proven feasible for the project area, but less desirable due to the permitting requirements, environmental impacts, and risks associated with working in a flowing river. They concluded that the trenchless construction method is their preferred method due to its ability to minimize the environmental impacts, permitting requirements, and risks.

Based on the review of the Pre-Feasibility Study, BLM has determined the following:

- That the various potential construction methods considered by the Applicant is appropriate given BLM's experience with methods used for other pipeline crossings in this and other rivers in the Vernal Field Office.
- The method carried forward as the Proposed Action is the least impacting of the possible methods because it minimizes impacts to the river and visual resources. The bridge crossing method would result in similar impacts to the river, but greater impacts to visual resources. The open cut method would result in greater impacts to the river, but similar impacts to visual resources. Therefore, BLM determines that the other methods can be eliminated from detailed analysis as they would not improve the range of alternatives, especially as they relate to minimizing impacts expected from those alternatives.

Table 2-7
Summary of Bureau of Land Management Data on Alternative Routes Considered

	Route 1A	**Route 1B**	**Route 2A**	**Route 2B**	**Route 3A**	**Route 3B**	**Route 4A (Proposed)**	**Route 4B**
Sage Grouse GHMA	Present	Present	Present	Present	Present	Present	Present	Present
Sage Grouse PHMA	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
Sage Grouse population area	Present	Present	Present	Present	Present	Present	Present	Present
Sage Grouse EIS corridor	Present	Present	Present	Present	Present	Present	Present	Present
Wilderness character	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
Existing RMP corridor	Present	Present	Present	Present	Present	Present	Present	Present
Visual Resource Management (VRM)	II, III, and IV	II, III, and IV	II (edge), III, and IV	II (edge), III, and IV	II (edge), III, and IV	II (edge), III, and IV	II (edge), III, and IV	II (edge), III, and IV
Sclerocactus potential habitat	Present	Present	Present	Present	Present	Present	Present	Present
Sclerocactus core conservation area 1	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
Sclerocactus core conservation area 2	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
Number of floodplain crossings including Evacuation Creek and White River	3	3	9	9	3	3	3	3
Wild Scenic River	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
ACEC	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present

SOURCE: BLM 2015b
NOTE: Refer to Appendix D for further details regarding these routes and associated maps.

- Further, no issues were identified by the BLM, the public during public scoping, or BLM's cooperators that necessitate the detailed review of any of the other potential methods.

2.4.2.2.3 Alternative Water Withdrawal Points

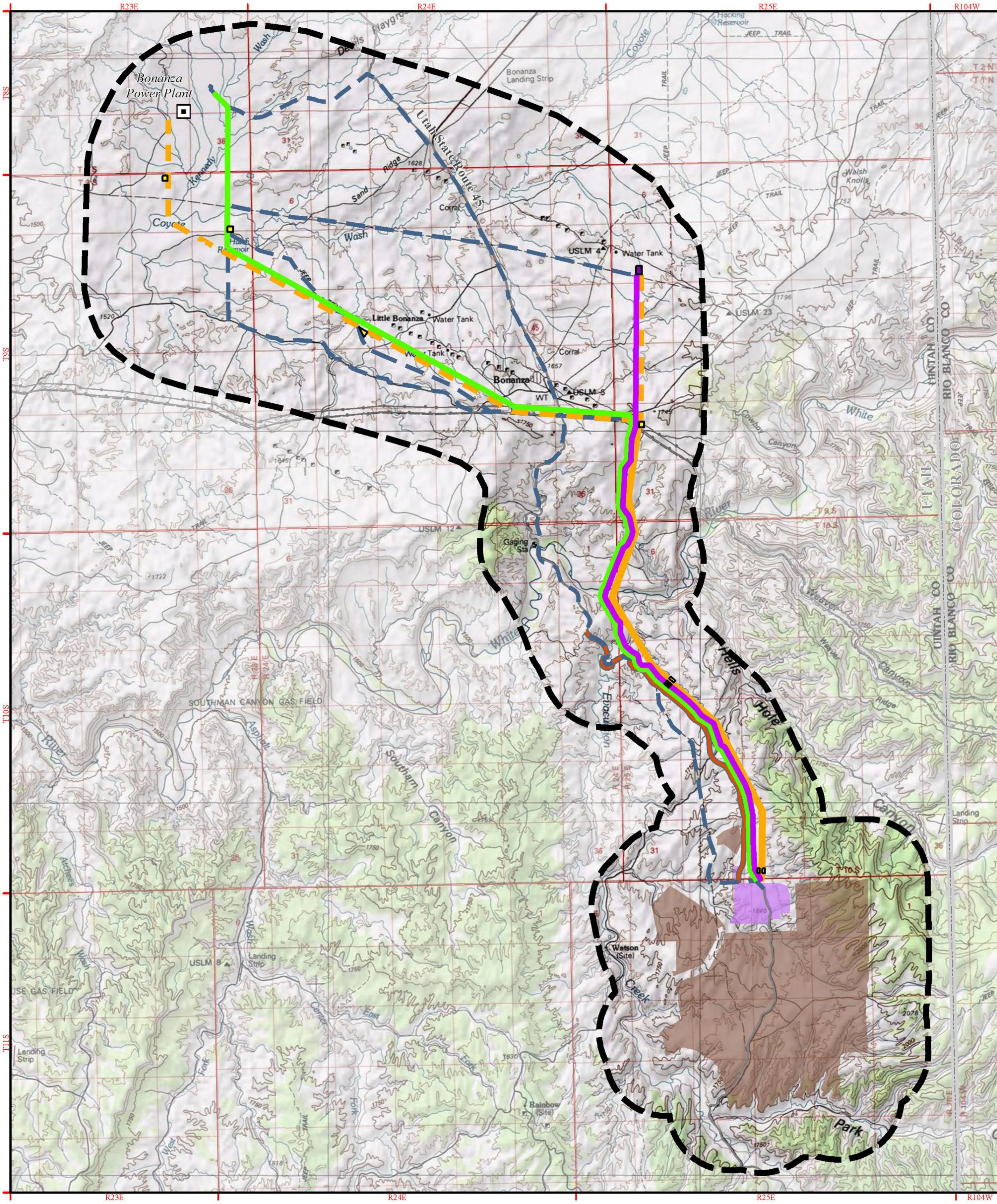
Two water withdrawal points are available to the Applicant to supply water for their project. Their water right allows for withdrawal from either the White River or the Green River. The Applicant has elected to utilize water from the Green River for their project due to higher and more stable flows, and due to the fact that they were able to arrange with the BPP to utilize the Plant's existing water withdrawal system and pipeline to withdraw and move the water closer to the Applicant project area. BLM requested technical feasibility data from the Applicant regarding their ability to withdraw water from the White River. The Applicant provided a response on June 5, 2015, that confirmed that they could withdraw the water from points in the White River near the proposed utility crossing. The supplemental details they provided in response to this question are as follows:

- To withdraw the water, a minimum of six to eight acres would be disturbed for installation of at least 3 to 4 withdrawal facilities. This would result in a relocation of the proposed pipeline and powerline crossing, which would result in greater environmental impacts from those utilities since the proposed crossing was determined to be the least impacting crossing point. Also, the proposed utilities are able to span above (power lines) or weave between (pipelines) archaeological sites present in the crossing area. The pads required to support the withdrawal facilities would not be able to avoid those archaeological sites.
- The White River has a lower flow rate than the Green River, so withdrawal would have to occur when the water is available and then the water would have to be stored in a reservoir or tank battery on the Applicant's private land. The reservoir and trails would be used when river flows cannot supply the required water. There would also be a greater probability that endangered fish would be adversely impacted if the water is withdrawn from the White River given the lower flows, than if the same water amounts were withdrawn from the higher flowing Green River.

Based on the review of the provided details, BLM has determined the following:

- Given the limitations of the Applicant's existing water rights, which are administered by the UDWaR, and therefore, outside the jurisdiction of the BLM, the Green River withdrawal location carried forward in the Proposed Action is the least impactful of the two possible withdrawal locations. Not only does the Green River have a higher flow rate than the White River, but the intake facilities and pipeline are already in place. Also, the White River withdrawal site would likely result in additional impacts to visual resources, archaeological resources, and surface resources (from construction of the facilities on BLM land and construction of the reservoir on private land). Therefore, the BLM determines that the White River withdrawal location can be eliminated from detailed analysis as it would not improve the range of alternatives, especially as they relate to minimizing impacts expected from those alternatives.
- Further, no issues were identified by the BLM, the public during public scoping, or BLM's cooperators that necessitate detailed review of the White River withdrawal location alternative.

Map 2-3 depicts the alternative routes presented during public scoping that were considered and eliminated.



Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline
- Proposed Colocated Powerlines
- Dragon Road Improvements
- Proposed Switchyard
- Proposed Construction Laydown Areas

Alternatives Considered and Eliminated

- Alternative Route Alignments

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

Alternative Alignments, Enefit 2013;
Proposed Action, Enefit 2013;
Dragon Road Improvements, Enefit 2014;
Power Plant as digitized by EPG, 2013;
Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
South Project Plant and Mine Site Areas, Enefit 2013

NOTES:
In most cases, linear project features are graphically depicted as individual lines but share centerline alignment in common areas.

October 2015

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Map 2-3: Proposed Action and Alternatives Considered and Eliminated

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2.4.2.2.4 Alternative South Project Alternative

During an Interdisciplinary Team meeting the EPA suggested an alternative version of the South Project be considered. This would involve an option that has no mine or associated infrastructure to serve as a baseline for the South Project. Based on review of the BLM Handbook H-1790-1, the BLM has determined the following:

The consideration of a non-federal connected action by the BLM is limited. Because the NEPA process is focused on agency decision making (40 CFR 1500.1(c), 40 CFR 1508.18, and CFR 1508.23), the BLM is not required to consider alternatives available to the non-federal party since the BLM has no jurisdiction over the action.

2.5 Summary Comparison of Alternatives

Table 2-8 provides a detailed comparative analysis of the resources for each alternative. For each resource, the table identifies key resource elements and associated impacts. A determination of potential significant impacts remaining after mitigation and cumulative effects (if present) also are identified. The basis for the information summarized for each resource is contained in Chapters 3 and 4.

While there would be no BLM-originated impacts resulting from the BLM's selection of the No Action Alternative, Table 2-8 breaks out into a separate column the impacts that may be anticipated to occur should the South Project go forward by means of other access routes to utilities, showing these impacts as what might happen under the No Action Alternative.

2.6 Agency Preferred Alternative on Federal Lands

The Agency Preferred Alternative on federal lands is the Proposed Action due to the reduced air quality impacts that can be expected to occur as compared to the No Action Alternative, which would result in increased trucking of water and oil products and self-generation of power. The BLM in coordination with the cooperating agencies believe this Alternative would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors.

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Table 2-8
Summary Comparison of the Proposed Action and No Action Alternatives

Proposed Action Alternative		No Action Alternative	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
Greenhouse Gas Emissions			
Inventory The inventory of construction phase greenhouse gas (GHG) emissions was based on estimated tailpipe emissions of CO_2 and other GHGs from operation of on-site vehicles and equipment during construction activity. Refer to Appendix E for GHG emission calculations. Total GHG emissions, as metric tons carbon dioxide equivalent (MT CO_{2eq}): ▪ 1st Mobilization: 3,772 MT CO_{2eq} ▪ 2nd Mobilization: 6,480 MT CO_{2eq} **Impacts** Use of construction equipment that meets current standards for emissions and energy-efficiency performance will maintain GHG emissions to the lowest practical level and reduce impacts. The generation and release of GHGs during construction will be of a relatively short duration. For the Utility Project, total GHG emissions are a small fraction of the regional inventory, and are well below the *de minimis* reporting thresholds (25,000 MT/yr) under federal GHG regulations. However, there could be an unquantifiable but small impact on the regional or global climate.	**Inventory** The inventory of South Project construction and operation GHG emissions has not been quantified, since the engineering basis and equipment selection for the facility is not complete. **Impacts** The construction and of the South Project will in a qualitative sense have the similar GHG emission impacts as construction activities for the utility corridors. Operation of the South Project facility will have longer-term GHG emissions and potential impacts due to operation of fuel-fired process equipment, mining vehicles and equipment, and on-site power generation units. Total GHG emissions are expected to be a small fraction of the regional inventory; however, there could be an unquantifiable but small impact on the regional or global climate. The South Project is not a BLM leasing or development action, so is not subject to existing BLM policies. The projected GHG emissions would be disclosed as part of an application for a PSD construction permit to EPA Region 8. As part of that application, additional analyses will be conducted at that time including consideration of potential effects of the proposed development, reasonable alternatives, and possible mitigation/best available control measures (BACT) measures. The EPA's review would encompass considerations appropriate for the application, and will ensure that State and local communities have the opportunity to be involved and are fully informed.	**Inventory** The direct GHG emissions for the No Action Alternative, which would avoid those resulting from utility corridor construction and Dragon Road improvements, will not occur. Higher GHG emissions would occur under the No Action Alternative due to substantially increased use of motor vehicles to deliver fuel and water, and to ship product. Refer to Appendix E for GHG vehicle emission calculations. For anticipated tanker truck and driver commute traffic, total GHG emissions, as metric tons carbon dioxide equivalent (MT CO_{2eq}) are 53,072 MT CO_{2eq}/Month. **Impacts** Under the No -Action Alternative, the planned utility corridors would not be constructed. This would avoid the GHG emissions and the related impacts.	**Inventory** The inventory of South Project construction and operation GHG emissions has not been quantified, since the engineering basis and equipment selection for the facility is not complete. Higher GHG emissions would occur under the No Action Alternative due to substantially increased use of motor vehicles to deliver fuel and water, and to ship product. Refer to Appendix E for GHG vehicle emission calculations. There is also expected to be higher on-site fuel gas consumption to provide 100% of the South Project power needs under this alternative, and associated higher amounts of GHG emissions. **Impacts** The construction of the South Project will in a qualitative sense have similar GHG emission impact as construction activities for the utility corridors. Operation of the South Project will have longer term GHG impacts due to operation of fuel-fired process equipment, mining vehicles and equipment, and power generation units. GHG impacts under the No Action Alternative are expected to be more than the South Project Proposed Action. The projected GHG emissions for stationary sources would be disclosed as part of an application for a PSD construction permit to EPA Region 8. As part of that application, additional analyses will be conducted at that time including consideration of potential effects of the proposed development, reasonable alternatives, and possible mitigation/ BACT measures. The EPA's review would

Table 2-8
Summary Comparison of the Proposed Action and No Action Alternatives

Proposed Action Alternative		No Action Alternative	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
			encompass considerations appropriate for the application, and will ensure that State and local communities have the opportunity to be involved and are fully informed. Over the projected term of South Project, the indirect GHG emissions due to increased vehicle operation and other sources remain a small fraction of the regional inventory; however, there could be an unquantifiable, but small impact on regional or global climate.
Air Quality			
Inventory The inventory of utility corridor construction phase air emissions was based on estimated disturbed acreage for each corridor segment, and tailpipe emissions of on-site vehicles and equipment during construction activity. Estimated air emissions (tons per mobilization): ▪ 1st Mobilization: • $PM_{2.5}$: 8.3 • PM_{10}: 39.0 • NO_X: 27.4 • CO: 19.5 • Volatile organic compound (VOC): 3.9 • SO_2: 0.05 ▪ 2nd Mobilization: • $PM_{2.5}$: 8.5 • PM_{10}: 39.2 • NO_X: 48.9 • CO: 40.5 • VOC: 7.2 • SO_2: 0.08 **Impacts** Total corridor project air emissions are less than major source significance levels defined in the	**Inventory** The air emissions inventory of South Project construction and operation has not been quantified, since the engineering basis to support an inventory will not occur until after the utility corridor project is approved or denied. **Impacts** The construction of the South Project will in a qualitative sense have similar air quality impacts as construction activities on the utility corridors. Operation of the facility over the longer term will cause local air quality impacts due to operation of fuel-fired process equipment, mining equipment and vehicles, and power generation units subject to permitting. Emission mitigation measures, such as those typically imposed by EPA Region 8 New Source Review air permitting processes, would mitigate adverse impacts. With the planned mitigation measures in place, the short and long-term impacts to air quality would be minor.	**Inventory** The air emissions associated with the No Action Alternative are negligible, since this alternative (without considering the South Project) would avoid emissions resulting from utility corridor construction and Dragon Road improvements. **Impacts** Direct air quality impacts for the No Action Alternative would be negligible, and would avoid short term and localized impacts resulting from corridor construction and road improvements. However, the indirect impacts due to increased long-term use of on-road vehicles to support the South Project operation would increase overall project impacts.	**Inventory** The emissions inventory of South Project construction and operation under the No Action Alternative has not been quantified, since the engineering basis to support an inventory is not available. Over the life of the project under the No Action Alternative, the anticipated increased use of on-road motor vehicles to deliver fuel and water, and to ship product, would result in tailpipe emissions far higher than those resulting from utility corridor construction. Greater roadway fugitive dust emissions would be anticipated due to the higher level of traffic on unimproved portions of Dragon Road. The air emissions due to additional vehicle traffic associated with the No Action Alternative have been estimated on an annual basis as follows, based on calculations provided in Appendix E (units in tons per year): ▪ $PM_{2.5}$: 23.8 ▪ PM_{10}: 78.7 ▪ NO_X: 73.3

Table 2-8 Summary Comparison of the Proposed Action and No Action Alternatives			
Proposed Action Alternative		No Action Alternative	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
federal Clean Air Act. The impacts due to generation and release of air pollutants during corridor construction will be localized, and of relatively short duration, less than 30 months overall. With the planned mitigation measures in place the short and long-term impacts to air quality will be minor.			▪ CO: 68.1 ▪ VOC: 10.6 ▪ SO_2: 0.22 Absence of external utilities may affect mining and mineral processing design decisions to balance power generation and parasitic load for the South Project. Overall, there is expected to be additional generation equipment and higher on-site fuel gas consumption to provide 100 percent of the South Project power needs under the No Action Alternative, with associated higher amounts of air emissions. **Impacts** The construction of the South Project under the No Action Alternative will in a qualitative sense have the same air quality impact as construction activities on the utility corridors. Under the No Action Alternative, the substantially increased use of on-road motor vehicles to deliver fuel and water, and ship product would, over the longer term, have indirect impacts that would more than offset the avoided direct impacts related to construction of the utility corridors. Additional local fugitive dust impacts are anticipated due to increased traffic over the unimproved Dragon Road. It is anticipated that operation of the South Project will have long term emissions that would differ from the South Project under the Proposed Action, due to different selection and operation of fuel-fired process equipment, mining equipment and vehicles, and power generation units. However, under the No Action Alternative,

Table 2-8 Summary Comparison of the Proposed Action and No Action Alternatives			
Proposed Action Alternative		**No Action Alternative**	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
			the emission mitigation measures to be imposed by EPA Region 8 New Source Review air permitting will mitigate adverse impacts. It is anticipated that as a result of the new source review process the short and long-term impacts to air quality due to the South Project will remain minor, although likely greater than under the South Project under the Proposed Action.
Soils			
Inventory ▪ Crosses 64 acres with of soils with high susceptibility to either water or wind erosion ▪ Crosses 199 acres of soils with moderate susceptibility to either water or wind erosion **Impacts** With applicant committed mitigation, impacts would be minor.	**Inventory** South Project would affect total of 9,000 acres – of which 3,079 acres are soils with moderate susceptibility to either water or wind erosion **Impacts** Long-term direct and indirect impacts of wind and water erosion would occur as a result of mining operations.	**Inventory** Use of existing roads for trucking may affect soils resources. **Impacts** Dragon Road would not be improved under the No Action Alternative. Use of heavy trucks would result in increased erosion, fugitive dust, and wear on Dragon Road. Use of other existing dirt roads would result in increased compaction and possibly alter run-off patterns on these roadways.	**Inventory** Same as previously described for South Project Proposed Action. **Impacts** Long-term impacts of wind and water erosion would occur as a result of mining operations. Dragon Road would not be improved under the No Action Alternative. Use of heavy trucks would result in increased erosion, fugitive dust, and wear on Dragon Road. Use of other existing dirt roads would result in increased compaction and possibly alter run-off patterns on these roadways. No impacts are anticipated from the other alternative means of developing the South Project (listed in Section 2.3.1.1).
Minerals			
Inventory ▪ Crosses 236 acres with minerals materials (sand, gravel, dirt, and rock) ▪ Crosses 481 acres of oil and gas leases with timing and controlled surface use ▪ Crosses 19 acres of split estate leases **Impacts** With avoidance of known oil and gas well pads, impacts on mineral resources would be minor.	**Inventory** ▪ South Project would affect 0.34 acres with minerals materials (sand, gravel, dirt, and rock) ▪ South Project would affect 0.35 acres of oil and gas leases with timing and controlled surface use ▪ Private and state mineral leases	**Inventory** Use of existing roads for would not directly affect minerals resources. **Impacts** Impacts to mineral resources would be avoided due to the use of existing roads.	**Inventory** Same as previously described for South Project Proposed Action. **Impacts** Long-term impacts on private and state mineral resources and oil and gas leases would occur as a result of the mining activity on private and state land.

<table>
<tr><th colspan="4">Table 2-8
Summary Comparison of the Proposed Action and No Action Alternatives</th></tr>
<tr><th colspan="2">Proposed Action Alternative</th><th colspan="2">No Action Alternative</th></tr>
<tr><th>Utility Project</th><th>Non-federal Connected Action South Project</th><th>Utilities Accessed by Alternative Means</th><th>Non-federal Connected Action South Project</th></tr>
<tr><td></td><td>Impacts
Long-term impacts on private and state mineral resources, and oil and gas leases, would occur as a result of the mining activity on private and state land.</td><td></td><td></td></tr>
<tr><th colspan="4">Water Resources/Water Quality</th></tr>
<tr><td>Inventory
The Applicant has an existing senior surface water right of 15 cfs from a point of diversion on the Green River.
The Utility Corridor Project would cross the White River (a perennial stream) and a number of ephemeral drainages.
Impacts
Direct and indirect effects to water resources from construction and operation of the Utility Project may include:
▪ surface water depletion for use during construction
▪ degradation of surface water from potential spills during construction and operations
▪ degradation of surface water due to sedimentation and turbidity from construction activities and vehicle use during operations.
▪ Impacts related to crossing the White River are avoided by use of Horizontal Directional Drilling (HDD) and spanning the river with the transmission lines.
No anticipated water depletion through use of existing water right.
No groundwater is anticipated to be used for the Utility Project.
Pipeline would be designed to minimize potential for leaks, spills, and potential spills during construction and operation of the Utility Project. Use flow meters on either end of pipelines and at each end of the White River crossing will be used</td><td>Inventory
The Applicant has an existing senior surface water right of 15 cfs from a point of diversion on the Green River.
To supply the South Project with water, the Applicant has an agreement to use the spare capacity in DGT's existing water delivery pipeline. The Applicant would construct a new buried pipeline from the DGT system termination point at the BPP to the South Project plant site. The project footprint for the South Project contains a number of ephemeral drainages.
Impacts
Indirect effects of construction and operation of the South Project may include surface water depletion for use during construction and operations; degradation of surface water from potential spills during construction and operations, and degradation of surface water due to sedimentation and turbidity from construction activities and vehicle use during operations.
The use of existing water right will not impact other water right holders in the basin. No groundwater is anticipated to be used for the South Project. Therefore, the South Project would not result in groundwater depletion.
Pipeline would be designed to minimize potential for leaks, spills, and potential spills during construction and operation of the Utility Project. Use of SCADA leak detection system will be used for control and monitoring of the</td><td>Inventory
The Applicant has an existing senior surface water right of 15 cfs from a point of diversion on the Green River. However, if the Utility Corridor Project were not approved, the Applicant would need an alternative method for delivery of the water from the DGT pipeline terminus to the South Project plant site. Several methods would be considered, including a new pipeline route, trucking water, or changing the point of delivery water source.
Impacts
Under the No Action Alternative, the planned utility corridors would not be constructed and associated impacts would not occur.</td><td>Inventory
The Applicant has an existing senior surface water right of 15 cfs from a point of diversion on the Green River.
However, if the Utility Corridor Project were not approved, the Applicant would need an alternative method for delivery of the water from the DGT.
Impacts
In a memo dated March 22, 2015, the Applicant indicated they could request another route for the water pipeline across BLM lands. If the Proposed Utility Corridor Project were not approved, the Applicant could seek an alternative route for the water pipeline or develop an alternative water source that would require a new point of diversion from the White River or develop a new groundwater development field in or near the South Project. Any change in the POD or development of a groundwater well field will require approval from the UDWaR.
If Enefit requires an alternative water pipeline route or groundwater development well field on BLM lands, they would need to submit a new SF-299 to the BLM for the rights-of-way. Additional studies would be required to analyze the impact on the human and natural environmental. A separate NEPA document would need to be prepared.</td></tr>
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Table 2-8
Summary Comparison of the Proposed Action and No Action Alternatives

Proposed Action Alternative		No Action Alternative	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
to control and monitoring pipelines. Degradation of surface water due to sedimentation and turbidity from construction activities and vehicle use during operations is not anticipated. The use of site-appropriate best management practices and mitigation would minimize impacts.	pipelines to the South Project. Depending on the depth of groundwater in the area of the spill, large spills may reach the groundwater table. Degradation of surface water due to sedimentation and turbidity from construction activities and vehicle use during operations is not anticipated. The use of site-appropriate best management practices and mitigation would minimize impacts.		If Enefit were to use their groundwater monitoring wells as supply wells, the point of delivery for the water right intended for use would have to be changed from the White and Green Rivers to groundwater point of delivery. Prior to any change in the point of delivery or approval for groundwater development, the UDWaR will determine if the action would result in adverse impacts to adjacent groundwater users or surface water uses. In addition, trucking water in tanker trucks on Dragon Road was also listed as a possibility.
Vegetation			
Inventory Affects a variety of vegetation communities consisting of 1,563 acres. **Impacts** Direct effects such as clearing and removal of vegetation would occur during construction, operation, and maintenance of the Utility Corridor Project. Indirect effects on vegetation from construction, operation, and maintenance of the Utility Corridor Project. Potential for introduction and/or spread of noxious weeds and/or invasive plant species associated the Utility Project. With best management practices and applicant committed mitigation, impacts would be minor.	**Inventory** Affects a variety of vegetation communities consisting of 11,213.4 acres. **Impacts** Indirect effects would occur to vegetation from fugitive dust associated with mining operations and shale-oil refining. Indirect effects on vegetation, such as dust, would occur from construction, operation, and maintenance of the South Project. Potential for introduction and/or spread of noxious weeds and/or invasive plant species would result from surface disturbance associated the South Project.	**Inventory** Use of existing roads for trucking in utilities would not directly affect vegetation resources. **Impacts** Impacts on vegetation resources would be reduced through the No Action Alternative and use of existing roads. Effects would include increased fugitive dust on vegetation along existing unpaved roadways.	**Inventory** Affects a variety of vegetation communities consisting of 11,213.4 acres. **Impacts** Impacts would be similar to those described under the Proposed Action for the South Project. Impacts to vegetation adjacent to Dragon Road would be increased because the roadway would remain unpaved. The large trucks associated with construction of the South Project and ongoing operations and trucking of product would increase wear on the unpaved road which would increase erosion, fugitive dust and alter run-off patterns. No impacts are anticipated from the other alternative means of developing the South Project (listed in Section 2.3.1.1).
Special Status Plants			
Inventory ▪ Crosses approximately 33.2 acres of Graham's penstemon habitat.	**Inventory** ▪ Affects approximately 1,052.7 acres of Graham's penstemon habitat.	**Inventory** Use of existing roads for trucking in utilities would not directly affect	**Inventory** Same as those previously described for South Project Proposed Action.

Table 2-8
Summary Comparison of the Proposed Action and No Action Alternatives

Proposed Action Alternative		No Action Alternative	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
▪ Crosses 5,150.3 acres of known White River penstemon habitat. ▪ Approximately 5 acres of Penstemon Conservation Agreement Area (PCAA) identified within the Utility Project study area. **Impacts** Loss of individual plants and degradation of occupied or potential habitat from soil disturbance leading to increased invasion by noxious weeds and/or invasive plant species, increased soil erosion, alterations to runoff patterns, increased dust production With best management practices, Applicant committed mitigation, and adherence to the conservation area requirements, impacts would be minor.	▪ Numerous point locations for special status plants are identified and potentially impacted by the South Project. ▪ Approximately 1,300.7 acres of PCAA identified on private lands non-conservation area. ▪ Approximately 7,040.8 acres of PCAA has been identified within the 2-mile wide study corridor. **Impacts** Loss of individual plants and degradation of occupied or potential habitat. Soil disturbance leading to increased invasion by noxious weeds and/or invasive plant species, increased soil erosion, alterations to runoff patterns, increased dust production. With adherence to the conservation area requirements, impacts would be reduced but not avoided.	vegetation resources. **Impacts** Direct impacts on Special Status Plants would be avoided through the No Action Alternative.	**Impacts** Indirect effects on Special Status Plants associated with the South Project, for the No Action Alternative, would be similar to those previously described for the South Project.
Wildlife			
Inventory ▪ Crosses 125.1 acres of crucial bighorn sheep habitat ▪ Crosses 600 acres of crucial Bison habitat ▪ Crosses 1,006.6acres of crucial and substantial, winter and year-long mule deer habitat. ▪ Crosses 857.9 acres of crucial pronghorn habitat. ▪ Crosses numerous types of wildlife habitat. **Impacts** Short term, direct effects of the Utility Project on wildlife species and their habitats during construction, including, but not limited to: ▪ Big game ▪ Migratory birds	**Inventory** ▪ Crosses 422.2 acres of crucial bighorn sheep habitat ▪ Crosses 6,585.7 acres of crucial Bison habitat ▪ Crosses 6,585.7 acres of crucial mule deer winter habitat ▪ Crosses 7,917.3 acres of substantial Elk habitat ▪ Crosses numerous types of wildlife habitat. **Impacts** Long term effects of the South Project on wildlife species and their habitats, including, but not limited to: ▪ Big game ▪ Migratory birds	**Inventory** Same as Utility Project. **Impacts** Impacts on habitat, loss or degradation of designated crucial habitat, including indirect impacts to migratory birds and raptors would be avoided through the No Action Alternative.	**Inventory** Same as those previously described for South Project Proposed Action. **Impacts** Indirect effects on wildlife and habitat associated with the South Project are similar as previously described.

Table 2-8
Summary Comparison of the Proposed Action and No Action Alternatives

Proposed Action Alternative		**No Action Alternative**	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
Long term, indirect effects of the Utility Project on wildlife species and their habitats, including, but not limited to: ▪ Big game ▪ Migratory birds With best management practices and applicant committed mitigation, impacts would be minor.			
Special Status Wildlife			
Inventory ▪ Crosses 1.4 acres of black-footed - ferret primary management zone ▪ Total 2,238.5 acres of black-footed ferret primary management zone in the 2-mile wide study corridor. ▪ Crosses 11.6 acres of yellow-billed cuckoo Survey area. ▪ Total 43.8 acres of yellow-billed cuckoo survey area in the 2-mile wide study corridor. ▪ Crosses 0.4 acre of inactive prairie dog colonies ▪ Crosses 19.1 acres of potentially active prairie dog colonies. ▪ Study corridor has approximately 545.7 acres of active and 70.8 acres of inactive prairie dog colonies. ▪ Crosses 632 acres of greater sage-grouse brood habitat. ▪ Crosses 663.4 acres of greater sage-grouse winter habitat. ▪ Greater sage-grouse occupied habitat for the 2-mile wide study corridor consists of 34,347 acres. ▪ Greater sage -grouse winter habitat for the 2-mile wide corridor is 34,347 acres. ▪ No greater sage -grouse leks ▪ No eagle nests ▪ One inactive raptor nest in Utility corridor. ▪ Numerous active and inactive raptor nests in 2-mile wide study corridor.	**Inventory** ▪ Greater sage-grouse occupied habitat for the South Project consists of 10,453.5 acres. ▪ Crosses 10,453.5 acres of greater sage grouse winter habitat in the South Project corridor. ▪ No greater sage-grouse leks ▪ Numerous active and inactive raptor nests in South Project area. **Impacts** Long-term effects of the South Project on special status wildlife species and their habitats, including, but not limited to: ▪ Greater sage-grouse ▪ Raptors	**Inventory** Same as Utility Project. **Impacts** Impacts on special status wildlife include the same as those described for wildlife and would be avoided through the No Action Alternative.	**Inventory** Same as those previously described for South Project Proposed Action. **Impacts** Indirect effects on special status wildlife associated with the South Project would be similar to those previously described.

Table 2-8
Summary Comparison of the Proposed Action and No Action Alternatives

Proposed Action Alternative		No Action Alternative	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
▪ Two active burrowing owl nests in Utility corridor ▪ 11 burrowing owl burrows in 2-mile wide study corridor. **Impacts** Short term, direct effects of the Utility Project on special status wildlife species and their habitats, such as ground disturbance, during construction, including but not limited to: ▪ Black-footed ferret ▪ Greater sage-grouse habitat ▪ Raptors ▪ Prairie dogs Long term, indirect effects of the Utility Project on wildlife species and their habitats, including but not limited to: ▪ Black-footed ferret ▪ Greater sage -grouse habitat ▪ Raptors ▪ Prairie-dogs With best management practices and applicant committed mitigation, impacts would be minor. Specifically, compliance with mitigation identified in the BLM Utah Greater Sage-Grouse Approved Resource Management Plan would be implemented to minimize impacts and achieve net conservation gain through compensatory mitigation.			
Special Status Fish			
Inventory ▪ The White River makes up most perennial aquatic habitats (1.1 acres) in the study area; Evacuation Creek is also a perennial water source that runs along the west edge of the analysis area. ▪ The bonytail sucker, Colorado pikeminnow, razorback sucker, and humpback chub are listed by the FWS.	**Inventory** ▪ No perennial streams on site; only ephemeral washes. ▪ Evacuation Creek is an intermittent water source that would be crossed by the proposed utilities. **Impacts** No impacts on critical habitat are anticipated. However, sedimentation and contamination	**Inventory** Same as Utility Project. **Impacts** Indirect impacts on aquatic resources would be avoided through the No Action Alternative.	**Inventory** Same as those previously described for South Project Proposed Action. **Impacts** Indirect impacts on aquatic resources associated with the South Project would be similar to those previously described.

<table>
<tr><th colspan="4">Table 2-8
Summary Comparison of the Proposed Action and No Action Alternatives</th></tr>
<tr><th colspan="2">Proposed Action Alternative</th><th colspan="2">No Action Alternative</th></tr>
<tr><th>Utility Project</th><th>Non-federal Connected Action South Project</th><th>Utilities Accessed by Alternative Means</th><th>Non-federal Connected Action South Project</th></tr>
<tr><td>▪ The roundtail chub, bluehead sucker, and flannelmouth sucker are listed by the State of Utah and the BLM as sensitive species.
Impacts
No direct impacts on critical habitat are anticipated. However, sedimentation as a result of the Utility Project may affect Colorado River fish, due to slight increases in sedimentation and erosion. It is unlikely that these unquantifiable amounts of sediment would adversely affect fish or habitats because of the minimal increase in sediment load on the White River.</td><td>from inadvertent spills as a result of the South Project may affect Colorado River fish, due to increases in sedimentation and erosion.</td><td></td><td></td></tr>
<tr><th colspan="4">Cultural Resources</th></tr>
<tr><td>Inventory
▪ 13 sites would potentially be subject to direct impact from construction activities
▪ Numerous known sites would potentially be subject to indirect impact
▪ Significant resources include the White River Stage Station and one prehistoric rock shelter
▪ Highly sensitive resources (Traditional Cultural Properties [TCPs] and General Land Office [GLO] roads/trails) have the potential to be intersected by the Utility Project
Impacts
Impacts on cultural resources could include:
▪ Direct and permanent ground disturbance during construction
▪ Direct and indirect long-term visual, atmospheric, and auditory intrusions that could compromise aspects of site integrity
▪ Direct and indirect permanent disturbances of cultural resources due to changes in public accessibility
Potential direct and indirect impacts on cultural resources would need to be mitigated to the satisfaction of the federal agency. Mitigation measures may include: data recovery studies, preparation of formal documentation, other non-</td><td>Inventory
▪ 76 sites would potentially be subject to impacts
▪ Numerous known sites would potentially be subject to indirect impact
▪ Significant resources include two historic mining sites
▪ Highly sensitive resources (TCPs and GLO roads/ trails) have the potential to be intersected by the South Project
Impacts
Impacts on cultural resources could include:
▪ Direct and indirect permanent disturbances due to changes in public accessibility
▪ Direct and indirect long-term visual, atmospheric, and auditory intrusions that could compromise aspects of site integrity
Potential indirect impacts on cultural resources would need to be mitigated to the satisfaction of the SHPO. Mitigation measures may include: data recovery studies, preparation of formal documentation, other non-site specific measures, and modification of the South Project.</td><td>Inventory
Use of existing roads for trucking in utilities would not directly affect cultural resources.
Impacts
Potential impacts on cultural resources would be avoided through the No Action Alternative.</td><td>Inventory
Same as those previously described for South Project Proposed Action.
Impacts
Types of impacts on cultural resources are the same as those previously described for South Project
Potential impacts on cultural resources would not be minimized through the No Action Alternative. The South Project area would still be developed to full build out. Appropriate mitigation measures (if required) would be determined through consultation with SHPO during UDOGM mine plan review process.</td></tr>
</table>

Table 2-8
Summary Comparison of the Proposed Action and No Action Alternatives

Proposed Action Alternative		No Action Alternative	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
site specific measures, and modification of the Utility Project alignment.			
Paleontological Resources			
Inventory ▪ Crosses 369 acres of very high potential fossil yield classification (PFYC) (5) formations, and 359 acres of moderate (PFYC 3) formations ▪ Fossil plants, insects, turtles, and mammals have been recorded in utility corridor **Impacts** Loss of a paleontological resource due to ground disturbing activities, or from increased erosion exposing paleontological resources. With best management practices and applicant committed mitigation measures, the impacts to paleontological resources would be minor.	**Inventory** Affects 1,066 acres of very high PFYC (5) formations, and 5,157 acres of moderate (PFYC 3) formations. No fossils previously recorded. **Impacts** Indirect long term impacts to paleontological resources would occur from mining operations. The impacts could be the loss of a paleontological resource due to ground disturbing activities, or through increased erosion that exposes a paleontological resource.	**Inventory** Use of existing roads for trucking in utilities would not directly affect paleo resources. **Impacts** Impacts to paleo resources would be avoided due to the use of existing roads.	**Inventory** Same as previously described for South Project Proposed Action. **Impacts** Indirect long term impacts to paleontological resources would occur from mining operations. The impacts could be the loss of a paleontological resource due to ground disturbing activities, or through increased erosion that exposes a paleontological resource.
Visual Resources			
Inventory ▪ Scenery: Crosses Class A (White River), Class B, and Class C landscapes ▪ Viewing Locations: Potential views from Key Observation Points (KOPs) #1 – Atchee Road, #5 – Highway 45/Dragon Road, #6 – Goblin City, and #7 – Fidlar/Little Bonanza, #8 – Kennedy Wash, and #9 – Duck Rock. ▪ VRM Classes: Crosses VRM Class II (adjacent to White River), Class III, and Class IV lands **Impacts** Scenery: The Utility Project would locally dominate scenic quality except where existing linear facilities are paralleled, including the crossing of the White River (Class A), where the Utility Project would visually influence approximately 7,150 acres. Viewing Locations: The Utility Project would influence views from KOP #5 – Highway 45/Dragon Road (located approximately 0.5 mile	**Inventory** ▪ Scenery: Located in Class B landscapes ▪ Viewing Locations: Potential views from KOPs #1 – Atchee Road, #5 – Highway 45/Dragon Road, #6 – Goblin City, #7 – Fidlar/Little Bonanza, and #8 – Kennedy Wash. **Impacts** Scenery: The South Project would locally dominate scenic quality adjacent to the facility due to changes in the existing landscape's form, line, color, and texture. Viewing Locations: The rolling terrain adjacent to the South Project screens views from most of the identified KOPs except for views from KOPs #1 – Atchee Road and #5 – Highway 45/Dragon Road where views of the South Project would influence these viewsheds.	**Inventory** Same as Utility Project. **Impacts** Impacts on visual resources would be minimized through the No Action Alternative. Additional effects including additional vehicle traffic from trucking in utilities, trucking product out, local utility re-location, and other alternative means would influence but not contrast with existing values to the extent of the Utility Project alternative.	**Inventory** Same as previously described for South Project Proposed Action. **Impacts** Impacts on visual resources associated with the South Project would be similar to those previously described for the South Project under the Proposed Action. If additional structures are proposed for the South Project, their visibility from adjacent lands would incrementally increase impacts on visual resources.

Table 2-8
Summary Comparison of the Proposed Action and No Action Alternatives

Proposed Action Alternative		No Action Alternative	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
away) but due to screening of these views, the Utility Project would instead be viewed from approximately 1 mile away. The Project would influence views from KOP #9 – Duck Rock where the White River is crossed adjacent to an existing above-ground pipeline and transmission line. Based on topographic screening and the viewing distance from other KOPs, views would be minimally influenced by the Utility Project. VRM Classes: The Utility Project would be compliant with VRM Class objectives crossed after application of mitigation.			
Land and Access			
Inventory Within the 2-mile-wide study corridor, there are: ▪ 22.0 acres of residential, ▪ 91.9 acres of industrial use, ▪ 180.0 acres of oil/gas extraction, ▪ 13.4 acres of extraction mining tailings pond, ▪ 13.2 acres of public/quasi-public use, ▪ 1,144.5 acres of the BPP, and ▪ 52,475.9 acres of BLM-administered grazing allotments. **Impacts** The Utility Project may impact 0.3 acre of industrial use, 1.3 acres of oil/gas extraction, 0.5 acre of extraction mining tailings pond, 13.6 acres of the BPP, and 769.1 acres of BLM-administrated grazing allotments (Bonanza, Coyote Wash, Hell's Hole, Watson-BC, and White River Bottoms). In general, direct effects of the Utility Project on the uses listed are expected to be minimal because the Utility Project is compatible with the uses crossed. There is potential for the Project to limit access to existing development for a short term during construction of the Utility Project. Potential direct effect of interfering with maintenance of existing oil and gas wells; avoidance of well pads would mitigate impact.	**Inventory** Undeveloped private and state land; zoned Mining and Grazing- MG1 in Uintah County General Plan. **Impacts** Mining operations on private and state land would indirectly impact land uses on BLM administered lands. Indirect effects would include increased traffic, fugitive dust.	**Inventory** Similar to Utility Project. **Impacts** Use of existing roads for trucking in utilities would not directly affect land use resources. Indirect effect of increased truck traffic and fugitive dust.	**Inventory** Same as previously described for South Project Proposed Action. **Impacts** Indirect impacts would occur as previously discussed for the South Project under the Proposed Action.

Table 2-8 Summary Comparison of the Proposed Action and No Action Alternatives			
Proposed Action Alternative		**No Action Alternative**	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
Potential indirect effect of corrosion on existing pipelines as a result of installation of powerlines in a parallel location; mitigation of cathodic protection on pipelines would reduce this impact.			
Travel Management			
Inventory State Route 45 runs north-south through the 2-mile-wide study corridor connecting to U.S. 40. Other local roads are present in the 2-mile-wide study corridor (e.g., Stanton Road, Dragon Road, and Rabbit Mountain Road, etc.). **Impacts** Direct effects due to proposed improvements on Dragon Road and other access roads include minor realignment, widening, and paving. Indirect effects of increased traffic on local roads during construction.	**Inventory** Crosses county roads, exiting local roads and ties in to Dragon Road. **Impacts** Mining operations on private and state land would not directly impact travel management on BLM administered lands. Indirect effects would include increased traffic on SR 45 and fugitive dust.	**Inventory** Same as Utility Project. **Impacts** Impacts to travel management may increase due increased truck traffic delivering product to market and fugitive dust. This Class B county road (dirt/gravel) as it now exists could disintegrate and deteriorate under the increased level of truck traffic.	**Inventory** Same as previously described for South Project Proposed Action. **Impacts** Impacts to travel management would increase due increased truck traffic on SR 45 and Dragon Road from employees travel and delivery of product to market. Additional indirect impacts would include increased fugitive dust and increased wear on the existing roads from heavy truck traffic. No impacts are anticipated from the other alternative means of developing the South Project (listed in Section 2.3.1.1).
Recreation			
Inventory Crosses off-highway vehicle (OHV) use areas managed by the Vernal Field Office as limited (existing roads and trails) throughout the 2-mile-wide study corridor. The Duck Rock Recreation Site (information kiosk and overlook to the White River) is approximately 140 feet from the Utility Project alternative. **Impacts** Short-term effects on OHV users using existing roads and trails during construction could include restricted access or temporary closure of roads, trails, increased traffic from construction vehicles, and equipment. Increased dust/vehicle emissions could also occur. No direct impacts are anticipated for the Duck Rock recreation site.	**Inventory** No known recreation resources on South Project site. **Impacts** Mining operations on private and state land would not directly impact recreation uses on BLM administered lands. Indirect effects would include increased traffic, fugitive dust.	**Inventory** Same as Utility Project. **Impacts** Impacts to recreation resources would be avoided due to the use of existing roads. Indirect effects would include increased traffic, fugitive dust.	**Inventory** Same as previously described for South Project Proposed Action. **Impacts** Same as previously described for South Project under the Proposed Action.

Table 2-8
Summary Comparison of the Proposed Action and No Action Alternatives

Proposed Action Alternative		No Action Alternative	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
Social and Economic Conditions and Environmental Justice			
Inventory Located in rural area in Uintah County in Eastern Utah. Social and Economic Conditions in Duchesne, Uintah and Rio Blanco County may be affected. Very small population with environmental justice characteristics occur in the area near the Utility Project. **Impacts** Construction of the Utility Project is expected to realize temporary increase in employment of 85-110 workers. Because these workers are likely to relocate to one of the communities closest to the project site there will be a minor, temporary increase in population. The increase in population is expected to have minor impacts on housing and public services. The Utility Project is not anticipated to affect environmental justice populations disproportionately.	**Inventory** Located in rural area in Uintah County in Eastern Utah. Social and Economic Conditions in Duchesne, Uintah, and Rio Blanco County may be affected. Very small population with environmental justice characteristics occur in the area near the South Project. **Impacts** The South Project is expected to generate a significant increase in employment during construction (2,500 workers) and operation (2,000 workers). This will result in a moderate impact to employment, income, population, housing, public financing, and public services in the region of influence (ROI). The rapid increase in employment and population could impact quality of life and potentially cause large social disruptions in communities most impacted by these changes. The South Project is not anticipated to affect environmental justice populations disproportionately.	**Inventory** Same as Utility Project. **Impacts** The social and economic impacts of the Utility Project under the No Action Alternative would be similar to those described under the Proposed Action, as the temporary pipeline and transmission line workers would be replaced with workers supporting the alternative means of obtaining utilities needed, including possible construction of pipelines in another location or temporary truck drivers. Evaluation of the environmental justice implications of the No Action Alternative would be similar to those described under the Proposed Action.	**Inventory** Same as previously described for South Project Proposed Action. **Impacts** The social and economic impacts of the South Project under the No Action Alternative would be similar to those described under the South Project Proposed Action, as the temporary pipeline and transmission line workers would with workers supporting the alternative means of obtaining utilities needed including possible construction of pipelines in another location or temporary truck drivers. Evaluation of the environmental justice implications for the No Action Alternative would be similar to those previously described.
Public Health and Safety - Hazardous Materials and Waste			
Inventory Hazardous material usage, storage, and disposal are anticipated during construction of the utility corridors. The level of hazardous waste generation is expected to be minimal, limited to the content of adhesives, or solid metal waste. **Impacts** No materials subject to reporting under the Superfund Amendments and Reauthorization Act Title III in an amount equal to or greater than 10,000 pounds annually would be used, produced, stored, transported, or disposed of during construction. No extremely hazardous substances	**Inventory** Hazardous material usage, storage, and disposal are anticipated during construction of the utility corridors and the South Project facility. The level of hazardous waste generation is expected to be minimal during construction, limited to the content of adhesives, or solid metal waste. Operation of the South Project may also utilize hazardous materials, and generate hazardous wastes. Specific types and quantities would be known after completion of project design, and will be disclosed as required by federal and state regulation. These uses will be subject to federal	**Inventory** There would be no hazardous materials used and no wastes generated as a result of the corridor construction under the No Action Alternative. However, hazardous material may result from alternative means of obtaining utilities. **Impacts** The nature and type of hazardous materials associated with the project would be the same as those discussed under the Utility Project. The proposed improvements to Dragon Road under the Proposed Action	**Inventory** Operation of the South Project may utilize hazardous materials and generate hazardous wastes. In addition, hazardous material may result from alternative means of obtaining utilities. Specific types and quantities would be known after completion of project design, and will be disclosed as required by federal and state regulation. These uses will be subject to federal and state compliance requirements for safe use and transport, and to mitigate releases.

Table 2-8
Summary Comparison of the Proposed Action and No Action Alternatives

Proposed Action Alternative		No Action Alternative	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
in threshold planning quantities, as defined in 40 CFR Part 355, would be used. Hazardous and Universal waste disposal contractors are available in the vicinity. No EPA ID number will be required for the construction phase.	and state compliance requirements for safe use and transport, and to mitigate releases. **Impacts** The South Project will implement an Occupational Safety and Hazard Administration (OSHA) HAZCOM program, Emergency Response and Spill plans to inform workers and protect the environment during hazardous material usage. The South Project will obtain an EPA waste generator identification number if hazardous wastes are generated for off-site shipment, and will register the facility annually with UDEQ, as a generator of hazardous wastes. South Project employees will use correct procedures for recordkeeping, storage, containers, labels, and manifests, development of hazardous waste profiles, transportation, and disposal in licensed facilities. South Project employees handling hazardous and universal waste and materials will receive specific training on these topics.	will not occur under the No Action Alternative. This Class B county road (dirt/gravel) as it now exists could disintegrate and deteriorate under the increased level of truck traffic.	It is estimated that traffic on Dragon Road to convey materials (including waste and/or hazardous materials) would comprise up to 8 tanker truck trips per hour under the No Action Alternative. **Impacts** The South Project will implement an OSHA HAZCOM program, Emergency Response, and Spill plans to inform workers and protect the environment during hazardous material usage. The nature and type of hazardous materials associated with the project would be the same as those discussed under the South Project. The proposed improvements to Dragon Road under the Proposed Action will not occur under the No Action Alternative. This Class B county road (dirt/gravel) as it now exists could disintegrate under the increased level of truck traffic. The South Project will obtain an EPA Identification number if hazardous wastes are generated for off-site shipment, and will register the facility annually with UDEQ as a generator of hazardous wastes. South Project employees will use correct procedures for recordkeeping, storage, containers, labels, and manifests, development of hazardous waste profiles, transportation and disposal in licensed facilities. South Project employees handling hazardous and universal waste and materials will receive specific training on these topics.

Table 2-8 Summary Comparison of the Proposed Action and No Action Alternatives			
Proposed Action Alternative		**No Action Alternative**	
Utility Project	**Non-federal Connected Action South Project**	**Utilities Accessed by Alternative Means**	**Non-federal Connected Action South Project**
Public Health and Safety - Solid Waste			
Inventory Solid and sanitary waste and used oil generation during construction. **Impacts** Solid and sanitary waste and used oil will be handled, stored and disposed of in accordance with local, state and federal laws, ordinances, and regulations and in such a manner to prevent any negative impact air quality, soils, water quality, vegetation, or wildlife. Local solid and sanitary waste and used oil handling and disposal contractors are available in the Utility Corridor vicinity.	**Inventory** Solid and sanitary waste and used oil generation and disposal. **Impacts** Solid and sanitary waste and used oil will be handled, stored, and disposed of in accordance with local, state, and federal laws, ordinances, and regulations and in such a manner to prevent any negative impact air quality, soils, water quality, vegetation, or wildlife. Local solid and sanitary waste and used oil handling and disposal contractors are available in the Utility Corridor vicinity.	**Inventory** Solid and sanitary waste and used oil generation during construction. **Impacts** This Class B county road (dirt/gravel) as it now exists could disintegrate and deteriorate under the increased level of truck traffic.	**Inventory** Solid and sanitary waste and used oil generation and disposal. **Impacts** This Class B county road (dirt/gravel) as it now exists could disintegrate under the increased level of truck traffic. Solid and sanitary waste and used oil will be handled, stored, and disposed of in accordance with local, state, and federal laws, ordinances, and regulations and in such a manner to prevent any negative impact air quality, soils, water quality, vegetation, or wildlife. Local solid and sanitary waste and used oil handling and disposal contractors are available in the South Project vicinity.

Chapter 3
Affected Environment

CHAPTER 3 – AFFECTED ENVIRONMENT

3.1 Introduction

In accordance with NEPA regulations codified at 40 CFR 1502.15, the following resource sections present a summary of the existing condition of the human and natural environment in the areas that could be affected by the Proposed Action or the No Action Alternative. This information served as a baseline from which the impacts anticipated to result from the Proposed Action or No Action Alternative were assessed.

The area of the affected environment for individual resources was assessed based on the area of potential direct and indirect environmental impacts. For most resources, the study area for resource data inventory and analysis generally includes a 2-mile-wide area comprising one mile in each direction from the proposed right-of-way for the utility corridors, the South Project, and any new access roads or existing roads that would require improvement. Resource analysis that incorporates a larger (e.g., regional) study area, such as air quality and social and economic analysis, is identified as appropriate in the particular resource section.

3.1.1 General Setting

The Utility Project study area is approximately 59,380 acres and located in the Uinta Basin Floor (Uinta Basin) subregion of the Colorado Plateau ecoregion (Omernik 1987). Topography consists of a broad northwest sloping plateau, incised by several deep canyons. Elevations in the Utility Project study area range from 4,800 feet (1,463 meters) above mean sea level (ft/m amsl) along the White River to nearly 5,900 ft (1,793 m) amsl on the plateau where the proposed utilities enter the South Project property owned by the Applicant.

The climate in the area is semiarid, with hot, dry summers and occasional intense thunderstorms. Winters are cold, although snow accumulation is infrequent and sparse. According to the Western Regional Climate Center (WRCC), ambient conditions at the Bonanza meteorological monitoring station (number 420802) between July 1948 and February 1993 consist of a mean annual maximum temperature of 62.6 degrees Fahrenheit (deg. F) and mean annual minimum temperature of 33.5 deg. F. July tends to be the warmest month, averaging 92.3 deg. F, while January is the coldest at 30.4 deg. F. A record high temperature for the reporting period of 106 deg. F was recorded in July 1981 and again in August 1983; while a record low of -32 deg. F was recorded in December 1990 (WRCC 2012).

Average annual precipitation totals 8.87 inches, with October being the wettest month. Precipitation occurs in all months, although only May and October average more than an inch (1.03 and 1.05 inches, respectively). The wettest month on record during the reporting period was July 1985 with 3.90 inches, and the one-day maximum on record was 1.88 inches reported on June 11, 1970. There are numerous months on record when no precipitation was reported.

The Uinta Basin is an inter-mountain fault curving south and running roughly parallel to the Uinta Mountains. The underlying geology includes unconsolidated Quaternary alluvium; the Uinta Formation; the Parachute Creek Member of the Green River Formation; the Douglas Creek Member of the Green River Formation; and the Renegade Tongue of the Wasatch Formation.

The Parachute Creek Member contains the oil shale deposits (the focus of the South Project). The contact between the bottom of the Uinta Formation and the top of the Parachute Creek Member dips to the northwest at approximately 2 degrees (Dynamac 2002). The Mahogany Marker, which is the richest oil shale zone and marks the transition from Quaternary- to Tertiary-aged beds, is the uppermost unit of the Douglas Creek Member.

The vegetation in the Utility Project study area is dominated by two shale badland cover types–Inter-Mountain Basins Shale Badland and White Shale Badland–interspersed in the broader Inter-Mountain Basins Shale Badlands. Colorado Plateau Mixed Low Sagebrush Shrubland dominates the highest elevations in the south portion of the Utility Project study area, and transitions to Inter-Mountain Basins Big Sagebrush Shrubland north of the White River.

3.2 Resources Analyzed

This section describes the existing condition and trend of issue-related elements of the present environment in the Utility Project study area. This information serves as a baseline against which to measure the potential effects of implementing the Proposed Action or selecting the No Action Alternative. The particular resources analyzed were selected based on federal regulatory requirements and policies as well as issues derived from comments provided by the BLM and cooperating agencies and the public during scoping. Resource concerns and issues raised by the public and agencies during scoping are presented in Table 1-1.

Generally, each resource discussion is organized as follows:

- **Regulatory Framework.** A description of the resource and the laws, regulations, and policies related or relevant to management or analysis of the resource.
- **Issues Identified for Analysis.** A description of the issues identified in agency and public scoping for each resource that are analyzed for the Project.
- **Affected Environment.** Description of present status (location, nature, condition, size, etc.) of each resource.

3.2.1 Greenhouse Gases

A small portion of the earth's atmosphere consists of Greenhouse Gases (GHGs) (so-called because the earth's atmosphere is like the glass panes of a greenhouse), which have the capability to absorb reflected infrared radiation. In turn, this causes additional heat to be retained in the lower atmosphere, which can affect weather patterns and climate on regional and global scales. Certain atmospheric gases that act as greenhouse gases are both naturally occurring and are emitted by human activities, including water vapor, carbon dioxide, methane, and nitrous oxide. Other GHG constituents are only created by human activities, such as hydrofluorocarbons (e.g., refrigerants) and sulfur hexafluoride (SF_6); the latter an industrial chemical often useful for its electrical insulating properties.

One property that is in common among GHGs is a relative chemical stability and persistence in the atmosphere. This allows the gases to accumulate and become well-distributed in the atmosphere before eventually being decomposed by physical or chemical mechanisms. This tendency to be stable and well-distributed spreads the greenhouse gas effects over a larger region (i.e., beyond the initial location of the emissions). Consequently, the potential climate effects attributable to GHGs are evaluated over large regional or global scales rather than within a given airshed.

3.2.1.1 Regulatory Framework for Greenhouse Gases

In the U.S., the EPA has designated as an "air pollutant" the aggregate mix of six different greenhouse gases–carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and SF_6 (EPA 2009). These six gases tend to remain in the atmosphere for decades to centuries where they become well-mixed globally in the atmosphere. The EPA began regulating these greenhouse gases after finding that current and projected atmospheric concentrations of

GHGs are reasonably anticipated to endanger the public health and welfare of current and future generations.

As an initial action, the EPA established a program in October 2009 for Mandatory Reporting of Greenhouse Gases (40 CFR Part 98). This extensive program requires monitoring and annual reporting of GHG emissions for facilities in over 40 source categories, if their annual emissions exceed 25,000 metric tons of GHG (as carbon dioxide equivalent units [CO_{2eq}]). As part of a later rulemaking, Subpart W of 40 CFR Part 98 was promulgated in November 2010 and this expanded the mandatory reporting requirements to petroleum and natural gas extraction operations. From a NEPA perspective, EPA guidance indicates that potential emissions of 25,000 metric tons CO_{2eq} per year represent a reference point that merits quantitative evaluation and disclosure of GHG emissions (CEQ 2014). It is anticipated that the mining operations of the South Project complex will be subject to this subpart, and also to Subpart C of 40 CFR Part 98 that provides for reporting of GHG emissions from stationary fuel combustion sources.

Subsequently, the EPA promulgated the GHG "Tailoring Rule" to incorporate the regulation of GHGs into the Prevention of Significant Deterioration (PSD) and Title V permitting programs for major sources (EPA 2010), which was codified in several sections of 40 CFR Parts 51, 52, 70, and 71 (40 CFR Sections 51.166, 52.21, 52.22, 70.2, 70.12, 71.2, and 71.13). This rule also imposed the requirement for new major sources of GHG to implement, through the new source review process, BACT to reduce GHG emissions. In June 2014, the Tailoring Rule provisions regarding GHG major source permitting were remanded by the U.S. Supreme Court (U.S. Supreme Court 2014), which functionally rescinded the EPA's authority to issue permits to facilities that were major sources only of GHGs. The EPA is currently addressing the next steps to be implemented regarding permitting of major GHG sources, and how to address previously permitted sources under the 2010 Tailoring Rule (EPA 2014a, 2014b). The provisions requiring BACT for GHG sources remain in force.

The EPA also continued to consider regulatory approaches and specific requirements pertaining to GHG. The agency has drafted New Source Performance Standards (NSPS) for GHGs from coal-fired power plants and oil refineries, which have attracted substantial comment and debate. To date, there are no federal or state standards that impose specific GHG emission or operational limits for oil and gas extraction industries. In the state of Utah or on tribal lands there are no established goals for reductions in GHG emissions, or regulatory requirements for such reductions.

3.2.1.1.1 Influence of Greenhouse Gas Emissions on Climate Change

During the past century, humans have substantially added to the amount of greenhouse gases in the atmosphere, primarily by burning fossil fuels. The added gases, the most prevalent being carbon dioxide and methane, may enhance the natural greenhouse effect, and there is evidence that this has contributed to the increase in global average temperature and related climate changes. Climate change refers to any significant change in measures of climate (such as temperature, precipitation or wind) lasting for an extended period (decades or longer). It is not practical to assign climate change impacts to a specific project or region, since the ultimate effects result from the accumulation of incremental emissions changes on a global scale.

As described in the third U.S. National Climate Assessment Highlights report, the average temperature of the Earth's surface has reportedly increased by about 1.2 to 1.4 deg. F since 1900 (http://nca2014.globalchange.gov/report). This assessment also states that the Southwest U.S. is "…the hottest and driest region in the U.S., where the availability of water has defined its landscapes, history of human settlement, and modern economy." (U.S. White House 2014). Warming trends (measured as increases in ambient surface temperatures) in the Southwest during the past thirty years is among the most rapid in the U.S., significantly more than the global average in some areas. Declines in spring snowpack and Colorado River flow have been linked to this warming trend.

3.2.1.2 Issues Identified for Analysis

Issues identified related to greenhouse gas emissions identified in agency and public scoping include:

- Potential for impacts from the Utility Project and South Project on climate change.

3.2.1.3 Affected Environment

The assembly of GHG emission inventory data pursuant to the Mandatory Reporting Rule of 2009 has allowed the first quantitative measurement of the magnitude of emissions at the individual sector and facility level. Using these data, it becomes possible to understand the actual distribution and magnitude of GHG sources nationwide. One objective in assembling this information may be to identify reasonable approaches to limit or control emissions of GHG and achieve emission reduction targets. Estimated GHG emissions can also serve as a reasonable proxy for climate change impacts, supporting a reasoned choice among proposed actions and alternatives, and improving the scientific integrity of the analysis (CEQ 2014).

In recent years, review of data collected under this program has indicated a general trend of declining GHG emissions nationwide, and across most sectors. It has been reported that for the U.S., GHG emissions in 2013 were 9 percent below the total emissions in 2005 in spite of a reported increase from 2012 to 2013 of about 2 percent in national GHG emissions (EPA 2015a). On a short term basis, changes in emissions are the result of increased electricity generation, increase in travel miles by on-road vehicles, an increase in industrial production, and also normal differences in prevailing weather. However, the longer-term data for GHG emissions are more indicative of the affected environment, and these recent trends indicate a reduction in national GHG emissions since the recent peak years of 2005 to 2007.

From 2010 (the first year of annual reporting) through 2013, the reporting facilities in Uintah County were primarily natural gas compressor stations and the Bonanza Power Plant. These facilities reported a combined total 2013 GHG emissions of 4.26 million metric tons of CO_2e. Smaller sources comprising the disperse facilities of the petroleum and natural gas extraction operations did not have sufficient emission levels to require individual reporting under the 2009 Mandatory Reporting Rule. Therefore, it should be recognized that the reported annual values presented here will generally underestimate the total county-wide GHG emissions (e.g., vehicles are not considered). The overall GHG data for various economic sectors in the U.S. are tabulated along with the reported totals for Uintah County in Table 3-1 (EPA 2015b).

Table 3-1
Reported GHG Emissions for U.S. Industrial Sectors and Uintah County

Calendar Year	2010	2011	2012	2013
Sector[1] or County	Annual Emissions[2] (106 Metric Tons CO_{2eq}/yr)			
Energy - Use and Production	5,855	5,703	5,482	5,637
Industrial Process/Product Use	354	372	361	359
Agriculture	525	522	523	516
Land Use/Forestry/Biogenic	30	36	40	23
Waste Disposal	145	145	139	138
Uintah County[3]	3.62	3.55	3.87	4.26

NOTES:
[1]Aggregated sector emissions for the U.S., obtained from EPA April 2015, Table 2-3
[2]Annual emissions are as reported to under the 40 CFR Part 98 Mandatory Reporting of GHG program. This reporting excludes facilities and sources with less than 25,000 metric tons emissions per year.
[3]Uintah County reported GHG emissions from EPA Facility Level Information on Green House Gases Tool (FLIGHT) (EPA 2015b)

3.2.2 Air Quality

The air quality resource in the Uinta Basin and surrounding region could potentially be affected by construction and operation of the Utility Project and South Project or implementation of the No Action Alternative. The construction of the Utility Project, and construction and operation of the South Project (a non-federal connected action) have different air emission characteristics and timeframes to be considered.

3.2.2.1 Regulatory Framework

Several regulatory programs promulgated under the federal Clean Air Act of 1970 (CAA) and subsequent amendments will apply to the Utility Project and the South Project. Title 40 CFR, Parts 50 through 97, implements the statutory provisions in the CAA and subsequent amendments. The EPA delegates the authority to administer and enforce many of these regulations to individual states and agencies. In such cases, the delegated state agency may write equivalent or more stringent requirements into their own rules, or they can adopt the federal requirements by reference. Such delegation has not been obtained by the tribal jurisdiction in the area of the Utility Project and South Project. Therefore, air permitting responsibility remains with the EPA Region 8 office, pursuant to 40 CFR Part 71.

The CAA specifically addresses seven "criteria pollutants" that have been established as the prime indicators of air quality in a locale or over larger regions. To assess the direct and indirect effects for a specific project, these pollutants are of primary importance:

- Inhalable Particulate Matter (PM_{10}) - regulations have been established under the CAA for particulates less than or equal to 10 microns in size. Sources of PM_{10} generally include:
    - Stationary point sources, such as fuel combustion and industrial processes;
    - Fugitive sources, such as roadway dust from paved and unpaved roads;
    - Wind erosion from open land; and
    - Operation of vehicles and engine-driven equipment, such as trucks and construction equipment.

- Fine Particulate Matter ($PM_{2.5}$) - regulations have been more recently established for particulates less than or equal to 2.5 microns in size. Sources of $PM_{2.5}$ generally include:
  - Stationary and mobile source fuel combustion processes; and
  - A portion of fugitive dust sources, including construction area emissions.
- Ozone (O_3) not emitted directly into the atmosphere from emission sources. Rather, it is produced through photo-chemical (light catalyzed) reactions in the atmosphere involving hydrocarbons and nitrogen oxides (NO_x), known generically as "ozone precursors."
- Carbon Monoxide (CO) is an odorless, invisible gas usually formed as the result of incomplete combustion of organic substances. The primary sources of CO are motor vehicles and stationary combustion sources. Secondary sources include aircraft emissions and agricultural and/or forest burning. CO is more of a localized pollution issue, due to its ability to react in the atmosphere under normal conditions.
- Sulfur Dioxide (SO_2) is formed during the combustion of sulfur-bearing materials, such as the sulfur in metal ores or fossil fuels.
- Nitrogen Dioxide (NO_2) and nitrogen oxide (NO) are the two prevalent forms of NO_X that are emitted as air pollutants. Both forms of NO_X are generated by combustion processes, and NO can be converted to NO_2 by atmospheric oxidation reactions. The National Ambient Air Quality Standards (NAAQS) is specific to the NO_2 species although total NO_X is usually quantified for emission sources.
- Lead – In the past, the main sources in the western states of lead emissions were vehicles fueled with leaded gasoline and lead smelters. Because no lead smelters and very few leaded-fuel vehicles remain in Utah, levels of atmospheric lead have been essentially non-detectable in most areas and are historically well below the NAAQS. Air emissions of lead are expected to be negligible for the Utility Project and South Project, in comparison to other criteria pollutants.

Atmospheric visibility in pristine parks and wilderness areas has become a key air quality parameter in the western U.S., and can be affected by numerous factors in distant urbanized or industrialized areas. Certain air pollutants, such as nitrates and sulfates, create a long-lasting visible haze that can be caused by the interaction of pollutant emissions and photochemical reactions. Windblown dust from disturbed areas, such as construction sites and agricultural areas can cause impaired visibility over a shorter timeframe. Different particles and chemical species have differing "extinction efficiencies", that is, the ability to block and obscure transmission of light. For larger new sources, evaluation of potential visibility effects in parks and wilderness areas constituting "Class I" areas is a requirement of air quality permitting.

3.2.2.2 Issues Identified for Analysis

Issues identified related to air quality identified in agency and public scoping include:

- Potential for impacts to air quality from the South Project facility from construction and oil-shale mining and processing in the Uintah Basin.

3.2.2.2.1 National Ambient Air Quality Standards

Ambient air quality in a given locale may be characterized by comparison to recognized standards established by either federal or state agencies. The NAAQS are the principal parameters for evaluating air quality. The EPA has promulgated NAAQS for seven different criteria pollutants that apply throughout the U.S.: sulfur oxides, measured as SO_2, CO, ozone (O_3), NO_2, lead (Pb); and two size categories for particulate matter (PM_{10} and $PM_{2.5}$) in 40 CFR Part 50.

Primary and secondary standards have been promulgated for most criteria pollutants. Primary standards are threshold levels that protect public health within an adequate margin of safety. The secondary standards are intended as thresholds that will protect public welfare, including agricultural and natural resources, from any known or anticipated adverse air quality related effects. Individual states may issue ambient standards more stringent than the NAAQS; however, Utah has adopted the federal NAAQS as the relevant ambient air standards for the state. Table 3-2 lists the values of each NAAQS for applicable averaging times. In the context of NEPA, a NAAQS defines an appropriate threshold of air quality for those pollutants beyond which adverse change would cause significant degradation of the air quality resource.

Table 3-2
NAAQS and PSD Air Pollution Increments

Criteria Pollutant	Concentration	Averaging Times [1]	PSD Class I Increments	PSD Class II Increments
Carbon Monoxide	9 ppm (10,000 µg /m^3) [2]	8-hour	None	None
	35 ppm (40,000 µg/m^3) [2]	1-hour	None	None
Lead	0.15 µg/m^3	Rolling 3-month Average	None	None
NO_2	0.053 ppm (100 µg /m^3)	Annual (Arithmetic Mean)	2.5	25
	100 ppb (188 µg /m^3) [3]	1-hour	None	None
Respirable Particulate Matter (PM_{10})	150 µg/m^3 [3] [4]	24-hour	8	30
	–	Annual	4	17
Fine Particulate Matter ($PM_{2.5}$)	35 µg/m^3 [3] [5]	24-hour	2	9
	12.0 µg/m^3 [3] [6]	Annual (Arithmetic Mean)	1	4
Ozone	75 ppb (2008 std) [7]	8-hour	None	None
SO_2		Annual (Arithmetic Mean)		
		24-hour		
	0.5 ppm (1,300 µg/m^3) [8]	3-hour (Secondary)		
	75 ppb (196 µg/m^3) [9]	1-hour (Primary)	None	None

NOTES:
[1]Averaging periods for a numerical standard are qualified in a variety of ways, e.g., 3-year average of 98th percentile, 3-year average of the fourth-highest daily maximum, not to be exceeded more than once per year, etc. Complete details of averaging period for each pollutant are provided at 40 CFR Part 50.
[2]Not to be exceeded more than once per year
[3]98th percentile, averaged over three years
[4]Not to be exceeded more than once per year on average over three years.
[5]98th percentile, averaged over three years
[6]Annual mean, averaged over three years
[7]Annual fourth-highest daily maximum 8-hour concentration, averaged over three years
[8]Not to be exceeded more than once per year
[9]99th percentile of 1-hour daily maximum concentrations, averaged over three years
µg/m^3 = micrograms per cubic meter
ppb = parts per billion
ppm = parts per million

Based on the adopted air quality standards, the CAA further requires that states classify air basins (or portions thereof) as either *attainment* or *non-attainment* with respect to the criteria pollutants:

- **Attainment Area.** A geographic or politically delineated air basin meeting the NAAQS for criteria pollutants.
- **Non-Attainment Area.** A geographic or politically delineated air basin *not* meeting the NAAQS for one or more pollutants. Non-attainment areas or states are required to formulate and submit State Implementation Plans (SIP) to the EPA that outline those measures the state will implement to attain and maintain the NAAQS.
- **Unclassifiable.** Areas are usually designated as *unclassifiable* due to lack of sufficient monitoring data. These areas are conservatively managed as though being in attainment, so as to maintain or improve existing air quality.
- **Maintenance Area.** This means that the area was previously a non-attainment area, and that it has been demonstrated with recent data to have achieved attainment of the NAAQS.

3.2.2.2.2 Prevention of Significant Deterioration Permitting

With the 1977 Amendments to the CAA, Congress enacted the PSD program in CAA § 160-169, to prevent the significant deterioration of air quality in areas where air quality is better than the NAAQS levels (e.g., in attainment and unclassifiable areas). The CAA established the concept of PSD increment as the maximum allowable increase of a pollutant's concentration in ambient air. Congress also established the original PSD increments for SO_2 and particulate matter (then measured as total suspended particulate or TSP). EPA has since promulgated or revised PSD increments for PM_{10}, $PM_{2.5}$, SO_2, and NO_2. A PSD increment defines an appropriate threshold of air quality for those pollutants beyond which adverse change would cause significant degradation of the air quality resource. These increments for each criteria pollutant are listed in Table 3-2.

The PSD increment consumption in a given locale for individual pollutants can be a key parameter for evaluating air quality in a specified region or airshed because the available PSD increment limits emission increases allowed for development of new sources. New source review (NSR) permitting of new large sources of air emissions to be located in attainment or unclassifiable areas is termed the PSD permitting process, and involves a variety of stringent steps to assess the potential for discernible air quality impacts.

In general, the NSR/PSD permitting rules define a "major source" as any stationary source with the potential to emit 250 tons per year or more of a criteria pollutant. A more stringent threshold is defined for a limited number of "categorical sources," source categories for which the PSD applicability threshold is 100 tons per year of any criteria pollutant. Neither of these thresholds will apply to the construction of the Utility Project and South Project. As more detailed information for the South Project is available, the facility will apply for a CAA PSD permit from EPA Region 8, pursuant to the PSD permitting program defined for tribal lands in 40 CFR Part 71. At this time, sufficient engineering detail is not available to quantify the projected annual emissions due to operation of the South Project facilities. The availability of utilities to the Applicant could influence certain mining and mineral processing design considerations, which in turn may affect the nature and magnitude of air emissions associated with the Utility Project and South Project.

3.2.2.2.3 New Source Performance Standards

NSPS that have been issued by the EPA apply to a wide variety of new and modified stationary sources of air emissions. These standards would not apply to the proposed Utility Project construction activities. While sufficient engineering detail is not available to quantify the projected annual emissions for the South Project facilities, it is expected that several of these federal standards would apply to their operation. For example, the NSPS will potentially apply to fuel burning equipment (process heaters, boilers, and turbines), petroleum liquid storage tanks, process equipment VOC leaks, and reciprocating engines (emergency generators). The NSPS will would serve to substantially limit air pollutant emissions from oil shale mining and upgrading to produce liquid product.

3.2.2.2.4 Hazardous Air Pollutants

The construction of the Utility Project would not be subject to current regulations that pertain to emissions of hazardous air pollutants (HAP) from stationary sources. While sufficient engineering detail is not available to quantify the projected annual emissions for the South Project facilities, several of these federal standards would likely apply to their operation and would serve to limit air pollutant emissions.

As part of the National Emission Standards for Hazardous Air Pollutants (NESHAP) program, the EPA has issued maximum achievable control (MACT) standards that serve to reduce the emissions of federally listed HAP from a diverse range of source categories (including uranium). In general, the NESHAP regulations apply to affected sources that are located at (or are themselves) major sources of HAP emissions as defined in 40 CFR Part 63. That is, any stationary source that emits or has the potential to emit, considering controls in the aggregate, 10 tons per year or more of any single HAP or 25 tons per year or more of any combination of HAP. The state of Utah has adopted these federal air quality regulations by reference, and the specific applicable requirements will be identified during the PSD permitting phase of the South Project facilities.

3.2.2.3 Issues Addressed in Assessment of Air Quality Impacts

Two broad issues have been identified that will be examined to characterize the air quality effects of the Utility Project and the operation of the South Project mining and oil shale refining complex, a non-federal connected action. For each of these issues, the air quality assessment also considers the relative effects of the No Action Alternative. Under the No Action Alternative, the South Project complex would be built and operated without the supporting utility corridors described in the Proposed Action; the Applicant would obtain the required utilities and deliver their product via alternative means (refer to Section 2.4). This can have a substantially different set of air quality effects.

3.2.2.3.1 Direct Effects of the Utility Corridor Project on Air Quality

Evaluation of the direct air quality effects of the construction of the Utility Project is largely based on the magnitude and duration of air pollutant emissions during construction. The assessment will present conservative estimates of Utility Project emissions on an hourly and total project basis. From this inventory, the potential for direct effects and significant impacts will be assessed.

3.2.2.3.2 Indirect Effects due to the Utility Corridor Project and the South Project

The evaluation of indirect air quality effects of the construction of the Utility Project and the operation of the South Project is more qualitative than that for direct effects. Indirect effects could be examined over both short- and longer-term durations in the Uinta Basin. For example, the generation of ground-level ozone in the Uinta Basin is a seasonal indirect effect that has been connected to ever-expanding oil and gas development. Neither the Utility Project construction nor the South Project operations will result in direct emissions of ozone. But these activities will result in emissions of ozone precursors, which could contribute to ozone generation in the region and in the Uinta Basin.

3.2.2.4 Regional Climate

The proposed routes of the utility corridors are primarily within the Uinta Basin in northwestern Utah. This is a semi-arid, mid-continental climate regime, with elevation ranging between 4,600 and 6.900 feet amsl. In a regional context, the air shed comprising the Uinta Basin is bounded by the Wasatch Range to the west, which runs generally north to south and divides the state of Utah, and on the north by the High Uinta Mountains, which range generally east and west through the northeast portion of the state.

The mountainous areas and higher elevation valleys of Utah, such as the Uinta Basin, experience no distinct dry season and have warm-to-hot summer months. Winters are typically severe, with cold temperatures and abundant snowfall in most areas. The surrounding Uinta Mountains with elevations over 11,000 feet are classified as subarctic. Cool summers and severe, cold winters characterize this mountain area. In this region, winter months experience the highest amounts of monthly precipitation. This is due to the polar jet stream that tends to flow further southward in winter so that Utah is exposed to strong Pacific storm systems from the northwest. In contrast, the summer months usually have much drier weather, as the polar jet stream retreats to the north and high pressure dominates much of the region.

Precipitation in the summer months in the Uinta Basin is usually in the form of periodic thunderstorms, which occur as warm air rises from the low-lying valleys and is chilled near the mountain ridge. Summer precipitation in this portion of Utah increases during the late summer as high pressure moves eastward, creating a monsoonal flow from the south. The monsoonal flow draws moist air from the Gulf of California, the Gulf of Mexico, and the Pacific Ocean into the region. This moist air combined with afternoon heating brings an increased chance for thunderstorm activity.

3.2.2.4.1 Temperature and Precipitation

The nearest reported weather station to the Utility Project and the South Project is located in Vernal, Utah. This station is at latitude 40.4523 degrees north, longitude 109.5097 degrees east, at an elevation of 1,603 feet amsl. The station is approximately 40 miles from the location of the South Project (WRCC 2015).

Table 3-3 lists the average monthly temperature ranges, average monthly precipitation, and average monthly snowfall for the Vernal station. Over the period from 1998 to 2008, annual mean precipitation is less than 8 inches per year, and is distributed throughout all months of the year. The highest monthly precipitation totals occur during the months of September and October, during which the monsoonal pattern is most prevalent. On an annual basis, most of the precipitation is in the form or rainfall. However, during the winter months, the relatively low amount of precipitation is in the form of snow. The temperature range during these colder months is sufficiently low to preclude significant snow melt, so the ground layer of snow tends to accumulate and remain intact for periods of several months each winter.

Table 3-3
Climate Data for Vernal, Utah Pertaining to the Utility Project Study Area

Month	Average Temperature Range (Min – Max, degrees Fahrenheit)	Average Total Precipitation as either Rain or Snow (inches/month)
January	9.1 – 29.8	0.53
February	17.0 – 38.3	0.65
March	25.0 – 52.8	0.61
April	32.3 – 62.1	0.80
May	40.7 – 76.0	0.64
June	48.3 – 82.5	0.56
July	56.9 – 91.1	0.45
August	54.4 – 86.6	0.58
September	44.3 – 75.7	1.08

Table 3-3
Climate Data for Vernal, Utah Pertaining to the Utility Project Study Area

Month	Average Temperature Range (Min – Max, degrees Fahrenheit)	Average Total Precipitation as either Rain or Snow (inches/month)
October	33.9 – 62.5	1.13
November	22.6 – 46.4	0.47
December	10.4 – 31.1	0.48
SOURCE: WRCC 2015		

3.2.2.4.2 Wind Patterns and Atmospheric Stability

Wind patterns are key factors that influence the dispersion and transport of air pollutants in the lower atmosphere. Prevalent wind directions indicate where emitted air pollutants will be more frequently transported. However, winds, by their inherent nature, are variable in the region. This means that during construction of the Utility Project and South Project, and during eventual operation of the South Project, pollutant emissions will be dispersed in different directions on a daily and longer-term basis.

The Vernal weather station reports hourly wind speed and direction data in the locale of the Utility Project study area. These data are illustrated in the wind rose that appears in Figure 3-1 (the wind rose vectors correspond to the direction from which the wind is blowing). The winds in the Uinta Basin are generally characterized as moderate, although periods of higher winds usually coincide with the monsoonal pattern thunderstorms. On an annual basis, winds are more prevalent from the east and east-northeast directions, with less frequent, but potentially higher speed, winds from the west-northwest.

Atmospheric stability is another important factor of meteorology that contributes to the weather patterns, frequency and intensity of storms, and air pollution concentrations. When the atmosphere is stable, emitted pollutants tend to remain within a few hundred feet of the surface close to the emission sources, and will begin to diffuse horizontally across the surface. When the atmosphere is unstable, air pollution mixes vertically within the atmosphere and tends to be carried away by the prevailing wind. In the Utility Project study area, atmospheric stability varies with the season.

The Uinta Basin will generally experience significant temperature inversions during the colder winter months, as the stable cold air mass lies near the ground. This contributes to the formation and accumulation of ground level ozone that have been recently monitored during several studies. This local phenomenon is discussed in Section 4.2 with respect to the indirect effects of the Utility Project and South Project. During the warmer months and in particular the monsoon season, the atmosphere is more strongly mixed by afternoon winds so that there is a relatively less stable atmosphere. This promotes dispersion and dilution of air pollutants in the area.

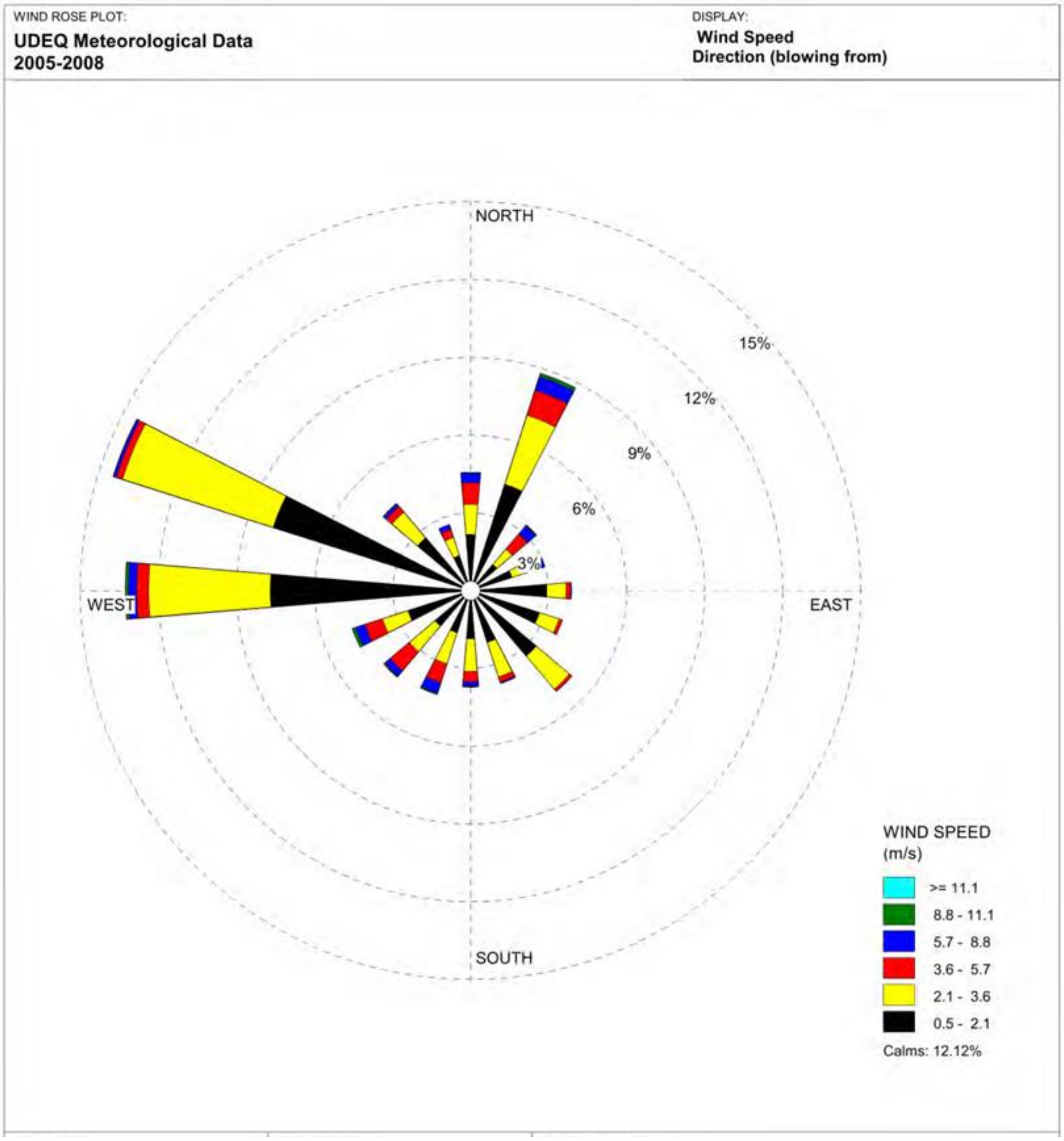

Figure 3-1 Wind Rose for Vernal, Utah, 2005 – 2008

3.2.2.5 Existing Air Quality

3.2.2.5.1 Vicinity Sources of Air Pollutant Emissions

There are a number of existing sources of air pollutant emissions the Uinta Basin and in the vicinity of the Utility Project and the South Project site. The largest sector represented is the oil and gas extraction industry. Table 3-4 summarizes the specific existing and proposed future vicinity projects that are the larger sources of air pollutant emissions in the area.

Table 3-4
Existing and Proposed Future Air Emission Sources - Northeast Utah

Project Name	Type of Operation	Existing or Future	General Location (County)
Gilsonite Mining	Non-Coal Mine	Existing	Vernal Field Office Jurisdiction; eastern side of the Lower Green River
Monument Butte Oil and Natural Gas Development Project EIS	Oil and/or Gas Development	Future	Duchesne and Uintah counties, Utah
Red Leaf Resources Red Leaf Project	Oil Shale and/or Tar Sands	Existing	Uintah County, Utah
Questar Exploration and Production Company Greater Deadman Bench	Oil and/or Gas Development	Existing	8 miles northeast of Ouray, Colorado
Applicant Plant Site	Oil Shale and/or Tar Sands	Future	Uintah County, Utah
Kerr-McGee Oil and Gas Onshore LP Greater Natural Buttes Project	Oil and/or Gas Development	Existing	T8S, R20-23E T9S, R20-24E T10S, R20-23E T11S, R21-22E
Gasco Energy, Inc. Monument Butte-Red Wash and West Tavaputs Natural Gas Project EIS	Oil and/or Gas Development	Future	Uintah County, Utah
XTO Energy Riverbend Directional Infill Project	Oil and/or Gas Development	Existing	Uintah County, Utah
Koch Exploration Company North Alger Development Project EA	Oil and/or Gas Development	Future	Uintah County, Utah

3.2.2.5.2 Existing Air Pollutant Monitoring Data

Generally, the ambient air pollutant monitoring data pertaining to the Uinta Basin region is collected at a station located in Vernal, Utah (latitude 40.4523 degrees north, and longitude 109.5097 degrees east, at an elevation of 1,603 feet amsl). In addition, there has been some additional data monitoring at stations located within the Uinta Basin; one near the intersection of U.S. Highway 145 and Dragon Road, and a second south of Ouray, Utah. These Uinta Basin stations (among others) gather air data related to recent concern with rising wintertime ozone levels, which has prompted several monitoring and theoretical studies of ozone trends in an effort to explain their cause. Table 3-5 lists a variety of recent ambient air data for the vicinity of the Uinta Basin that can be compared to the NAAQS for criteria pollutants (EPA 2015c).

Table 3-5
Summary of Monitored Air Quality Data in the Utility Project Study Area, 2012 to 2014

Criteria Pollutant	Data Averaging Time and/or Percentile [1]	Monitor Location	2012	2013	2014
Nitrogen Dioxide (N_2O)	1-Hour Max. [2] ($\mu g/m^3$)	Vernal, Utah	59	90	52
	1-Hour, 98th Percentile ($\mu g/m^3$)[3]		41	78	54
	1-Hour Max. [2] ($\mu g/m^3$)	U.S. 145/Dragon Road	18	57	NR
	1-Hour, 98th Percentile ($\mu g/m^3$)[3]		12	44	NR
Respirable Particulate Matter (PM_{10})	24-Hour Avg., Highest ($\mu g/m^3$)[4]	U.S. 145/Dragon Road	231	38	NR

Table 3-5
Summary of Monitored Air Quality Data in the Utility Project Study Area, 2012 to 2014

Criteria Pollutant	Data Averaging Time and/or Percentile [1]	Monitor Location	2012	2013	2014
Fine Particulate Matter ($PM_{2.5}$)	24-Hour, 98th Percentile ($\mu g/m^3$)[5]	Vernal, Utah	24	6	NR
	Annual Mean ($\mu g/m^3$)[6]		7	3.3	NR
	24-Hour, 98th Percentile ($\mu g/m^3$)[5]	U.S. 145/Dragon Road	17	NR	NR
	Annual Mean ($\mu g/m^3$)[6]		4.9	NR	NR
Ozone (O_3)	8-Hour Avg., Highest (ppb)[7]	Vernal, Utah	70	114	64
	8-Hour Avg., 4th Highest (ppb)[8]		64	102[9]	62
	8-Hour Avg., Highest (ppb)[7]	2 miles south of Ouray, confluence of White and Green Rivers	74	142	91
	8-Hour Avg., 4th Highest (ppb)[8]		70	133[9]	79[10]

SOURCE: EPA 2015c
NOTES:
[1]Averaging periods for a numerical standard are qualified in a variety of ways, e.g., 3-year average of 98th percentile, 3-year average of the fourth-highest daily maximum, not to be exceeded more than once per year, etc. Complete details of averaging period for each pollutant are provided at 40 CFR Part 50.
[2] Highest 1-hour values provided for information only, NAAQS is on a different averaging basis
[3] NAAQS = 188 $\mu g/m^3$, 98th percentile 1-hour concentrations, averaged over three years
[4] NAAQS = 150 $\mu g/m^3$, 24-hour average; not to be exceeded more than once per year on average over three years
[5] NAAQS = 35 $\mu g/m^3$, 98th percentile 24-hour concentrations, averaged over three years
[6] NAAQS = 12.0 $\mu g/m^3$, annual mean, averaged over three years
[7] Highest 8-hour values provided for information only, NAAQS is on a different averaging basis
[8] NAAQS = 75 ppb, annual fourth-highest 8-hour concentration, averaged over three years
[9] These monitored values are indicative of possible exceedances, although NAAQS is averaged over three years, for 2013 the Vernal station reported 25 exceedance days, and the Ouray station 48 exceedance days.
[10]This monitored value is indicative of possible exceedances, although NAAQS is averaged over three years, for 2014 the Vernal station reported 0 exceedance days, and the Ouray station 7 exceedance days.
NR = no data reported

On April 30, 2012, the EPA designated most of Utah as attainment/unclassifiable for ozone. Two counties in eastern Utah most affected by oil and gas development, Duchesne and Uintah, were designated at that time as "unclassifiable" for all criteria pollutants. As of 2013, the required three years of regulatory quality data needed to determine attainment of the standard had not yet been collected and evaluated to update this attainment status (UDEQ 2015).

Since 2010, the EPA has been monitoring ozone in four locations in the Uinta Basin: Myton, White Rocks, Ouray, and Red Wash. Monitoring studies for $PM_{2.5}$ in the Uinta Basin reported since 2007 have shown that under winter atmospheric inversion conditions, the ambient $PM_{2.5}$ levels can be comparable to those on the Wasatch Front range. Taken together, these data have disclosed relatively high levels of ground level ozone and fine particulate during winter inversion conditions that can exceed the NAAQS standards. As this historic data is evaluated in detail, the EPA may elect to change the attainment status of the area. This would initiate a process of developing a SIP to address the NAAQS exceedances, and provide specific measures to achieve the "reasonable forward progress" criteria that have been established by EPA for non-attainment areas.

3.2.2.6 Ozone Studies in the Uinta Basin

Starting in the winter of 2011-2012, UDEQ and several cooperating agencies, including the BLM, EPA, Western Energy Alliance, and Uintah Impact Mitigation Special Service District, initiated a multi-year study to evaluate the phenomenon of within ozone in the Uinta Basin. The objective of the Uinta Basin Winter Ozone Study (UBWOS) was to monitor and study the mechanisms of atmospheric chemistry and precursor gas interactions that can create high levels of wintertime ozone. Atypically warm conditions during the winter of 2011-2012 resulted in less-than-normal snow cover and fewer inversions that would have promoted elevated ozone levels. As shown in Table 3-5, no NAAQS exceedance days were reported at stations in Vernal and in the Uinta Basin. The 2011-12 UBWOS and Air Quality Study Final Report (UBWOS 2013) included the following key findings:

- The extent of snow cover is a key factor in high ozone episodes, and this can differ between winter seasons.
- Historical weather data indicates that conditions favorable to ozone formation occur during about half of all winter seasons, and severe ozone seasons can occur about once in four winters.
- An air emissions inventory indicated that oil and gas operations generated 98 to 99 percent of the VOCs and 57 to 61 percent of NOx.
- It was observed through monitoring that VOC emissions tend to concentrate near the ground, while NOx emissions are dispersed higher into the atmosphere. These vertical differences may affect the relative contributions of these precursors.

The winter of 2012-2013 coincided with more-typical wintertime conditions than the 2011-2012 year. Persistent snow cover and stable atmospheric conditions in early 2013 led to multiple inversions, which in turn resulted in monitored 8-hour ozone concentrations well above the NAAQS (NAAQS is assessed as a 3-year average of 4th highest 8-hour concentration). As shown in Table 3-4 the maximum 8-hour average ozone concentration at the Ouray air monitoring station during the 2013 study period reached 142 ppb, 89 percent higher than the federal air quality standard. The fourth-highest 8-hour value was 133 ppm, which is still above the 3-year average NAAQS of 75 ppb. Ozone values were higher than the NAAQS for 25 days in Vernal and 29 days in Roosevelt, Utah. Individual episodes of elevated ozone ranged from 3 to nearly 15 days in length (UBWOS 2014).

During the winter of 2013-14, the UBWOS focused additional attention on mechanisms that may allow snow chemistry and aerosol chemistry to contribute to the formation of ozone. In particular, ambient air concentrations of nitrous acid (HONO) and formaldehyde (HCHO) drove the chemical reactions responsible for ozone formation. This was a key finding, in that HONO and formaldehyde are unconventional sources for ozone formation, and different from conventional sources (ozone photolysis) in typical summer urban ozone episodes. The general trend in ozone values for the 2013-2014 winter was lower than in the prior year, but the data did show several 8-hour values at the Ouray station that were higher than the NAAQS (UBWOS 2015).

The BLM has also conducted an evaluation of ozone precursor emission inventories, and the modeled effect of future growth in emissions. The Utah ARMS evaluated the impacts to air quality and air quality related values predicted by regional modeling of dispersion and photochemical phenomena. In that study, the predicted winter and non-winter impacts for a base year of 2010 have been compared to predicted effects due to projected emissions growth in the year 2021. Overall, while precursor emissions were projected to increase considerably in that timeframe, the winter and non-winter ozone concentrations were not predicted to increase beyond current levels (AECOM 2014).

3.2.3 Soil Resources

3.2.3.1 Regulatory Framework

Agency objectives for managing soil resources center on the preservation of the natural properties of the resource, including soil productivity and surface stability. In addition to the requirements of FLPMA, the Farmland Protection Policy Act of 1981 requires the assessment of impacts on designated farmland soils from proposed conversion of farmlands to nonagricultural uses.

3.2.3.2 Issues Identified for Analysis

Issues related to soils resources identified during agency and public scoping included:

- Impacts of the Utility Project and South Project on sensitive soils, including erosion (wind and water) on steep slopes as result of ground disturbance and reclamation potential.

3.2.3.3 Affected Environment

The Utility Project study area includes 26 distinct soil types (refer to Maps A-2a and A-2b in Appendix A). The predominant soil types are Walknolls-Gilston association, Walknolls-Bullpen association, Walknolls very channery loam, and Badlands-Walknolls-Rock outcrop (Table 3-6)

Table 3-6
Soil Types in the Utility Project Study Area

Soil Type	Acres
Badland-Denco Complex, 4 to 25 percent slopes	70.3
Badland-Rock outcrop complex, 1 to 100 percent slopes	710.0
Badland-Tipperary association, 1 to 8 percent slopes	2741.2
Badlands-Walknolls-Rock outcrop complex, 50 to 90 percent slopes	4,241.9
Bullpen Parachannery loam, 2 to 25 percent slopes	69.0
Cadrina association, 2 to 25 percent slopes	2,089.0
Denco silty clay loam, 8 to 25 percent slopes	11.2
Gilston-Muff-Cadrina, cool complex, 1 to 25 percent slopes	2,350.4
Gompers very channery silt loam, 25 to 50 percent slopes	62.7
Green River-Fluvaquents complex, o to 2 percent slopes	98.8
Jenrid-Eghelm complex, 0 to 3 percent slopes	956.3
Jenrid sandy loam, 0 to 2 percent slopes	17.2
Mikim loam, 3 to 15 percent slopes	107.7
Moonset-Whetrock association, 8 to 50 percent slopes	229.7
Pherson-Hickerson complex, 1 to 8 percent slopes	1,256.8
Shotnick-Ioka complex, 4 to 25 percent slopes	438.6
Solirec-Abracon-Begay complex, 2 to 25 percent slopes	10.0
Turzo complex, 2 to 4 percent slopes	1,791.6
Walknolls-Badland-Rock outcrop complex, 25 to 50 percent slopes	1,587.1
Walknolls-Bullpen-Walknolls association, 2 to 25 percent slopes	269.3
Walknolls-Bullpen association, 2 to 25 percent slopes	7,165.4
Walknolls-Gilston association, 2 to 25 percent slopes	12,519.0
Walknolls-Rock outcrop complex, 50 to 70 percent slopes	678.8
Walknolls-Uendal association, 2 to 25 percent slopes	25.7
Walknolls extremely channery sandy loam, 4 to 25 percent slopes	1,921.5
Walknolls very channery loam, 25 to 50 percent slopes	6,852.5

3.2.4 Mineral Resources

3.2.4.1 Regulatory Framework

FLPMA serves as the primary legislation requiring assessment and mitigation of potential impacts on mineral resources when considering proposals for major actions on federally administered land.

The BLM manages mineral resources in three management categories: locatable, leasable, and salable. Locatable minerals include rocks that bear precious stones such as diamonds or sapphires and a broad category of economically important minerals such as precious and base metals (e.g., gold, silver, and lead) and industrial minerals. Leasable resources typically are extracted for use in energy production and include oil, natural gas, coal, fissionable (e.g., uranium), and geothermal deposits. Leasable mineral resources on federal lands require a lease of set duration with the government for extraction or development. Salable mineral resources typically are used for construction and industrial purposes and include sand, gravel, stone, pumice, and cinders. Salable mineral resources may be acquired from federally owned or managed lands via a permit or contract or through small-scale methods such as recreational rock collecting.

3.2.4.2 Issues Identified for Analysis

There were no issues identified specific to mineral resources during agency and public scoping.

3.2.4.3 Affected Environment

The Utility Project and South Project lie in the Uinta Basin, an area known for its oil shale. The Utility Project study area includes several oil and gas leases and other mineral leases, and areas classified as available for or closed to development of mineral materials (refer to Maps A-3a and A-3b in Appendix A). The leases include those with standard stipulations and split estate leases. The BLM describes mineral materials as natural resources such as sand, gravel, dirt, and rock that are used for every day building and construction. The Uinta Basin is known as one of the largest sources of gilsonite. Leases for the mining of gilsonite are found in the study area, near Bonanza, Utah. Table 3-7 summarizes the mineral resources in the Utility Project study area.

Table 3-7
Mineral Resources in the Utility Project Study Area

Mineral Resource	Acres
Mineral Materials (Closed)	327.5
Mineral Materials (Open)	7,240.4
Oil and Gas leases (Closed)	848.3
Oil and Gas Leases (Standard Stipulations)	21,765.0
Oil and Gas Leases (Timing and Controlled Surface Use)	9,406.2
Oil and gas Leases Split Estate (Private)	307.0
Oil and gas Leases Split Estate (State)	49.0

3.2.5 Water Resources

Water resources analyzed in this EIS include surface waters such as ephemeral, intermittent and perennial rivers and streams; groundwater; and wetlands, springs, and wells. The main focus of this section is to identify water resources and their susceptibility to potential impacts from the Utility Project and South Project.

3.2.5.1 Regulatory Framework

3.2.5.1.1 Federal

- Clean Water Act. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The following sections of the CWA may influence construction and operation of the Utility Project and South Project:
  - Section 301: Effluent Limitations from Point Sources. The volume of pollutants generated by a known source or point source is limited by specific water resources as described in Section 303(d). These limitations may affect the Utility Project and South Project if a construction-related activity discharges a controlled pollutant such as sediment into regulated waters, which would require a permit.

- Section 302: Water Quality Related Effluent Limitations. Under Section 302, water quality standards designated by the state set levels of allowable pollutants called Total Maximum Daily Load (TMDL). This pollutant allotment criterion is designated for a specific waterbody relative to its particular usage (e.g., recreation, water supply, aquatic life, and agriculture). A water quality criterion (numeric pollutant concentrations and narrative requirements) is also designated to protect particular resource uses. If either the Utility Project or South Project have the potential to add pollutants to a particular resource that is protected by a TMDL, it may be necessary to mitigate impacts and potentially require the Utility Project to be included in the TMDL permit.
- Section 303: Water Quality Standards and Implementation Plans, Designation of Impaired Waters. Water bodies not meeting state-mandated water quality standards are presented to the EPA for designation as Impaired Waters and issuance of federal protection under a TMDL. Impaired waters that may potentially be affected by the Utility Project and South Project are subject to limitations set forth by the TMDL issued for the particular impaired water. If there is a high probability the Utility Project and South Project will affect the impaired water, modification to the state construction general permit could be required.
- Section 319: Effluent Limitations from Nonpoint Sources. Section 319 regulates the discharge of pollutants from various sources, which accumulate to reduce water quality standards set by the state. If the Utility Project and South Project have the potential to add nonpoint source pollutants to a particular resource protected by a TMDL, it may be necessary to mitigate impacts and may potentially require the Utility Project and South Project to be included into the TMDL permit.
- Section 401: Water Quality Certification. An application for a federally permitted activity that may result in a discharge into a water of the U.S. must obtain a Section 401 Water Quality Certification from the state with jurisdiction, certifying the action will not violate state or federal water quality standards. The state of Utah is not authorized to issue Clean Water Act Section 401 certifications for activities within the Uintah and Ouray Reservation; the EPA administers Section 401 certifications on the reservation.
- Section 402: NPDES. The NPDES regulates water-quality standards specifically by issuing and monitoring construction-related permits for discharges into waters of the State.
- Section 404: Dredge or Fill in Waters of the U.S. The CWA regulates the dredging or filling of any material in a water of the U.S. under the regulatory jurisdiction of the USACE. If the Utility Project and South Project require the dredge or fill in a water of the U.S. as defined in 33 CFR Part 328.3 of the Clean Water Act, it may be necessary to obtain a federal permit to conduct the work. As a provision of the federal permitting process, mitigation for the permanent loss of jurisdictional wetlands or other Waters of the U.S. may be required by the USACE and EPA.
- Programmatic General Permit 40: Minimal Impact Activities under the Stream Alteration Program for the State of Utah. The District Engineer, Sacramento District, USACE issued Programmatic General Permit 40 for certain activities in Waters of the U.S. that have been authorized under the State of Utah’s Stream Alteration Program. This permit is designed to eliminate duplication and expedite authorization of the activities that fall under the USACE Regulatory Program that have been authorized through a Stream Alteration Permit. This permit applies to all Waters of the U.S. that are considered to be part of the surface tributary system and over which the State Engineer has regulatory authority under the Stream Alteration Program. Limits of the state of Utah’s jurisdiction are defined in UAC R655-13, Stream Alteration.

- Safe Drinking Water Act. Under the Safe Drinking Water Act, the EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards, but does not regulate private wells that serve fewer than 25 individuals. The Safe Drinking Water Act also mandates a Groundwater Wellhead Protection Program be developed by each state to protect groundwater resources that serve as sources for public drinking water.
- National Flood Insurance Program. In support of the National Flood Insurance Program, Federal Emergency Management Agency (FEMA) identifies flood hazard areas throughout the U.S., including Special Flood Hazard Areas, which are defined as areas of land that would be inundated by a flood having a 1 percent chance of occurring in any given year (previously referred to as the base flood or 100-year flood). Development may take place within Special Flood Hazard Areas, provided development complies with local floodplain management ordinances, which must meet the minimum federal requirements.
- The Vernal RMP (2008) specifies goals and directs management of resources and resource programs on BLM-administered lands and minerals and sets stipulations to protect fish and wildlife and the habitats on which they depend.
- Utah BLM Riparian Policy (Instruction Memorandum [IM] 2005-091). The objective of this policy is to establish an aggressive riparian area management program that will identify, maintain, restore, and/or improve riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits; provide watershed protection while still preserving quality riparian-dependent aquatic and terrestrial species habitats; and, as appropriate, allow for reasonable resource uses.
- Federal Anti-degradation Policy. The EPA requires each state and tribal nation to develop, adopt, and retain a statewide anti-degradation policy regarding water quality standards and establish procedures for its implementation through the water quality management process. The State anti-degradation policy and implementation procedures must be consistent with the detailed three tier management components of Sections 131.13(a)(1), 131.12(a)(2), and 131.12(a)(3) of 40 CFR 131.12.
- The Utah Reclamation Mitigation and Conservation Commission (URMCC) is an Executive branch agency of the federal government. The Commission was authorized under the Central Utah Project Completion Act of 1992 (Utah State P.L. 102-575). The Act set terms and conditions for completing the Central Utah Project (CUP), which diverts, stores, and delivers large quantities of water from numerous Utah rivers. The Commission is responsible for designing, funding, and implementing projects to offset the impacts on fish, wildlife, and related recreation resources caused by CUP and other federal reclamation projects in Utah.
- The Oil Pollution Act Emergency Response; Spill Prevention, Control and Countermeasure Plans; and Facility Response Plan. EPA requires any owner or operator of a non-transportation related facility engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, using or consuming oil or oil products prepare to comply prepare a Spill Prevention, Control, and Countermeasure Plan.

3.2.5.1.2 State Regulations

- Utah Pollutant Discharge Elimination System (UPDES). UAC R317-8 mandates both direct and indirect discharges to waters of the State be regulated and permitted by the Utah Division of Water Quality, including surface-water discharges; wastewater discharges; indirect discharges; stormwater discharges from commercial, industrial, and municipal activities; groundwater discharges; and discharges resulting from underground injection.

- Utah State Executive Order. 11988: Floodplain Management. If structures are to be placed in a FEMA-designated flood-hazard area, a floodplain modification permit may be required.
- Utah Division of Water Quality: Utah State Stream Alteration Permit. Work done to the bed and banks of a named intermittent or perennial stream will require the issuance of a State Stream Alteration Permit and likely will require a USACE § 404 and 401 permit or a Programmatic General Permit 40, if applicable.

3.2.5.2 Issues Identified for Analysis

Issues related to water resources identified in agency and public scoping include:

- Concerns regarding the quantity of water needed to operate the Utility Project and South Project.
- Potential for impacts from the Utility Project and the South Project on the quality of groundwater and surface water in the region.
- Potential for impacts to the White River and its tributaries
- Potential for impacts to Waters of the U.S. within Utility Project study area.

3.2.5.3 Affected Environment

The Utility Project study area lies within an arid to semi-arid region in the southeastern portion of the Uinta Basin in Utah. The Uinta Basin is a topographic and structural basin encompassing an area of over 14,400 square miles of east-central Utah and northwestern Colorado. The basin is bounded on the north by the Uinta Mountains, on the south by the Tavaputs Plateau, on the west by the Wasatch Mountains, and on the east by elevated terrain that separates it from the Piceance Basin in Colorado. Kings Peak, in the Uinta Mountains, is the highest point in the basin (13,528 feet). The lowest point in the basin (4,150 feet) lies where the Green River exits the basin above its confluence with the Price River (refer to Maps A-4a and A-4b in Appendix A). The principal drainage in the basin is the Green River, with the Duchesne and White Rivers as major tributaries (UDWaR 2015).

The normal annual precipitation in the Uinta Basin averages 11 inches per year. However, precipitation varies greatly from place to place, mostly in response to changes in altitude. The normal annual precipitation ranges from less than 8 inches in areas where altitudes are below 5,000 feet, to more than 20 where altitudes exceed 9,000 feet. Normal annual precipitation near Bonanza, Utah is 8.2 inches (Lindskov and Kimball 1984).

3.2.5.4 Surface Water Resources

3.2.5.4.1 Utility Project Study Area Drainages

The Utility Project study area is located in the White River watershed, which encompasses approximately 5,120 square miles in Utah and Colorado. The White River flows into the Green River near Ouray, Utah. The drainages and streams in the Utility Project study area are tributary to the White River, including Evacuation Creek, Hells Hole Canyon, Weaver Canyon, Coyote Wash, and Park Canyon. Each of these tributaries are ephemeral with the exception of Evacuation Creek, which maintains an intermittent base flow. These channels trend in a northerly direction with the exception of Park Canyon, which courses westward and discharges to Evacuation Creek, and Coyote Wash, which also courses westward and discharges to the White River. In addition to these named drainages, several more unnamed ephemeral drainages also occur throughout the area.

The flow volume of the White River is much greater than that of the tributaries flowing into it. For the reporting period from October 1923 to December 2014, the White River as measured immediately downstream from the Highway 45 bridge over the river (gauging station 09306500; approximately two river-miles downstream of the Evacuation Creek discharge point) averaged a flow rate of 685.4 cfs. The highest flow rate month tends to be June, where flow rates averaged 1,780 cfs, while the lowest tends to be January, where rates decrease to an average of 353 cfs (U.S. Geological Survey [USGS] 2015).

Flow patterns in Evacuation Creek are more complex compared to the White River and show several variations with time. Surface runoff contributes substantial amounts of water to the creek. Groundwater seepage contributes less water than surface runoff, but it is a consistent source of flow in the Evacuation Creek. Peak flows are usually related to rainfall periods. Evacuation Creek has two distinct periods, a low flow period (usually between August and February) in which the flow is sustained by seepage from consolidated-rock aquifer (mainly the Birds-nest aquifer) and a high flow period where surface runoff and snowmelt increase flow substantially. The actual dates of these periods fluctuate from year to year and are strongly influenced by rainfall events. The average flow is 1.3 cfs during August to February, increasing to 2.1 cfs during May to June. A peak flow event of 1,980 cfs was recorded during the reporting period, and the creek was observed to draw down to no flow as well (Lindskov and Kimball 1984).

In November 2012, the Applicant contracted CH2M Hill to calculate the 25- year and 100-year peak flow rates at the South Project area. Design points were specified at the confluence of Park Canyon and Evacuation Creek and Evacuation Creek at the White River. Results of the USGS peak flow regression equations using the *USGS Scientific Investigations Report 2007-5158, Methods for Estimating Magnitude and Frequency of Peak Flows for Natural Streams in Utah* are summarized in Table 3-8.

Table 3-8
Peak Flow Rates for Selected Subbasins in the Utility Project Study Area

Basin	Area (square miles)	Mean Basin Elevation (feet)	25-Year (cfs)[1]	100-Year (cfs)[1]
Park Canyon	31.3	6,396	1,933	3,682
Evacuation Creek at Park Canyon (including Park Canyon)	245.2	7,058	3,520	6,388
Evacuation Creek	287.7	6,895	3,985	7,224

SOURCE: CH2M Hill 2012
NOTE: [1]Average standard error of prediction for 25-year and 100-year recurrence interval is 62 percent and 61 percent respectively.

3.2.5.4.2 Surface Water Occurrence and Use

The Uinta Basin's water supply is over 95 percent from surface sources and less than five percent from groundwater. The Green River is the largest river in the basin. Entering the basin at Flaming Gorge Reservoir, flows are increased by contributions from the Yampa, White, and Duchesne rivers and numerous smaller tributaries in Utah (UDWaR 2015).

The UDWaR report *Uintah Basin Planning for the Future* is the latest in the "Utah State Water Plan" series and is intended to guide and direct water-related planning and management in the Uintah Basin over the next several decades. The report includes quantifying available water supply in the basin, estimating current and future uses, and discussing water quality and environmental issues. According to the report, estimated precipitation input to the basin is 9,000,000 acre-feet per year; vegetation and natural systems use 7,172,400 acre-feet and groundwater recharge is estimated at 630,000. Thus, the Basin Yield or Available Supply is 1,187,600 acre-feet. Uses in the basin include irrigation depletions of 411,000 acre-feet, Municipal and Industrial of 16,000 acre-feet, surface evaporation from reservoirs of 101,700 acre-feet and water exported from the basin of 481,000 acre-feet. Inflow to the basin from the Green River, Black's Fork River, Yampa River and the White River totals 3,459,000 acre-feet. Adding the net Basin Yield to the total inflow yields 3,940,000 acre-feet flowing out of the basin. In addition, 186,000 acre-feet are reserved for the Ute and Navajo Tribes (UDWaR 2015).

Relatively few water users exist in the proposed Utility Project study area. Approved water rights for surface water in the Utility Project study area are listed in Table 3-9.

Table 3-9
Approved Water Rights in the Utility Project Study Area

Water Right No. and Type	Name of Water Right Holder	Allocation
49-258 – Surface: White River	Enefit	Allocation: 15 cfs. Approved for Irrigation, Domestic, Mining, and Industrial.
49-1272 – Surface: White River and Tributaries and Underground	Uintah Water Conservancy District	Allocation: 1,450 acre-feet. Approved for Industrial. The following conditions apply: ■ This application was approved by Memorandum Decision dated January 20, 1983, on the following conditions: • The 1,500 acre-feet appropriated is part of the storage right under Segregation Application No. 36979-a (49-304), now un-approved, and shall be part of the rated storage capacity of the White River Reservoir when it is constructed. • The applicant may divert the 1,500 acre-feet of water each year as is required by the applicant without limiting the flow rate; however, the amount diverted shall not exceed the 1,500 acre-foot allocation. • The water may be diverted from any of the points indicated on the application, but deviation from the points may require filing of a change application.
49-2330 – Surface: White River and Tributaries and Underground	Uintah Water Conservancy District (Water User: Red Leaf Resources)	Allocation: 1,450 acre-feet. Approved for Industrial. The following conditions apply: ■ The water is to be diverted up to a total volume of 1,500 acre-feet per year. The diversion will be made with a pump system, which will lift water through a pipeline to the place of use. The water will be delivered to the Paraho Development Corporation property and stored in regulating ponds to supply the necessary quantities of water required to support the construction and operation of the Paraho Shale Oil Project. The place of use will be in Federal tracts Ua & Ub in Townships 9 and 10 South, Range 24 and 25 East, SLB&M. ■ This application was approved by Memorandum Decision dated January 20, 1983, on the following conditions: • The 1,500 acre-feet appropriated is part of the storage right under Segregation Application No. 36979-a (49-304), now un-approved, and shall be part of the rated storage capacity of the White River Reservoir when it is constructed. • The applicant may divert the 1,500 acre-feet of water each year as is required by the applicant without limiting the flow rate; however, the amount diverted shall not exceed the 1,500 acre-foot allocation. • The water may be diverted from any of the points indicated on the application, but deviation from the points may require filing of a change application.

SOURCE: Utah Division of Water Rights 2015

3.2.5.4.3 Surface Water Quality

Water quality in the semi-arid Uinta Basin is influenced by natural geologic and geomorphic conditions, flows evaporating or seeping into the channel beds, and overall land use patterns, including oil and gas development. The UDWQ is responsible to set water quality standards for each of its water-bodies (creek, river, pond, lake, reservoir, etc.) by identifying the associated uses. Designations for streams with established beneficial uses include the following:

- 1C–Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water
- 2B–Protected for secondary contact recreation such as boating, wading, or similar uses
- 3A–Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain
- 3B–Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain
- 3C–Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain
- 3D–Protected for waterfowl, shore birds, and other water-oriented wildlife not included in Classes 3A, 3B, or 3C, including the necessary aquatic organisms in their food chain
- 4–Protected for agricultural uses, including irrigation of crops and stock watering.

Beneficial use assessments have been completed by the UDWQ for the White River and Evacuation Creek. The State of Utah has designated the White River from its confluence with the Green River upstream to the Utah-Colorado state line and Evacuation Creek and tributaries from the confluence with the White River to headwaters for the following uses: 2B, 3B, and 4. Excavation Creek was assessed as impaired for agricultural activities (4) due to exceedances of water quality standards for boron and Total Dissolved Solids (TDS) and impaired for warm water species of game fish and other warm water aquatic life (3B) due to exceedances of selenium and temperature (UDWQ 2014). Boron, TDS, and selenium in the area are derived primarily from natural sources, while temperature is related to and affected by a variety of factors, including riparian conditions, stream morphology, and volume of discharge.

Section 303(d) of the Clean Water Act and EPA’s Water Quality Planning and Management Regulations (40 CFR 130) require states to develop TMDLs for water bodies not meeting applicable water quality standards. TMDLs list the maximum amount of a pollutant that a water body can assimilate and still meet water quality standards. A TMDL study is needed to determine how to reduce pollutants in the Evacuation Creek; however, the priority for development of it is considered to be low (UDWQ 2014).

Surface water quality of the White River has been measured at several locations near the Utility Project study area since the early 1970s. Historic sampling results indicate that specific conductance and TDS were usually inversely related to volume of flow. TDS measurements in the White River are generally at their lowest during spring when flows were at their highest and snowmelt represented the major portion of the flow. As water flow decreased in the summer and fall, the water quality changed as ground water seepage contributed a larger portion of the flow.

To support their various permit applications and determine future water requirements for their mining activities, the Applicant has conducted baseline surface water quality monitoring since 2013. Surface water samples have been collected along Evacuation Creek and White River to measure and document baseline surface water characteristics. A summary of the results from their most recent surface water sampling is provided below (Walsh 2014).

3.2.5.4.3.1 Surface Water Sampling (non-storm event):

- No exceedances of the total phosphorous or nitrogen standards were detected in the (non-storm event) surface water samples collected November 2013.
- Aluminum exceeded the Class 3B Aquatic Wildlife Standard at South Property Boundary and mercury exceeded the standard at the North Property Boundary.
- Gross alpha exceeded the Class 3B Aquatic Wildlife Standard in two of the five surface water samples collected from Evacuation Creek during November 2013.
- Phenol exceeded the Class 3B Aquatic Wildlife Standard at Watson during November 2013.
- Boron exceeded the Class 4 Agricultural Standard at four of the Evacuation Creek points sampled during November 2013.
- TDS exceeded the Class 4 Agricultural Standard at each of the Evacuation Creek points sampled during November 2013.

3.2.5.4.3.2 Storm Event Sampling (September 2013):

- Total phosphorus exceeded the Class 2B Recreation Standard for surface water discharge in each of the surface water points sampled during the September 2013 storm event.
- Aluminum exceeded the Class 3B Aquatic Wildlife Standard in all of the sampled surface water points, and lead exceeded in two of the points, sampled during the September 2013 storm event.
- Gross alpha exceeded the Class 3B Aquatic Wildlife and Class 4 Agricultural Standards in all of the sampled surface water points and gross beta exceeded in five of the points sampled during the September 2013 storm event.
- Phenol exceeded the Class 3B Aquatic Wildlife Standard in two of the samples and one of the duplicates collected during the September 2013 storm event.

3.2.5.4.4 Groundwater Resources

Groundwater in the Uinta Basin occurs in three major aquifers: 1) alluvial aquifers of small areal extent in valley-fill deposits of major drainages; 2) consolidated rock aquifers including the Birds-nest aquifer underlying the South Project area; and 3) the Douglas Creek aquifer (Kimball and Holmes 1987).

Alluvial aquifers exist along the major drainages of Evacuation Creek and the White River and to a smaller extent, in some of the minor drainages in the area. The alluvial aquifer, consisting primarily of silt and clay, with minor amounts of sand and gravel, is recharged by infiltration of streamflow and leakage from consolidated-rock aquifers. Recharge is estimated to average about 32,000 afy (Kimball and Holmes 1987). Maximum infiltration occurs during periods of snowmelt and summer months. Discharge from the alluvial aquifers occurs in springs, evapotranspiration, wells, and subsurface flow into consolidated aquifers. Kimball and Holmes (1987) estimated the evapotranspiration from the alluvium in the White River, and Evacuation Creek drainage basins to be about 7,300 afy and 566 afy, respectively.

The alluvial aquifers average about 30 feet in Evacuation Creek and White River, and smaller tributaries. The largest values of hydraulic conductivities occur in aquifers along the White and Green Rivers. Hydraulic conductivity values range from 1 to 25 feet per day. Smaller values of hydraulic conductivity generally occur along Evacuation Creek. Reported specific yield values ranged from 0.02 to 0.21. Water moves from recharge areas along perennial reaches of streams downstream toward the mouths of major drainages. Most of the water is consumed by evapotranspiration and never reaches the mouths of major drainages. Water level gradients in major drainages average about 40 feet per mile and the average velocity of water moving through alluvial aquifers is about 0.4 feet per day (Kimball and Holmes 1987). The estimated volume of recoverable water in storage in alluvial aquifers is about 200,000 acre-feet (Kimball and Holmes 1987).

The Bird's-nest aquifer occurs in the Parachute Creek member of Green River Formation. The thickness of the aquifer ranges from 90 to 205 feet and averages about 115 feet. The upper surface of the aquifer slopes uniformly to the northwest at approximately 250 feet per mile. Water levels in the Bird's-nest aquifer range from a few feet below ground surface where the formation occurs as outcrop along Evacuation Creek, to over 400 feet near the White River Mine, which is located approximately two miles northwest of the South Project area. Transmissivity in the aquifer varies significantly based on fracturing and solution. Recharge to the Bird's-nest aquifer, estimated to average 670 afy, is primarily via infiltration from Evacuation Creek and downward leakage from the overlying Uinta Formation, while localized discharge occurs primarily in the form of upward leakage to the White River alluvium. The estimated volume of recoverable water in storage in the Birds-nest aquifer is 1.9 million acre-feet (Holmes and Kimball 1987).

3.2.5.4.5 Groundwater Quality

Chemical quality of the ground water in the southeastern Uinta Basin varies considerably. The dissolved constituents in groundwater are derived initially from rainfall and snowmelt, and subsequently from the water-rock interaction that takes place when rainfall, snowmelt, and streamflow recharge the aquifer (Kimball 1981). Water from the Bird's-nest aquifer has dissolved-solids concentrations ranging from 870 to 5,810 milligrams [mg] per liter. Water from alluvial wells generally is a sodium sulfate type, whereas water in both the consolidated-rock aquifers generally changes from a sodium sulfate type to a sodium bicarbonate type. All ground water is very alkaline, and the alluvial aquifers contain very hard water (Kimball and Holmes 1987).

To support their various permit applications and determine future water requirements for their mining activities, the Applicant has conducted baseline groundwater quality monitoring since 2013. Seventeen groundwater monitoring wells are located in and around the South Project. The wells are installed at varying depths to allow the capture of groundwater from the various subsurface aquifers, which include an alluvial aquifer, the Birds-nest Zone, Upper Parachute Creek, and Douglas Creek from shallowest to deepest, respectively (Walsh 2014).

The Utah Groundwater Quality Protection Program establishes guidelines for classifying aquifers based on TDS concentrations and select other contaminants. Based on these limits, groundwater is designated as Class 1 through Class 4, from pristine to saline, respectively. A summary of the results from their most recent groundwater sampling is provided in this section (Walsh 2014).

- Total phosphorous exceeded the Class 2B Recreation Standard in 11 of the 15 groundwater monitoring wells sampled and the seep during November 2013. Nitrogen concentrations exceeded the standard at G-20New. All other nitrogen detections were below the regulatory limits.
- Aluminum, arsenic, cadmium, lead, and selenium exceeded their respective Class 3B Aquatic Wildlife Standards in one or more of the groundwater samples collected during November 2013.
- Gross alpha exceeded the Class 3B Aquatic Wildlife Standard in five of the sampled groundwater points and gross beta exceeded in three of the points sampled during November 2013.
- Phenol exceeded the Class 3B Aquatic Wildlife Standard in five of the 15 groundwater samples collected during November 2013.
- Bis(2-ethylhexyl)phthalate exceeded the Class 3B Human Health Standard in the sample collected from Skyline-2A during November 2013.
- Arsenic, boron, and selenium exceeded the Class 4 Agricultural Standard in one or more groundwater samples collected during November 2013.

- TDS exceeded the Class 4 Agricultural Standard in thirteen of the groundwater samples collected during November 2013.

3.2.5.5 Wetlands and Riparian Zones

A delineation of Waters of the U.S. was conducted for the Utility Project study area in July 2013 (SWCA 2013d). The USACE determined that the Utility Project study area contains Non-relatively Permanent Waters that flow directly or indirectly into a Traditionally Navigable Waterway (SPK-2013-00678-UO).

The USACE determination identified 29 ephemeral channels that have an Ordinary High Water Mark and have a significant nexus with the Green River. These channels have an indirect physical connection with the Green River. Nine ephemeral channels flow into Coyote Wash, which is a meandering ephemeral channel that flows into the White River, a perennial tributary to the Green River, approximately 10 river miles from the Utility Project study area.

The other ephemeral channels in the Utility Project study area had continuous Ordinary High Water Marks and are tributaries to Evacuation Creek, which is an ephemeral channel that is tributary to the White River, a perennial tributary to the Green River. Sediments, nutrients, and pollutants in the ephemeral washes channels may flow into Coyote Wash and Evacuation Creek, and then into the Green River.

3.2.5.6 Floodplains

Floodplains are relatively flat areas adjoining water bodies and are occasionally inundated during high water periods. According to FEMA Flood Insurance Rate Maps, 100-year floodplains (subject to inundation at least once in 100 years) are present along the White River and Evacuation Creek.

The area where the utility rights-of-way cross the White River contains relatively narrow alluvial banks and terraces that may flood during periods of high flow, normally during the spring snowmelt/runoff period. In addition, the utility rights-of-way will cross Evacuation Creek and a number of ephemeral drainages. These drainages are subject to flash flooding mainly in response to summer thunderstorms.

3.2.6 Vegetation

This section describes the existing condition of vegetation resources in the Utility Project study area.

3.2.6.1 Regulatory Framework

Relevant regulations for vegetation resources are presented in this section.

3.2.6.1.1 Federal

Federal legislation applicable to vegetation resources in the Utility Project study area listed in this section includes the FLPMA. Pertinent Instructional Bulletins, Internal Memorandums, the Vernal RMP, and federally issued resource management manuals are also listed in this section.

- The FLPMA (43 U.S.C. §1701) as amended, consolidates and articulates BLM management responsibilities and governs most uses of the federal lands, including authorization to grant or renew rights-of-way. BLM must make land use decisions based on principles of multiple use and sustained yield. As such, a grant of right-of-way must be limited to its necessary use and must contain terms and conditions that reflect the agencies' management responsibilities under the FLPMA, including minimizing impacts on fish and wildlife habitat.
- Executive Order 13112 requires that federal agencies prevent the introduction and spread of invasive species, detect and respond rapidly to control such species, monitor invasive species

populations, and restore native species and habitat conditions in ecosystems that have been invaded. In addition, the order requires that a federal agency "not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species."

- The Carlson-Foley Act (43 U.S.C. 1241) directs federal land management agencies to destroy noxious weeds growing on land under their jurisdiction, and provides a legal framework for reimbursement of expenses to state or local agencies for weed control on federal land.
- EPA Executive Order 11990: Protection of Wetlands, ordered by Jimmy Carter in 1977, provides additional support to NEPA, as amended (42 U.S.C. 4321 et seq.), in order to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.
- The BLM Washington Office Instructional Bulletin (WO-IB) 2012-097 states current BLM policy for any cutting or removal of timber, trees, or vegetative resources, including such resources located within the clearing limits of rights-of-way.
- The BLM Vernal RMP (2008) specifies goals and directs management of resources and resource programs on BLM-administered lands and minerals and sets stipulations to protect important or sensitive vegetation communities.
- The BLM UT-IM-2005-091 provides the Utah BLM Riparian Management Policy aimed at identifying, maintaining, restoring, and/or improving riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits and overall watershed protection while allowing for reasonable resource uses.
- BLM Manual 1740–Renewable Resource Improvements and Treatments (1985, amended 2008) outlines policies, objectives, and standards focused primarily on planning, analyzing, constructing, maintaining, replacing, or modifying renewable resource improvements and treatments such as for forestry, invasive species, and range management.

3.2.6.1.2 State

- Utah Noxious Weed Act (Rule R68-9) officially designates the list of weeds as noxious for the state of Utah, equipment capable of disseminating those weeds, and treatments considered to prevent dissemination of weed seeds or parts of noxious weed plants that could cause new growth by contaminated equipment, as per the authority vested in the Commissioner of Agriculture and Food under Section 4-17-3.

3.2.6.2 Issues Identified for Analysis

Issues identified related to vegetation identified in agency and public scoping include:

- Potential for impacts from construction and operation of the Utility Project and South Project on vegetation, particularly from ground-disturbing activities.
- Potential for impacts caused by erosion and dust associated with ground-disturbing activities from the Utility Project and the South Project on vegetation.

3.2.6.3 Affected Environment

3.2.6.3.1 Vegetation Communities

Sixteen cover types were identified during pre-field analysis of Southwest Regional Gap Analysis Project (SWReGAP) data (Table 3-10). Based on baseline study reports (SWCA 2013e) the SWReGAP land cover data were not representative of vegetation community distribution or composition in the study area. Three cover types identified in the study were not indicated by the SWReGAP data. Two shale badland cover types dominated the study area–Inter-Mountain Basins Shale Badland and White Shale Badland–interspersed within the broader Inter-Mountain Basins Shale Badlands. Colorado Plateau Mixed Low Sagebrush Shrubland dominates the highest elevations in the south portion of the Utility Project study area, and transitions to Inter-Mountain Basins Big Sagebrush Shrubland north of the White River (refer to Maps A-5a and A-5b in Appendix A).

Areas that were representative of the Rocky Mountain Cliff and Canyon, Inter-Mountain Basins Semi-Desert Shrub Steppe, or Inter-Mountain Basins Semi-Desert Grasslands were not documented in the study area.

Table 3-10
Southwest Regional Gap Cover Types in the Utility Project Study Area

Land Cover Classification	Acres
Colorado Plateau Mixed Bedrock Canyon and Tableland	27.0
Colorado Plateau Mixed Low Sagebrush Shrubland	97.3
Colorado Plateau Pinyon-Juniper Shrubland	9.9
Developed, Open Space - Low Intensity	1.0.
Inter-Mountain Basins Big Sagebrush Shrubland	452.8
Inter-Mountain Basins Greasewood Flat	57.3
Inter-Mountain Basins Mat Saltbush Shrubland	16.0
Inter-Mountain Basins Mixed Salt Desert Scrub	80.8
Inter-Mountain Basins Semi-Desert Grassland	1.2
Inter-Mountain Basins Semi-Desert Shrub Steppe	8.1
Inter-Mountain Basins Shale Badland	25.8
Invasive Annual Grassland	5.8
Open Water	1.5
Rocky Mountain Lower Montane Riparian Woodland and Shrubland	1.5
SOURCE: SWCA 2013e	

Colorado Plateau Mixed Bedrock Canyon and Tableland

This system includes steep cliff faces, narrow canyons, and open tablelands of predominantly sedimentary rocks, such as sandstone, shale, and limestone. The distribution of this vegetation cover type is centered on the Colorado Plateau where it is composed of barren and sparsely vegetated landscapes on steep cliff faces, narrow canyons, and open tablelands of predominantly sedimentary rocks, such as sandstone, shale, and limestone. The vegetation is characterized by very open tree canopy or scattered trees and shrubs with a sparse herbaceous layer. Common varieties include white fir (*Abies concolor*), Utah juniper (*Juniperus osteosperma*), Colorado blue spruce (*Picea pungens*), limber pine (*Pinus flexilis*), Great Basin bristlecone pine (*P. longaeva*), ponderosa pine (*P. ponderosa*), Douglas fir (*Pseudotsuga menziesii*), two-needle pinyon (*P. edulis*), and littleleaf mountain mahogany (*Cercocarpus intricatus*), and other short-shrub and herbaceous species. These species have adapted to using moisture from cracks and pockets where soil accumulates as habitat. The Colorado Plateau Mixed Bedrock Canyon and Tableland type covers approximately 26.99 acres in the study area.

Colorado Plateau Mixed Low Sagebrush Shrubland

Located in the Colorado Plateau, Tavaputs Plateau, and Uinta Basin, this vegetation cover type occurs in canyons, gravelly draws, hilltops, and dry flats at elevations generally below 6,000 feet amsl (BLM 2005b). This cover type includes open shrublands and steppe dominated by black sagebrush, Bigelow sagebrush (*Artemisia bigeloviin*), or sometimes Wyoming big sagebrush. The Colorado Plateau Mixed Low Sagebrush Shrubland type covers approximately 97.3 acres in the study area.

Colorado Plateau Pinyon-Juniper Shrubland

These woodlands occur on warm, dry sites on mountain slopes, mesas, plateaus, and ridges at lower elevations ranging from 4,900-8,000 amsl of the Colorado Plateau region from the Western Slope of Colorado to the Wasatch Range. The vegetation is dominated by dwarfed two-needle pinyon and/or Utah juniper trees that form extensive tall shrublands. Other shrubs that may occur in this vegetation community may include black sagebrush (*Artemisia nova*), Wyoming big sagebrush, or yellow rabbitbrush (*Chrysothamnus viscidiflorus*).This vegetation cover type covers approximately 9.9 acres in the study area.

Developed, Open Space – Low Intensity

The Developed-Open Space cover type consists of all scraped or excavated bare land that is currently in or has previously been converted to a developed state. This cover type includes all lands covered by urban development, including residential, transportation, utility infrastructure, well pads, mines, quarries, and other surface features. Isolated structures such as farmsteads and low density residential areas are also included. This category covers an estimated 0.80 acre in the study area.

Inter-Mountain Basins Big Sagebrush Shrubland

This vegetation cover type is found in basins between mountain ranges, plains, and foothills. It occurs throughout much of the western U.S., at 5,000 and 7,500 feet above mean sea level (amsl) (BLM 2014). Soils can be described as deep, well drained and non-saline and as a result are often rocky, shallow and alkaline. Vegetation in these shrublands is dominated by Basin big sage brush (*Artemesia tridentata* ssp. *tridentata)* or Wyoming big sagebrush (*Artemesia tridentata* ssp*. wyomingensis*). Other species often present include juniper (*Juniper* spp.), greasewood (*Sarcobatus vermiculatus*) and saltbrush (*Atriplex* spp.).

In some altered or disturbed areas, species such as shrubland rubber rabbitbrush (*Ericameria nauseosa*), yellow rabbitbrush (*Chrysothamnus nauseosus*), antelope bitterbrush (*Purshia tridentate*), or mountain snowberry (*Smyphoricarpos oreaphilus*) are common. This vegetation type covers approximately 452.8 acres in the study area.

Inter-Mountain Basins Greasewood Flat

This vegetation cover type occurs throughout much of the western U.S. in intermountain basins and extends onto the western Great Plains. It typically occurs near drainages on stream terraces and flats or may form rings around more sparsely vegetated playas that typically have saline soils and a shallow water table. Greasewood flats are large patch systems confined to specific environments defined by hydrologic regime, soil salinity and soil texture and are identified as a wetland habitat. They may flood intermittently but remain dry for most of the growing season. This vegetation cover type usually occurs as a mosaic of multiple communities, with open to moderately dense shrublands dominated or co-dominated by greasewood, fourwing saltbush, or shadscale saltbush. Occurrences are often bordered by mixed salt desert scrub. This woody vegetation community covers about 57.3 acres in the study area.

Inter-Mountain Basins Mat Saltbrush Shrubland

This vegetation cover type is on moderate slopes and rolling plains in the northern Colorado Plateau and Uinta Basin. The soils are shallow, typically saline, alkaline, fine-textured soils. These landscapes that typically support dwarf shrublands are composed of relatively pure stands of saltbush such as mat saltbush (*Atriplex corrugate*) or Gardner's saltbush (*Atriplex gardneri*). Other dominant or co-dominant dwarf-shrubs may include longleaf wormwood (*Artemisia longifolia*), birdfoot sagebrush (*A. pedatifida*), or bud sagebrush (*Picrothamnus desertorum*), these shrubs are sometimes mixed with other low growing shrubs such as winterfat (*Krascheninnikovia lanata*) or shortspine horsebrush (*Tetradymia spinosa*). The Inter-Mountain Basins Mat Saltbush Shrubland type covers approximately 16 acres in the study area.

Inter-Mountain Basins Mixed Salt Desert Scrub

This common open-canopy shrub-steppe system has an understory dominated by perennial grasses and forbs and occurs throughout much of the northern Great Basin in Utah and Wyoming among alluvial slopes and plains at elevations between 4,980 and 7,220 amsl. The vegetation is characterized by a typically open to moderately dense shrubland that are comprised of one or more saltbush species such as shadscale saltbush (*Atriplex confertifolia*), fourwing saltbush (*A. canescens*), or cattle saltbush (*A. polycarpa*). Other shrubs that may be present to co-dominant include Wyoming big sagebrush, yellow rabbitbrush, rubber rabbitbrush, Mormon tea (*Ephedra nevadensis*), spiny hopsage (*Grayia spinosa*), winterfat, bud sagebrush, or shortspine horsebrush. Warm-season medium-tall and short perennial grasses dominate in the sparse to moderately dense grass or grass-like species. Common graminoids may include James' galleta (*Pleuraphis jamesii)*, blue gramma (*Bouteloua gracilis*), alkali sacaton (*Sporobolus airoides*, sand dropseed (*S. cryptandrus*), Indian rice grass (*Achnatherum hymenoides*), squirreltail (*Elymus elymoides*), and saltgrass (*Distichlis spicata*) (Colorado Natural Heritage Program [CNHP] 2005).These shrublands and steppe habitats are one of the most common vegetation communities in the study area, covering 80.8 acres.

Inter-Mountain Basins Semi-Desert Grassland

This vegetation cover type occurs throughout the intermountain western U.S. on dry plains and mesas at elevations between 4,750 and 7,600 feet amsl. These grasslands occur in lowland and upland areas and may occupy swales, playas, mesa tops, plateau parks, alluvial flats, and plains, but sites are typically dry. The dominant perennial bunch grasses and shrubs within this system are all very drought-resistant. Grasslands are typically dominated by Indian rice grass (*Achnatherum hymenoides*), threeawn (*Aristida*) spp., blue grama (*Bouteloua gracilis*), needle-and-thread grass (*Hesperostipa comate*), Torrey's muhly (*Muhlenbergia torreyana*), or James' galleta (*Pleuraphis jamesii*). In addition, this vegetation type may include scattered shrubs and dwarf-shrubs of species of sagebrush, saltbush, and snakeweed. The Inter-Mountain Basins Semi-Desert Grassland type covers 1.2 acres in the study area.

Inter-Mountain Basins Semi-Desert Shrub Steppe

In Utah, this semi-desert shrub steppe occurs between 7,500-9,500 amsl, on windswept mesas, valley floors, gentle slopes, or shoulders of ridges. The vegetation is characterized by a typically open to moderately dense shrubland composed of one or more saltbush species, with a sparse to moderately dense herbaceous layer dominated by perennial grasses.

Characteristic grasses include Indian ricegrass, blue grama, saltgrass, needle-and-thread grass, James' galleta, Sandberg bluegrass (*Poa secunda*), and alkali sacaton. Shrub species may include fourwing saltbush, sand sagebrush (*Artemisia filifolia*), Greene's rabbitbrush (*Chrysothamnus greenei*), yellow rabbitbrush, rubber rabbitbrush, broom snakeweed (*Gutierrezia sarothrae*), and winterfat. The Inter-Mountain Basins Semi-Desert Shrub Steppe type covers 8.1 acres in the study area.

Inter-Mountain Basins Shale Badland

The vegetation in this ecological system is very sparse and may be naturally absent in some places. Landforms are typically rounded hills and plains that form a rolling topography. Environmental variables that lead to sparse dwarf-shrubs are harsh soil properties and the high rate of erosion and deposition. When vegetation is present it may be dominated by either dwarf shrubs such as saltbrush, sagebrush, or grass/forb herbaceous vegetation with scattered shrubs and trees. Small mature trees such as pinyon or juniper may be present. The dominant grass is often the perennial bunchgrass or saline wild rye (*Leymus* *salinus*). Total vegetation cover in these badlands is often less than 10 percent. The Inter-Mountain Basins Shale Badland type covers 25.8 acres in the study area.

Invasive Annual Grassland

The Invasive Annual Grassland vegetation type covers 5.8 acres in the Utility Project study area and is dominated by annual grass species such as cheatgrass (*Bromus tectorum*) and California brome (*Bromus carinatus*) that have been introduced to the Utility Project study area.

Open Water

Open water is often identified as ponds, lakes, inundated wetlands, rivers, or streams. About 1.5 acres of this cover type is found in the Utility Project study area.

Rocky Mountain Lower Montane Riparian Woodland and Shrubland

This vegetation type covers 1.9 acres in the study. Communities of the Rocky Mountain Lower Montane-Foothill Shrubland system are diverse, and species composition varies with elevation, aspect, soils, and disturbance history (CNHP 2007). Communities range from dry to mesic, and may be transitional to riparian woodland and shrublands at elevations between 5,000 and 9,500 feet amsl and are usually associated with exposed sites, rocky substrates, and dry conditions, all of which limit tree growth. The dominant shrub species are generally well adapted to poor soils, dry sites, and disturbance by fire. The herbaceous stratum rarely exceeds 1 m in height. Consequently, many of the dominant shrub species are also members of the shrub layer in ponderosa or mixed conifer woodlands.

The vegetation cover may be sparse to dense, and dominant shrub species may include Rocky Mountain maple (*Acer glabrum*), speckled alder (*Alnus incana*), water birch (*Betula occidentalis*), red osier dogwood (*Cornus sericea*), river hawthorn (*Crataegus rivularis*), stretchberry (*Forestiera pubescens*), chokecherry (*Prunus virginiana*), skunkbush sumac (*Rhus trilobata*), park willow (*Salix monticola*), Drummond’s willow (*S. drummondiana*), narrowleaf willow (*S. exigua*), sandbar willow (*S. irrorata*), shining willow (*S. lucida*), or silver buffaloberry (*Shepherdia argentea*). Dominant trees may include boxelder (*Acer negundo*), narrowleaf cottonwood (*Populus angustifolia*), eastern cottonwood (*P. deltoids*), Fremont cottonwood (*P. fremontii*), balsam poplar (*P. balsamifera*), Douglas-fir, peachleaf willow (*S. amygdaloides*), or Rocky Mountain juniper (*Juniperus scopulorum*).

The understory grass species vary with site conditions; common species include mountain muhly, blue grama, sideoats grama (*Bouteloua curtipendula*), Arizona fescu (*Festuca arizonica*), and bluebunch wheatgrass (*Pseudoroegneria spicata*).

3.2.6.3.2 Noxious Weeds and Invasive Plants

Thirty-one noxious weed species listed by the State of Utah and Uintah County have the potential to occur in the study area (SWCA 2013e). These species are identified in Table 3-11.

Table 3-11
Noxious Weed Species Listed by the State of Utah and by Uintah County

Common Name	Scientific Name	State of Utah	Uintah County
Utah Class A Noxious Weeds[1]			
Diffuse knapweed	*Centaurea diffusa*	✓	
Spotted knapweed	*Centaurea maculosa*	✓	
Yellow starthistle	*Centaurea solstitialis*	✓	
Squarrose knapweed	*Centaurea squarosa*	✓	
Oxeye daisy	*Chrysanthemum leucanthemum*	✓	
Common teasel	*Dissacus fullonum*		✓

Table 3-11
Noxious Weed Species Listed by the State of Utah and by Uintah County

Common Name	Scientific Name	State of Utah	Uintah County
Leafy spurge	*Euphorbia esula*	✓	
Blackhenbane	*Hyoscyamus niger*	✓	
St. Johnswort	*Hypericum perforatum*	✓	
Yellow toadflax	*Linaria vulgaris*	✓	
Purple loosestrife	*Lythrum salicaria*	✓	
Sulfur cinquefoil	*Potentilla recta*	✓	
Perennial sorghum	*Sorghum halepense*	✓	
Medusahead	*Taeniatherum caput-medusae*	✓	
Utah Class B Noxious Weeds[2]			
Hoary cress	*Cardaria* spp.	✓	
Musk thistle	*Carduus nutans*	✓	
Russian knapweed	*Centaurea repens*		
Squarrose knapweed	*Centaurea virgata*	✓	
Poison hemlock	*Conium maculatum*	✓	
Bermudagrass	*Cynodon dactylon*	✓	
Dyer's woad	*Isatis tinctoria*	✓	
Broad-leaved peppergrass	*Lepidium latifolium*	✓	
Dalmation toadflax	*Linaria dalmatica*	✓	
Scotch thistle	*Onopordum acanthium*	✓	
Puncturevine	*Tribulus terrestris*	✓	✓
Utah Class C Noxious Weeds[3]			
Quackgrass	*Agropyron repens*	✓	
Canada thistle	*Cirsium arvense*	✓	
Field bindweed	*Convolvulus* spp.	✓	
Houndstongue	*Cynoglossum officinale*	✓	
Russian olive	*Elaeagnus angustifolia*		✓
Salt cedar	*Tamarix ramosissima*	✓	

SOURCE: SWCA 2013e
NOTES:
[1] Class A: Early Detection Rapid Response (EDRR) Declared noxious weeds not native to the state of Utah that pose a serious threat to the state and should be considered as a very high priority.
[2] Class B: (Control) Declared noxious weeds not native to the state of Utah that pose a threat to the state and should be considered a high priority for control.
[3] Class C: (Containment) Declared noxious weeds not native to the state of Utah that are widely spread but pose a threat to the agricultural industry and agricultural products with a focus on stopping expansion.

Most of the species listed in Table 3-11 have low potential to occur due to limited distribution in the Uinta Basin and the limited amount of disturbed cover types in and near the vegetation analysis area. The species with the highest potential to occur are hoary cress (*Cardaria* spp.), broad-leaved peppergrass (*Lepidium latifolium*), field bindweed (*Convolvulus* spp.), Russian olive (*Elaeagnus angustifolia*), and saltcedar (*Tamarix ramosissima*).

3.2.7 Special Status Plants

Special status plant species are those that are federally listed as Endangered, Threatened, and Candidates, or Proposed for protection under the ESA or those considered sensitive by the BLM. This section identifies special status plant resources in the 2-mile-wide study area.

3.2.7.1 Regulatory Framework

Regulations that address and govern impacts on special status plant resources include the ESA and BLM handbooks and manuals, and the BLM Vernal RMP. Relevant regulations for special status plant resources are presented in this section.

3.2.7.1.1 Federal

- The ESA authorizes the FWS to protect plant and wildlife species and the habitats on which they depend. It requires federal agencies to ensure that their actions (including permitting) are not likely to jeopardize the continued existence of a listed species or result in the destruction of the species' habitat.
- BLM Special Status Species Management Policy Manual 6840 (6840 Policy) (Rel. 6-125) provides policy and guidance, consistent with applicable laws and regulations, for the conservation of special status species and the ecosystems upon which they depend. Special status species are defined as those "which are proposed for listing, officially listed as threatened or endangered, or are candidates for listing as threatened or endangered under the provisions of the ESA; those listed by a State in a category such as threatened or endangered implying potential endangerment or extinction; and those designated by each State Director as sensitive." As stated in Manual 6840, it also is BLM policy "to conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA provisions are no longer needed for these species, and to initiate proactive conservation measures that reduce or eliminate threats to BLM sensitive species to minimize the likelihood of and need for listing of these species under the ESA."
- The BLM Vernal RMP (2008) specifies goals and directs management of resources and resource programs on BLM-administered lands and minerals and sets stipulations to protect special status plants and the habitats on which they depend.

3.2.7.1.2 Conservation Agreement and Strategy for Graham's Beardtongue and White River Beardtongue

The Conservation Agreement and Strategy for Graham's Beardtongue (*Penstemon grahamii*) and White River beardtongue (*P. scariosus* var. *albifluvis*) (Agreement) was signed in July 2014 and enacted in August and September 2014. This document serves as a model for candidate species conservation and cooperation among resource managers and landowners in Utah.

The Agreement process was initiated by Uintah County and private landowners following a federal proposal to list the Graham's beardtongue and White River beardtongue as threatened under the ESA in August 2013. As a result of the collaboration between the FWS, the Bureau of Land Management, state and county governments, and private landowners the Agreement prompted the FWS to withdraw its proposed rule to protect the two beardtongue species under the ESA.

The 15-year pact identifies and minimizes potential threats to the two beardtongue species and their habitats. Even more importantly, the agreement sets forth collaborative protections and voluntary conservation actions that also protect the rights of private landowners.

The Agreement establishes 44,373 acres of conservation areas on federal, state, and private lands in Uintah County, Utah, and adjacent Rio Blanco County, Colorado. An additional 3,359 acres will be protected in the short term prior to approving permits for development, which provides a unique opportunity to study restoration methods for these two sensitive plant species. Further, the conservation areas consist of 38,486.5 acres on BLM lands, 743.5 on Utah Division of Wildlife Resources lands, 2,355.9 acres on SITLA lands, and 2,787.4 acres on private land. According to the Agreement, another 15,000.2 acres of habitat exist on private lands but are not included in the Agreement due to active lease or development status. One benefit of the Agreement designated conservation areas of five White River beardtongue core population areas that would not have been assured protection under an ESA listing.

Additional conservation actions undertaken as part of the Agreement include range-wide surveys, habitat evaluations, development of habitat restoration techniques, and formalized incentives for voluntary conservation actions. These include:

Federal lands. Designated conservation areas will be managed to identify, mitigate, and minimize impacts to the two beardtongue species as follows:

- A maximum of 5 percent new surface disturbance for Graham's beardtongue and 2.5 percent new surface disturbance for White River beardtongue will be allowed per conservation unit.
- Ground-disturbing activities will avoid Graham's and White River plants by 300 feet both inside and outside the designated conservation areas.

Non-federal lands. There are three categories of non-federally managed lands: conservation areas, interim conservation areas, and non-conservation areas.

- Conservation areas will be managed to identify, mitigate, and minimize impacts to Graham's and White River beardtongue, with up to 5 percent new surface disturbance for Graham's beardtongue and 2.5 percent new surface disturbance for White River beardtongue per landowner, and with plants avoided by 300 feet. New surface disturbance is defined as new or improved roads, permanent structures, or permitted activities.
- Interim conservation areas are designated areas on SITLA and private lands that will be managed as conservation areas until surface-disturbing activities have been permitted. On SITLA lands once mine permit applications for surface-mining activities are filed with the UDOGM, SITLA may elect to transfer their status in whole or in part to that of a non-conservation area. The SITLA Interim conservation areas are classified as either of the following:
  - SITLA Interim Class A are areas deemed by SITLA to be *likely* for surface development and removal from conservation status during the 15-year term of the Agreement.
  - SITLA Interim Class B are areas deemed by SITLA to be *unlikely* for surface development or removal from conservation status during the 15-year term of the Agreement.
- Non-conservation areas are designated as those areas in suitable habitat where surface-mining activities will occur unimpeded by this Agreement. It is understood that voluntary conservation measures may take place on these lands, and those voluntary conservation measures will be considered by the conservation team in evaluating the conservation of the species. These voluntary measures will be reported back to the conservation team.

Additional details for incorporating new conservation areas will be revisited every 1 to 3 years by the conservation team to consider adjustments as a result of newly identified populations, restoration activities undertaken, changes in habitat condition, and population dynamics (increases or decreases).

Distribution of conservation area acres within federal and non-federal lands is summarized in Table 3-12.

Table 3-12
Graham's and White River Penstemon Conservation Area Acres Protected Under the Agreement

Land Ownership	Penstemon Conservation Areas (Acres)	Interim Conservation Areas (Acres)	Private Non-Conservation Areas (Acres)
BLM	38,486.5	0	0
UDWR	743.5	0	0
SITLA	2,355.9	Class A: 1,686.6; Class B: 1,327.4	0
Private	2,787.4	345.5	15,000.2
Total Acres	44,373.4	3,359.5	15,000.2
SOURCE: SWCA 2015			

Specific threats to both plants described in the Agreement are further discussed in Section 3.2.7

Collaborations between the agreement signatories have already resulted in significant financial and in-kind resources for surveys and habitat assessments, with more resources for expanded surveys, research, and restoration. The conservation actions implemented under the agreement will enhance our knowledge of the species' distributions, abundance, habitat requirements, and restoration potential — and promote inter-governmental, private, and citizen involvement in the conservation process. Refer to Figure 3-2 for a flow chart of the process.

Designated PCAAs are described in the Conservation Agreement and Strategy for Graham's beardtongue *(P. grahamii)* and White River beardtongue *(P. scariosus* var. *albifluvis)* (Agreement). These PCAAs represent the ranges of each species, encompass varying site conditions, promote species stability (high-density populations), maintain corridors between populations, and provide for redundancy for each species. PCAAs in the Agreement encompass about 44,373.4 acres within both federal and non-federal lands. According to the Agreement BLM, Utah Division of Wildlife Resources, SITLA, and private lands contain acreage under the Agreement. Table 4-18 (Chapter 4) details the distribution of the PCAA acres protected under the Agreement. Interim conservation areas are designated areas on SITLA and private lands that are likely to be used for surface development which are managed as conservation areas until surface-disturbing activities have been permitted. Map C-5a and Map C-5b provide locations of penstemon habitat in relation to the Utility Project. Designated critical habitat for Graham's penstemon occurs in the Conservation Units and lands not covered under the Agreement.

3.2.7.2 Issues Identified for Analysis

Issues specific to special status plants were identified during agency and public scoping and included:

- Impacts to BLM sensitive species; and
- Impacts to Uintah Basin hookless cactus.

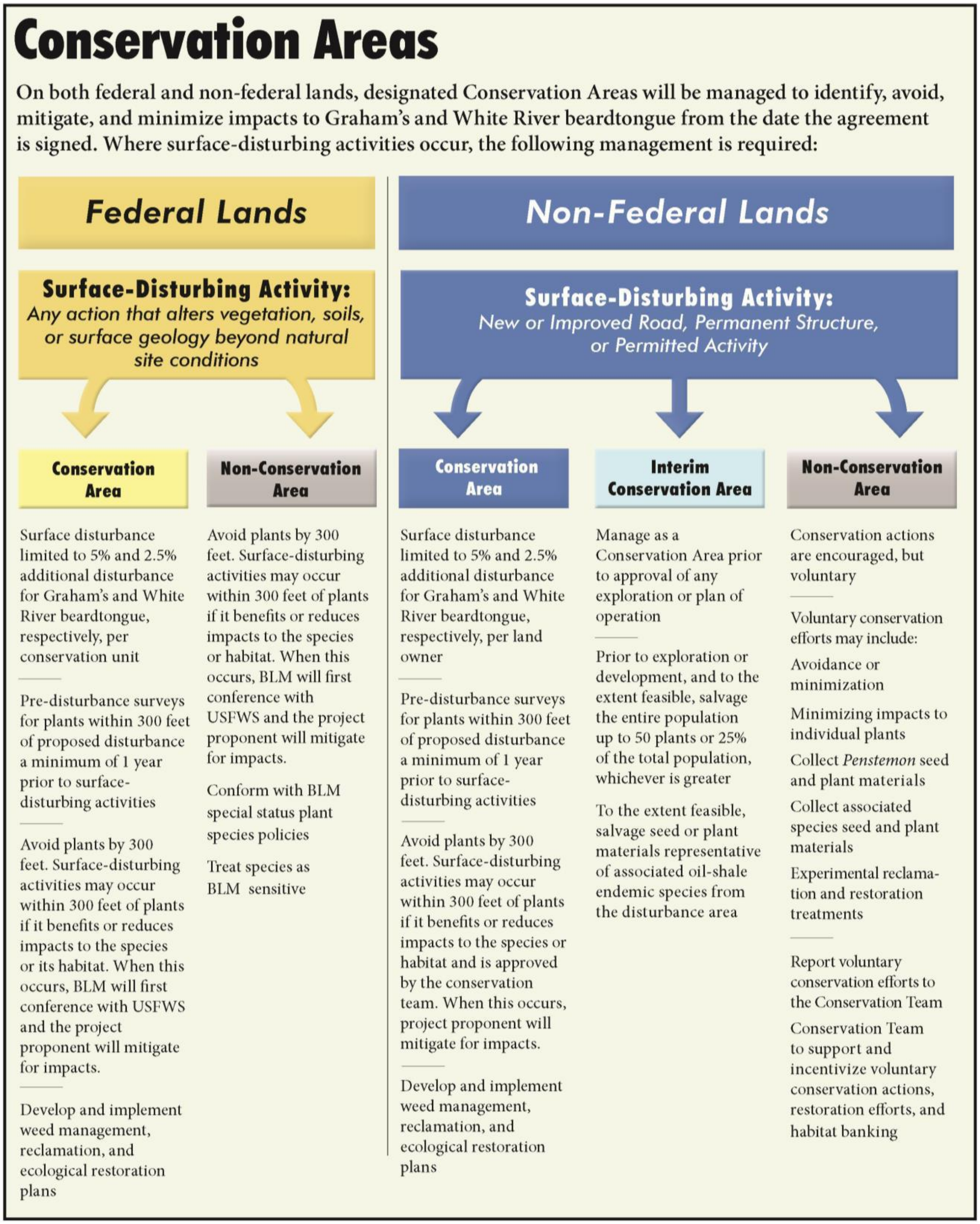

Figure 3-2 Conservation Areas Management Flowchart

3.2.7.3 Affected Environment

One federally listed plant species and five BLM sensitive plant species have potential to occur in the 2-mile-wide study area (SWCA 2013f). Occurrences of these species were limited and confined to the south and east portions of the South Project Area.

3.2.7.3.1 Special Status Plant Resources

3.2.7.3.1.1 Federally Threatened, Endangered, or Proposed Species

The evaluation of federally listed threatened and endangered species in this EIS complies with the requirements of pertinent environmental laws, regulations, and policies in accordance with the requirements of 3.2.7 7(b) of the ESA of 1973, as amended, and implementing regulations [16 U.S.C. 1536 (c), 50 CFR 402.12 (f) and 402.14 (c)], and ESA guidance contained in the Endangered Species Consultation Handbook (FWS and National Marine Fisheries Service 1998).

It is FWS' policy to consider candidate species when making natural resource decisions. Consequently, candidate species will be included for consideration in this EIS. Biological information on the above-mentioned species is provided in Table 3-13 and discussed below.

Table 3-13
Special Status Plant Species Potentially Occurring in the Utility Project Study Area

Common Name	Scientific Name	Conservation Status	Habitat
Federally Listed Plant Species			
Uinta Basin hookless cactus	*Sclerocactus wetlandicus*	ESA-threatened	Duchesne River, Green River, and Mancos Formations; salt desert shrub and pinyon-juniper on river benches at 4,500 to 6,600 feet amsl
BLM Sensitive Plant Species			
Graham's penstemon	*Penstemon grahamii*	BLM-sensitive, conservation agreement	Green River shale talus and ledges; sparse shadscale, desert shrub, and pinyon juniper associate; 4,600 feet amsl
White River penstemon	*Penstemon scariosus* var. *albifluvis*	BLM-sensitive, conservation agreement	Green River shale slopes and knolls; shadscale, desert scrub, and pinyon-juniper associate at 5,000- to 6,600 feet amsl
Barneby's catseye	*Cryptantha barnebyi*	BLM-sensitive	White shale barrens and knolls of the Green River Formation in shadscale and pinyon-juniper at 6,069 to 7,874 feet amsl. Known to co-occur with *Penstemon grahamii* and *P. scariosus* var. *albifluvis*
Strigose Easter-daisy	*Townsendia strigosa* var. *prolixa*	BLM-sensitive	Clay badlands in Duchesne and Uintah Counties. Limited information on distributional range or habitat features. Type locality near Chapita Wells
Sterile yucca	*Yucca sterilis*	BLM-sensitive	Salt desert shrub, sagebrush, and shadscale in sandy soils at 4,790 to 5,800 feet amsl
SOURCE: Utah Native Plant Society (UNPS) 2009			

Uinta Basin Hookless Cactus

The Uinta Basin hookless cactus (*Sclerocactus wetlandicus*) has been protected under the ESA since 1979 (44 FR 58868). Until recently it was considered a part of *S. glaucus* (Uinta Basin hookless cactus). On September 15, 2009 (74 FR 47112), FWS officially recognized the taxonomic split of this species into three distinct species: *S. brevispinus* (Pariette cactus), *S. glaucus* (Colorado hookless cactus), and *S. wetlandicus* (Uinta Basin hookless cactus) (Goodrich et. al. 1986).

Uinta Basin hookless cactus is a barrel-shaped cactus that ranges from 1.5 to 10 inches. The Uinta Basin hookless cactus is generally found on coarse soils derived from cobble and gravel-river and stream terrace deposits, or rocky surfaces on mesa slopes at 4,400 to 6,200 feet amsl (FWS 2015). Habitat requirements and distribution of this species has changed over time as additional studies and surveys are conducted in the Uinta basin. It can be found in a variety of vegetative communities including clay badlands, salt desert scrub, and pinyon-juniper woodlands. Potential habitat polygons were developed by FWS (2010) for *S. wetlandicus* to assist in management of this species. The FWS has proposed core conservation areas and management recommendations for *S. wetlandicus* in response to energy development within the Uinta Basin. Two levels of core conservation areas have been developed specifically based on insect and bee pollinators' travel distances between populations of the cactus and individual plants. Relative travel distances of small to medium bee species reported by Tepedino et al. (2010) are the basis of these established buffers. These core conservation areas are centered on the densest areas of cactus within a 1,312 foot (400 meter) buffer in Level 1 and 3,821 foot (1,000 meter) for Level 2 areas, respectively.

Sclerocactus Core Habitat

Core conservation areas have been established by the FWS to provide management guidance for habitat for both Uinta Basin hookless cactus (heretofore referred to as *Sclerocactus* core habitat), as no clear geographic delineation between the ranges and habitat requirements of these species exists (FWS 2009). Level 1 core habitat includes high-density occupied *Sclerocactus* habitat and a 400- meter (1,312 feet) buffer around plants. Level 2 core habitat includes less-densely occupied *Sclerocactus* habitat and a 1,000-meter (3,821 feet) buffer around plants. Both buffer distances allow for pollinator travel between cactus locations (FWS 2009). Polygons for these core habitat areas will be regarded as occupied *Sclerocactus* habitat for the purposes of this analysis and impacts on these areas are reported separately. Analysis of impacts on Uinta Basin hookless cactus potential habitat reported in this chapter is based on mapped areas in which the FWS requires surveys for these species to be conducted in advance of any project construction

Within the two-mile wide project study corridor are approximately 316.1 acres and 977.7 acres of Level 1 and Level 2 Core Conservation Areas (respectively) where 438 occurrences of *S. wetlandicus* have been documented. The total area of potential habitat for *S. wetlandicus* includes 460,009 acres found on federal (56 percent), tribal (28 percent), state, and private lands in Utah (FWS 2009). About, 7,203.7 acres has been identified in the two-mile wide study corridor for this project.

Utility Project

Surveys conducted during 2013 did not identify cactus within the Utility Project area. However, 1.2 acres of Level 1 Core Conservation Area occurs near the Bonanza Power Plant along the 150 foot transmission line right-of-way. Additionally, 68.4 acres of potential *Sclerocactus* habitat was determined to be present in the Utility Project areas. No individuals were found in the Utility Project area.

South Project

Surveys conducted during 2013 did not identify cactus in the South Project area.

3.2.7.3.1.2 BLM Sensitive Plant Species

<u>Graham's Penstemon</u>

Graham's beardtongue or penstemon *(Penstemon grahamii*) is a BLM sensitive plant species restricted to calcareous soils derived from oil shale barrens of the Green River Formation in the Uinta Basin of northeastern Utah and adjacent Colorado (FWS 2015) where it grows on semi-barren knolls, ridges, and steep slopes in a mix of fragmented white shale and silty clay soils associated with the Parachute Creek and Evacuation Creek members of the Green River Formation. It grows in sparsely vegetated communities of pinyon-juniper and desert shrub at elevations ranging from 4,690 to 6,760 feet amsl. Graham's beardtongue is frequently associated with pinyon pine, juniper, shadscale, and sagebrush, yucca (*Yucca harrimaniae*), (such as crispleaf buckwheat), and greasebrush (FWS 2004). Other federally listed species that could occur with Graham's beardtongue include Uinta Basin hookless cactus (*S. wetlandicus*), Shrubby reed-mustard (*Schoenocrambe suffrutescens*), and clay reed mustard (*Schoenocrambe argillacea*). Since 1992, 1,079 penstemon have been surveyed on the private lands within the areas comprising the South Project and none with the Utility Project area according to BLM records.

Graham's beardtongue occurs on federal and non-federal lands but is not known to occur on tribal lands (FWS 2013c). The penstemon occurs in an approximate 80-mile long, 6-mile wide land area that occurs from Rio Blanco County in Colorado to the southeastern border of Duchesne County in Utah (FWS 2013c). Of the known occupied range, including 24 sub-populations of the penstemon, about 40,333 plants have been documented (FWS 2013c).

Graham's beardtongue has been documented to occur in the same locations as other federally listed and BLM sensitive plant species endemic to oil-shale habitats. These species include shrubby reed-mustard (*Hesperidanthus* [*Schoenocrambe*] *suffrutescens*; federally endangered), clay reed-mustard (*Hesperidanthus* [*Schoenocrambe*] *argillaceua*; federally threatened), Barneby's catseye (*Cryptantha barnebyi*; BLM sensitive), and the narrow oil-shale endemics Graham's cryptanth (*Cryptantha grahamii*), ephedra buckwheat (*Eriogonum ephedroides*), dragon milkvetch (*Astragalus lutosus*), and Barneby's thistle (*Cirsium barnebyi*). Other associated rare plant species include Uinta Basin hookless cactus (*S. wetlandicus*; federally threatened), sterile yucca (*Yucca sterilis*; BLM sensitive), Goodrich's blazingstar (*Mentzelia goodrichii*; BLM sensitive), and *strigose townsendia (Townsendia strigosa* var. *prolixa*; BLM sensitive).

Reproduction of Graham's beardtongue is primarily by self-pollination and by pollinators such as bees (Dodge and Yates 2009; Dodge and Yates 2010). A number of native bee species were found to visit the plants when in flower. Pollinator distance for the penstemon is about 700 meters (2,296.6 feet). Seeds are dispersed in the fall and winter. Germination in early spring requires cold stratification according to Reisor and Yates (2011).

According to the FWS, potential threats to Graham's beardtongues could include: 1) plant mortality, habitat loss, and habitat fragmentation due to energy development, livestock grazing, road construction and maintenance, and off-road vehicles; 2) indirect disturbance to the species and their pollinators from fugitive dust and invasive plant species; 3) lack of range-wide protection; 4) population vulnerability due to small population size, random localized events (e.g., natural disasters), loss of genetic diversity, and inbreeding; 5) mortality, stress, or habitat loss due to climate change and drought; and 6) cumulative effects of the individual factors listed above.

In August 2014, the FWS withdrew their proposal to list Graham's beardtongue as threatened under the ESA as well as the proposal to designate critical habitat. Graham's penstemon is currently a BLM-sensitive species and is protected under the Conservation Agreement and Strategy for Graham's

Beardtongue (*Penstemon grahamii*) and White River Beardtongue (*P. scariossu* var. *albifluvis*) (SITLA et al. 2014).

Utility Project

Surveys conducted during 2013 identified approximately 29.8 acres of *P. grahamii* habitat in the Utility Project area of the White River Unit (5). Within the Utility Project, 4.88 acres of BLM Penstemon Conservation Area and 1 acre of the SITLA Penstemon Conservation Area was identified. No individual occurrences of *P. grahamii* were identified within the Utility Project area based on survey data collected in 2013.

South Project

Within the South Project area 1,052.7 acres of Penstemon Conservation Agreement Area is located in the Evacuation Creek Unit (4) and about 1,300.7 acres on private non-conservation area. Surveys identified 118 penstemon plants within these areas. However, none of the surveyed plants would fall within 300 feet of proposed ground disturbance areas.

White River Penstemon

White River beardtongue (penstemon) (*Penstemon scariosus* var. *albifluvis*) is a BLM-sensitive plant. White River beardtongue occurs on both federal and non-federal lands in similar habitats as Graham's beardtongue. The currently known range of White River beardtongue extends from Raven Ridge in Rio Blanco County, Colorado, to the vicinity of Willow Creek in Uintah County, Utah (FWS 2013c). However, distributions of the White River beardtongue are based on limited information regarding the potential range of the species and limited surveys throughout most of the currently known range.

Approximately 4,680.74 acres of habitat exists in the study area for Evacuation Creek and 1,446.34 acres for White River. This plant grows on raw shale barrens and oil shale barrens of the Evacuation Creek and Parachute Creek Member of the Green River Formation and occurs between 5,000 and 6,800 feet amsl. This species occupies steep habitats that range in the study area from 3 to 48 percent (average 20.7 percent) occurring on north eastern or in a north western facing slopes. Current distribution for the penstemon follows along the White River from Ignatio Bridge northeast nearly to the Utah-Colorado border. Other occurrences are known in Weaver Canyon, Hells Hole Canyon Ridge, and drainages of Evacuation Creek near Park Canyon, Rainbow, and Watson (FWS 2015). The current population estimate for White River beardtongue is about 12,215 individuals distributed across eight populations.

White River beardtongue is sometimes associated with other plant species that include pinyon pine (*Pinus edulis*), Utah juniper (*Juniperus osteosperma*), Utah serviceberry (*Amelanchier utahensis*), alder-leaved mountain-mahogany (*Cercocarpus montanus*), broom snakeweed (*Gutierrezia sarothrae*), shadscale (*Atriplex confertifolia*), and spiny greasebush (*Glassopetalon spinescens*. Uinta Basin oil shale endemic plant species associates consist of ephedra buckwheat (*Eriogonum ephedroides*), Barneby's thistle (*Centaurea solstitialis*), Graham's cryptantha (*Crypantha grahamii*), many-stem blazingstar (*Mentzelia multicaulis*), and oil shale columbine (*Aquilegia barnebyi*) (Welsh et al. 2008).

Reproduction of the species involves self-pollination and pollination by bees and insects. Like Graham's beardtongue, pollinators are also important to the successful reproduction of White River beardtongue. Identified pollinators of White River beardtongue include several native solitary ground-nesting and dead-wood-nesting bee species (FWS 2013c). Pollinator distance for the penstemon is about 500 meters (1,640.4 feet). Similar to Graham's beardtongue, seeds are dispersed during the fall or winter and likely germinate in early spring. Cold stratification is essential for seed germination in White River beardtongue, In August 2014, the FWS withdrew their proposal to list the White River beardtongue as threatened under the ESA as well as the proposal to designate critical habitat. Graham's penstemon is currently a BLM-sensitive species and is protected under the Conservation Agreement and Strategy for Graham's Beardtongue (*Penstemon grahamii*) and White River Beardtongue (*P. scariossu* var. *albifluvis*) (SITLA et al. 2014).

Utility Project

BLM and SITLA Penstemon Conservation Agreement areas consisting of 5.88 acres exist within the Utility Project area but no individual White River penstemon plants were found to occur in these areas.

South Project

Surveys conducted in 2013 identified 256 individual penstemon within the South Project on 1,137.6 acres of suitable habitat in the mine site area and 18.2 acres in the plant site within the South Project area. In total, 1,155.8 acres of Penstemon Conservation Agreement Area is located on private lands in the South Project area.

Barneby's Catseye

Barneby's catseye (*Cryptantha barnebyi*) is a long-lived perennial that occurs on barren white knolls of the Green River Formation in shad-scale, rabbitbrush, sagebrush, and pinyon-juniper communities (Welsh, et. al 2003) and is endemic to Uintah County, Utah. This perennial herb is a member of the borage family that inhabits regions with oil shale, gently sloping white shale barrens, and the semi-barren shale knolls of the Green River Formation. Due to the limits of soil requirements, this species is endemic to the Uinta Basin. This plant is generally associated with pinyon-juniper, shadscale, rabbitbrush, and sagebrush communities at elevations between 6,000 and 7,900 feet amsl (UNPS 2007 and 2009).While little is known about the habitat requirements for this species, suitable habitat exists within Utility Project corridor based on the vegetation, soil, and elevation associations required by the species. These conditions give Barneby's catseye a moderate potential for occurrence in the study area. Potential threats to this species include habitat loss and fragmentation as a result of oil and gas development, mineral and building material development, road development, off-highway vehicle (OHV) travel, and grazing (BLM 2012a).

Utility Project

No occurrences of Barneby's daisy were identified by surveys conducted in 2013. No potential habitat data is available for the daisy but the habitat for this species is similar to both *P. grahamii* and *P. scariosus* var. *albifluvis.*

South Project

About 314 occurrences of Barneby's daisy were documented within the South Project Area from surveys conducted in 2013. No potential habitat data is available but the habitat for the daisy is similar to both *P. grahamii* and *P. scariosus* var. *albifluvis.*

Sterile Yucca

The sterile yucca (*Yucca sterilis*) is a member of the *Agave* family and is restricted to the Uinta Basin in Duchesne and Uintah counties, Utah (Neese and Welsh, 1986). The yucca is listed as a BLM sensitive species. The yucca is endemic to Duchesne and Uintah counties, Utah. Sterile yucca have been found in salt desert scrub, sagebrush, juniper, and shadscale communities at elevations above 4,800 to 5,800 feet amsl in sandy soils. The yucca is similar to other yucca such as *Y. harrimaniae* with yellow- to cream-colored flowers.

Little is known about this species, its distribution, or habitat associations. Based on surveys conducted in 2013, no individual *Y. sterilis* plants were identified but there is potential habitat that exists within the project area. *Y. harrimaniae,* Spanish bayonet, was also limited in distribution throughout the project area.

Utility Project

Surveys conducted during 2013 did not identify sterile yucca plants within the Utility Project Area and no habitat data is available for this species.

South Project

Sterile yucca was not identified by surveys conducted in 2013 and no habitat data is available for this species within the South Project area.

Strigose Easter-daisy

The strigose Easter-daisy (*Townsendia strigose*) is found in sandy or clay soil of dry, open places (Ackerfield 2012) at 5,000 to 9,000 feet amsl among shale badlands. The average slope at identified locations for this plant was 17.4 percent and ranged from 10 to 24 percent slopes. Associated plant species include saltbrush, sagebrush, stemless mock goldenweed (*Stenotus acaulis*), Rocky Mountain phlox (*Phlox multiflora*), mat rock spiraea (*Petrophyton caespitosum*), and tufted milkvetch (*Astragalus spatulatus*) (Welsh et. al. 1993).

According to surveys performed in 2013, the specific habitat associations of the target variety are not well defined, with the few historic records from the Uinta Basin distributed from greasewood flats to shale badland communities, and no recent documentation of the varieties' distribution on clay soils derived from the Upper Green River Formation (Glisson 2012).

Utility Project

Strigose Easter-daisy was not identified in the Utility Project corridor among 25.8 acres of potential shale badlands habitat within the corridor.

South Project

Two locations identified in the west portion of the South Project area contained 25 individuals and approximately 1,728 acres of potential habitat including White Shale Badland and Colorado Plateau Mixed Low Sagebrush Shrublands.

3.2.8 Wildlife

Wildlife resources discussed in the section include birds, mammals, and reptiles other than those designated as threatened, endangered, or candidates for listing under the ESA, or species listed as sensitive by the BLM or state that may be present in the study area. Special status fish are discussed in Section 3.2.10.

3.2.8.1 Regulatory Framework

Relevant regulations for wildlife resources are presented in this section.

3.2.8.1.1 Federal

- Under authority of the MBTA of 1918 (16 U.S.C. 703-712), it is unlawful to take, kill, or possess migratory birds, their parts, nests, or eggs. Take is defined (50 CFR I 0.12) as to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.

- The Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C668-668d) prohibits the "taking" or possession or any commerce of bald or golden eagles. The definition of "take" includes pursue, shoot, shoot at, wound, poison, kill, capture, trap, collect, molest, or disturb. Disturb is defined as to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.
- Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, directs federal agencies to take certain actions to further implement the MBTA (16 U.S.C. 703-711). The federal agencies are directed to develop and implement a Memorandum of Understanding with the FWS to promote conservation of migratory bird populations.
- The BLM Memorandum of Understanding Between the Bureau of Land Management and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds outlines a collaborative approach to promote the conservation of migratory bird populations and is intended to strengthen migratory bird conservation efforts by identifying and implementing strategies to promote conservation and reduce or eliminate adverse impacts on migratory birds through enhanced collaboration between the BLM and the FWS, in coordination with state, tribal, and local governments.
- The FLPMA, as amended, consolidates and articulates BLM management responsibilities and governs most uses of the federal lands, including authorization to grant or renew rights-of-way. In accordance with FLPMA, BLM must make land use decisions based on principles of multiple use and sustained yield. As such, a grant of right-of-way must be limited to its necessary use and must contain terms and conditions that reflect the agencies' management responsibilities under FLPMA, including minimizing impacts on fish and wildlife habitat.
- The URMCC is authorized under the Central Utah Project Completion Act of 1992 (P.L. 102-575) to set terms and conditions for completing the CUP, which diverts, stores, and delivers large quantities of water from numerous Utah rivers. The Mitigation Commission is responsible for designing, funding, and implementing projects to offset the impacts on fish, wildlife, and related recreational resources caused by CUP and other federal reclamation projects in Utah. Lands owned and managed by the Mitigation Commission for CUP mitigation commitments are located in the Utility Project study area.
- The BLM WO-IB 2012-097 states current BLM policy for any cutting or removal of timber, trees, or vegetative resources, including such resources located in the clearing limits of rights-of-way.
- The BLM UT-IM-2005-091 provides the Utah BLM Riparian Management Policy aimed at identifying, maintaining, restoring, and/or improving riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits and overall watershed protection while allowing for reasonable resource uses.
- Executive Order 13112 (*Invasive Species*) requires federal agencies prevent the introduction and spread of invasive species and prohibits their authorization of actions that would be likely to cause or promote the introduction or spread of invasive species.
- The BLM Vernal RMP (2008) specifies goals and directs management of resources and resource programs on BLM-administered lands and minerals and sets stipulations to protect fish and wildlife and the habitats on which they depend.

3.2.8.1.2 State

- The Utah State Wildlife Action Plan (SWAP) 2005 is a comprehensive management plan designed to conserve native species populations and habitats within Utah, and prevent the need for additional Federal listings.
- Utah State Code Section 23-14-1 directs the UDWR to protect, propagate, manage, conserve, and distribute protected wildlife throughout Utah. This statute also authorizes UDWR to identify and delineate crucial seasonal wildlife habitats.
- Utah Partners in Flight Avian Conservation Strategy, Version 2.0 prioritizes avian species and their habitats and sets objectives designed to determine which species are most in need of immediate and continuing conservation effort. The other purpose of the strategy is to recommend appropriate conservation actions required to accomplish stated objectives.

3.2.8.2 Issues Identified for Analysis

Issues related to wildlife identified in agency and public scoping include:

- Potential for impacts from the Utility Project and South Project to wildlife species and their habitats, including, but not limited to:
  - Big game;
  - Greater sage-grouse;
  - Raptors (e.g., golden eagle); and
  - Migratory birds.

3.2.8.3 Affected Environment

3.2.8.3.1 General Wildlife Habitat

The study area consists of a variety of natural vegetation communities and landscape features that provide a diversity of wildlife habitat types. The vegetation communities described in Section 3.2.6 characterize the general wildlife habitat found in the study area. There are big game (such as deer, elk, pronghorn, and bighorn sheep); mountain lions (or cougars); upland game; and non-game species (such as small mammals, reptiles, and amphibians). Water resources suitable for fish species are also present in the study area. Management goals for most wildlife populations in the project area are determined primarily by the UDWR, with the exception of federally protected wildlife species, which are determined by the FWS. The BLM Vernal Field Office has established habitat management objectives (BLM 2008) within the field office boundary for mule deer, Rocky Mountain elk, pronghorn, and Rocky Mountain bighorn sheep (refer to Maps A-6a and A-6b in Appendix A). Habitat management objectives for reptiles, amphibians, and other non-game species in the project area are limited to protecting individuals and the habitat of state sensitive, BLM sensitive, and federally listed species, and designating spatial and temporal barriers for nesting raptors (BLM 2006a and 2008a). Details on state sensitive, BLM sensitive and federally listed species can be found in Section 3.2.9. Table 3-14 provides acreage for wildlife habitat in the Utility Project study area.

Table 3-14 Wildlife Habitat in the Utility Project Study Area		
Wildlife Habitat	**Utility Project (Acres)**	**South Project**
Badland	28.1	3,362.4
Cliff and Canyon	26.4	0.0
Developed/Disturbed	59.6	79.7
Greasewood Flat	64.0	391.6
Open Water	1.5	0.0
Pinyon-Juniper Forest	2.8	326.8
Riparian	2.6	0.0
Sagebrush Shrubland	422.3	2,425.
Salt Desert Scrub	72.1	0.0
Total Acres	607.3	6,585.4

3.2.8.3.1.1 Wildlife

Small mammals potentially found in the study area and surrounding region include the cottontail rabbit, black-tailed jackrabbit, coyote, badger, striped skunk, western spotted skunk, and various species of rodents and bats. Bird species that may be present include the black-throated sparrow, Say's phoebe, ferruginous hawk, Brewer's sparrow, sage sparrow, grasshopper sparrow, and horned lark. Reptiles potentially found in the region include the wandering garter snake, Great Basin gopher snake, milksnake, Great Basin spadefoot toad, smooth green snake, western whiptail, sagebrush lizard, and shorthorned lizard.

Although all of these wildlife species are important members of ecosystems and communities of Utah, most are common and have wide distributions. As a result, the association of most of these species to the Utility Project study area is not discussed to the degree as species that are considered threatened, endangered, sensitive, of special economic interest, or are otherwise of interest or value.

Table 3-15 provides a list of wildlife with the potential to occur in the Utility Project study area according to SWCA (2013j). Table 3-10 in Section 3.2.6 provides the vegetation cover types in the study area.

Table 3-15 Mammalian Species With Potential to Occur in the Utility Project Study Area		
Species	**Scientific Name**	**Habitat**
White-tailed antelope squirrel[1]	*Ammospermophilus leucurus*	SS, SDS, GF
Pronghorn antelope[1]	*Antilocapra americana*	SDS, DD
Pallid bat	*Antrozous pallidus*	CC, SS, GF, BA, SDS, RI
Bison	*Bos bison*	SS, SDS, BA
Coyote[1]	*Canis latrans*	SS, CC, GE, SDS
Elk[1]	*Cervus elaphus*	PJF
White-tailed prairie-dog[1]	*Cynonmys leucurus*	DD, GF, SDS
Ord's kangaroo rat[1]	*Dipodomys ordii*	SS
Big brown bat	*Eptesicus fuscus*	CC, DD, SS, GF, BA, SDS, PJF, RI
Sagebrush vole	*Lemmiscus curtatus*	SS
Black-tailed jackrabbit	*Lepus californicus*	SS
Bobcat	*Lynx rufus*	SS, BA, SDS, PJF, RI
Various myotis species	*Myotis* spp.	CC, DD, SS, GF, BA, SDS, PJF, RI
Woodrat [1]	*Neotoma* spp.	CC
Mule deer[1]	*Odocoileus hemionus*	DD, SS, PJF, RI
Rocky Mountain bighorn sheep	*Ovis canadensis canadensis*	CC, RI
American deer mouse	*Peromyscus maniculatus*	DD, SS, SDS, PJF
Cougar	*Puma concolor*	CC, RI

Table 3-15
Mammalian Species With Potential to Occur in the Utility Project Study Area

Species	Scientific Name	Habitat
Desert cottontail	*Sylvilagus audubonii*	SS, BA, SDS, PJF
Brazilian free-tailed bat	*Tadarida brasiliensis*	CC, DD, SS, GF, BA, SDS, RI, OW
Least chipmunk[1]	*Tamias minimus*	SS, SDS, GF
American badger	*Taxidea taxus*	DD, SS, GF, BA, SDS
Red fox	*Vulpes vulpes*	CC, DD, SS, SDS, GF, BA, RI, PJF

NOTES:
[1]Species were observed during SWCA 2013 field surveys.
BA = badland
CC = cliff and canyon
DD = developed/disturbed
GF = greasewood flat
OW = open water
PJF = pinyon-juniper forest
RI = riparian
SDS = salt desert scrub
SS = sagebrush shrubland.

Upland Game and Small Mammals

Upland game species with potential to occur in the study area include chukar partridge (*Alectoris chukar*), mourning dove (*Zenaida macroura*), greater sage-grouse (*Centrocercus urophasianus*), mountain cottontail rabbit (*Sylvlagus nuttalii*), and desert cottontail rabbit (*Sylvilagus audubonii*). Discussion on the potential for greater sage-grouse to occur in the analysis area can be found in Section 3.2.9.

Habitat for upland game can be found throughout study area. Correlation can be made between annual climatic patterns and annual population changes. Studies have linked mild winter and early spring precipitation with increases in upland game populations. Warm, dry weather during the early summer, is vital for the survival of newborn upland game species. Most upland game species adapt easily to human disturbances and can often be found near disturbed areas such as well sites and roads.

Several small mammal, amphibian, and reptile surveys have been conducted by the BLM on the land managed by the Vernal Field Office, including parts of the study area. Many of these non-game species are difficult to study and monitor because of low population sizes and/or discrete behavior. However, the BLM is in the process of acquiring basic habitat and population information on non-game species listed by state and federal agencies as special status species.

Small mammals, amphibians, and reptiles may have special habitat needs. Areas with the highest concentrations and diversity of these species are generally associated with riparian areas (there are approximately 3 acres of BLM-identified riparian habitat in the study area). Amphibian populations are generally limited to areas with water. Small mammals and reptiles generally range farther from water into grassland, shrubland, and forested habitats (reptiles are often associated with talus slopes and rock faces), but must return periodically to water sources. Since small mammals and reptiles occur across many habitats, potential habitat for these species occurs throughout the proposed right-of-way for the utility corridors and the South Project area itself (2,040.8 acres).

Reptiles and Amphibians

Reptile and amphibians species likely to occur in the study area include eastern fence lizard (*Sceloporus undulates*), common sideblotched lizard (*Uta stansburiana*), Great Basin gopher snake (*Pituphis melanoleucus*), wandering garter snake (*Thamnophis elegans vagrans*), midget faded (western) rattlesnake (*Crotalus viridis concolor*), and western whiptail (*Cnemidophorus tigris*) (UDWR 2003). Areas with the highest concentration and diversity of these species are generally associated with riparian areas, such as the White River. Amphibian populations are generally limited to areas with water and could be affected by impacts to water resources discussed in Section 3.2.5. Reptiles must return periodically to water sources, but generally range farther from water into grassland, shrubland, and forested habitats, and are often associated with talus slopes and rock faces.

Big Game

Five primary big game species occur within or near the Utility Project study area: mule deer, pronghorn antelope, Rocky Mountain bighorn sheep, Rocky Mountain elk, and bison, where specific habitat types occur in the study area, as shown in Table 3-16. These species occur throughout the Utility Project study area, where suitable habitat exists. Currently, the BLM uses the UDWR crucial habitat boundaries to apply restrictions to uses in crucial wildlife habitat areas because UDWR is the entity with jurisdiction and expertise over wildlife in Utah (BLM 2008a). The BLM defines crucial winter habitat as the determining factor in a population's ability to maintain and reproduce itself over time (BLM 2006c). The BLM also designates other habitat applied to big-games species such as substantial winter habitat and crucial year-long habitat. BLM and UDWR habitat designations are defined in Table 3-17.

Table 3-16
Big-Game Habitat in the Utility Project Area

Big-Game Habitat	Season	Type	Acres
Mule deer	Winter	Crucial	154
	Winter	Substantial	109.5
	Year-long	Crucial	210.8
	Total	–	474.2
Pronghorn	Year-long	Crucial	422.3
Rocky Mountain Bighorn Sheep	Year-long	Crucial	57.8
Rocky Mountain Elk	None	None	0.0
Bison	Year-long	Crucial	281.4
SOURCE: BLM 1999			

Table 3-17
UDWR Habitat Definition

UDWR Habitat Designation	Definition
Crucial Value Habitat	Habitat on which the local population of a wildlife species depends for survival because no alternative ranges or habitats are available. Crucial value habitat is essential to the life history requirements of a wildlife species. Degradation or unavailability of crucial habitat will lead to significant declines in carrying capacity and/or numbers of wildlife species in question.
Substantial Value Habitat	Habitat that is used by a wildlife species but is not crucial for population survival. Degradation or unavailability of substantial value habitat will not lead to significant declines in carrying capacity and/or numbers of the wildlife species in question.
SOURCE: UDWR 2007; BLM 2008f	

Mule Deer

Mule deer (*Odocoileus heminonus*) make use of a variety of habitats in Utah, but are found in greater densities in shrublands and areas of rough, broken terrain characterized by abundant browse and cover (UDWR 2008). Typical habitats include short-grass and mixed-grass prairies, sagebrush and other shrublands, coniferous forests, and forested and shrubby riparian areas. Fawn production is closely tied to the abundance of succulent green forage during the spring and summer months, whereas deer are especially reliant on shrubs for forage during the winter (UDWR 2008). Mule deer are less abundant in grassland and shrub steppe habitats.

In Utah, mule deer are seasonal migrants, using high-elevation mountainous terrain in the summer, and descending to lower elevation benches and valley floors in the winter. Mule deer summer range habitat types consist of spruce, fir (or combination), aspen, alpine meadows, and large grassy parks. Winter range habitat primarily consists of shrub-covered, south-facing slopes, which often coincide with areas of concentrated human use. Winter range is often considered a limiting factor for mule deer in the Intermountain West (UDWR 2008). The size and condition of mule deer herds are usually directly correlated with the quantity and quality of their habitat (UDWR 2012). UDWR-defined mule deer habitat encompasses approximately 474.2 acres. In the Uinta Basin, mule deer typically occur in riparian areas along the White River and Evacuation Creek and in sagebrush and pinyon-juniper habitats in the winter.

Utility Project

Mule deer could occupy the Utility Project area on a year round basis. In addition, the Utility Project area consists of about 210.8 acres of year-long, crucial habitat, 154 acres of crucial winter habitat and 109.5 acres of substantial, winter habitat (refer to Table 3-16).

South Project

Mule deer are most likely to be present on a year round basis. In addition, about 6,585.7 acres of crucial winter habitat are located in the South Project area.

Pronghorn Antelope

Pronghorn (*Antilocarpa americana*) typically inhabit grasslands and semi-desert shrublands of the western and southwestern U.S. The species is common in Utah, where it can be found in desert, grassland, and sagebrush habitats (UDWR 2009). Of these habitats, nearly all pronghorn populations in Utah occur in shrub steppe habitat, where large expanses of low rolling or flat terrain characterize the topography. Pronghorn are typically less abundant in xeric habitats because the abundance of water is important to long-term population viability. Pronghorn habitat in Utah often shows a scarcity of naturally available water (UDWR 2009). Pronghorn are commonly found in small groups and tend to be most active during the day (UDWR 2009). In 2014, herd size for pronghorn consisted of about 113 individuals. According to UDWR, the local herd was with 50 additional pronghorns that were trans-located from southern Utah.

Utility Project

UDWR-defined pronghorn, year-long, crucial habitat encompasses approximately 422.3 acres in the Utility Project area and pronghorn are likely to occupy areas of the Utility Project on a year round basis.

South Project

No UDWR-defined pronghorn habitat was identified in the South Project area. However, pronghorn are likely to occupy the area on a yearlong basis.

Rocky Mountain Bighorn Sheep

Rocky Mountain bighorn sheep (*Ovis canadensis*) are generally found in the cooler mountainous regions of Canada and the western U.S. Bighorn sheep were almost extirpated from Utah in the early 1900s. Between 1970 and 1998, bighorn sheep were transplanted into the Books Cliffs, Hill Creek area, and in 2008, the Books Cliff Rattlesnake herd size was estimated at 350 individuals. No current herd size estimates for the Books Cliff are available since the area is not managed for sheep by UDWR (EPG 2015c).

Bighorn sheep graze on grasses and browse on shrubby plants, and often seek salt licks or natural mineral deposits to supplement their diets. They seek cover, and their agility in steep and rugged terrain helps them avoid predators. They are often found in large herds, though they do not follow a strict dominance hierarchy.

Utility Project

Within the Utility Project area, about 57.8 acres of year-long, crucial habitat was identified, although no bighorn sheep were observed during surveys conducted in 2013.

South Project

Within the South Project area, about 422.2 acres of year-long, crucial habitat was identified within the South Project area, although no bighorn sheep were observed.

Rocky Mountain Elk

Rocky Mountain elk (*Cervus canadensis*) herds have increased dramatically in Utah over the past 30 years but have generally been more stable in recent years (UDWR 2005). According to UDWR, the Rocky Mountain Elk is the second-most abundant big-game species in the state after mule deer.

Grasses and shrubs compose most of elk's winter diet, with the former being of primary importance in the spring months (Kufeld 1973). Forbs become increasingly important in late spring and summer, and grasses again dominate in the fall. The exact composition of their diet depends on the availability of the food source and may change somewhat depending on location (UDWR 2010). Seasonal changes in diet are associated with seasonal changes in habitat. The season and function of use of these habitats help distinguish various types of winter ranges, production areas (calving grounds), and/or summer range. Production or calving areas are used from mid-May through June, and typically occupy higher-elevation sites than winter range.

Elk herds have increased dramatically in Utah over the past 30 years and appear to be generally more stable in recent years most likely due to management activities (UDWR 2005). According to surveys conducted in 2013, no elk were observed in the study area but were observed by biologists approximately 4 miles outside the study area. Areas of the Utility Project study area are foraged by elk and according to UDWR the elk population in Utah is estimated at 5,500 individuals.

Utility Project

No UDWR-defined crucial elk habitat exists within the Utility Project corridor.

South Project

Within the South Project 3,958.7 acres of winter substantial habitat for elk was identified and elk are likely to be present during winter months.

Bison

Bison were historically present in the East Tavaputs Plateau and Uinta Basin, but were hunted to near-extinction throughout the country in the early 1900s. They now occur in only three locations in Utah: the Henry Mountains, Antelope Island, and the Book Cliffs. Bison are grazers and thus mostly eat grass, but can consume other vegetation. Bison were reintroduced to the Book Cliffs area by the Ute Tribe in 1986 and by UDWR in 2008 (UDWR 2007). Currently, the resident public bison herd in Utah is estimated at 150 individuals (EPG 2015b).

Utility Project

Within the Utility Project study area, 281.4 acres of year-long, crucial habitat occurs in the Utility Project area. No bison were observed in 2013.

South Project

Within the South Project, there is about 6,585.7 acres of year-long, crucial habitat but no bison were observed in 2013.

Migratory Birds and Raptors

The MBTA prohibits killing migratory birds (including raptors) or destroying their nests and eggs without a permit. This statute applies to all migratory birds in the U.S. with the exception of exotic species, such as the European starling (*Sturnus vulgaris*) and house sparrow (*Passer domesticus*). Executive Order 13186 directs federal agencies taking actions that are likely to have a measurable adverse effect on migratory birds to support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.

According to the surveys conducted, fifty-one avian species, including neotropical, wading and waterfowl, raptors, and other migratory birds, have the potential to occur in or near the Utility Project study area. The species with potential to occur in the analysis area and the habitat in which they are likely to occur were determined by referencing Cornell's Birds of North America online database (Cornell Lab of Ornithology, 2013), Table 3-18 below lists avian species with the potential to occur in the Utility Project study area.

Table 3-18
Avian Species Occurring or Potentially Occurring in the Utility Project Study Area

Species	Scientific Name	Habitat	Species Occurring	Species Likely to Occur
Greater sage-grouse	*Centrocercus urophasianus*	SS	No	Yes
Cooper's hawk	*Accipiter cooperii*	SS, RI, PJF	Yes	Yes
Sharp-shinned hawk	*Accipiter striatus*	PJF	No	Yes
Northern shoveler	*Anas clypeata*	RI, OW	Yes	Yes
Golden eagle[1]	*Aquila chrysaetos*	CC, flyover	Yes	Yes
Sage sparrow	*Artemisiospiza belli*	SS, SDS	Yes	Yes
Burrowing owl[1]	*Athene cunicularia*	SS, DD	Yes	Yes
Juniper titmouse	*Baeolophus ridgwayi*	PJF	No	Yes
Canada goose[1]	*Branta Canadensis*	CC, RI	Yes	Yes
Great-horned owl[1]	*Bubo virginianus*	CC	Yes	Yes
Red-tailed hawk[1]	*Buteo jamaicensis*	RI, flyover	Yes	Yes
Ferruginous hawk	*Buteo regalis*	PJF, SS	No	Yes
Swainson's hawk	*Buteo swainsoni*	RI	Yes	Yes
Sandpiper species	*Calidris* spp.	RI	Yes	Yes
Lesser goldfinch	*Carduelis psaltria*	DD	No	Yes
Turkey vulture	*Cathartes aura*	Flyover	Yes	Yes
Canyon wren	*Catherpes mexicanus*	CC	No	Yes
Mountain plover	*Charadrius montanus*	GR	Yes	Yes
Killdeer[1]	*Charadrius vociferous*	SDS, DD, GF	Yes	Yes
Lark sparrow[1]	*Chondestes grammacus*	SS, GF, SDS, RI	Yes	Yes
Northern harrier	*Circus cyaneus*	SS, SDS, DD	Yes	Yes
Northern flicker	*Colaptes auratus*	RI, PJF	Yes	Yes
Common raven[1]	*Corvus corax*	SS, SDS, DD, PJF, CC	Yes	Yes
Yellow warbler	*Dendroica petechial*	RI	Yes	Yes

Table 3-18 Avian Species Occurring or Potentially Occurring in the Utility Project Study Area				
Species	**Scientific Name**	**Habitat**	**Species Occurring**	**Species Likely to Occur**
Horned lark	*Eremophila alpestris*	SS, SDS, DD	Yes	Yes
Brewer's blackbird	*Euphagus cyanocephalus*	SDS, RI, SS	Yes	Yes
Merlin	*Falco columbarius*	SS	Yes	Yes
Prairie falcon[1]	*Falco mexicanus*	CC, SS	Yes	Yes
Peregrine falcon	*Falco peregrinus*	CC, RI	No	Yes
American kestrel	*Falco sparverius*	CC, DD, SS, SDS	Yes	Yes
Common yellowthroat	*Geothlypis thichas*	RI	No	Yes
Pinyon jay	*Gymnorhinus cyanocephalus*	PJF	No	Yes
Bald eagle	*Haliaeetus leucocephalus*	RI	No	Yes
Yellow-breasted chat	*Icteria virens*	RI	Yes	Yes
Bullock's oriole	*Icterus bullockii*	RI	Yes	Yes
Dark-eyed junco	*Junco hyemalis*	SS	Yes	Yes
Loggerhead shrike	*Lanius ludovicanus*	SS, SDS	Yes	Yes
Western screech-owl	*Megascops kennicottii*	PJF, RI	No	Yes
Common merganser	*Mergus serrator*	RI, OW	Yes	Yes
Northern mockingbird	*Mimus polyglottos*	RI	Yes	Yes
Brown-headed cowbird	*Molothrus ater*	SDS, DD	Yes	Yes
Townsend's solitaire	*Myadestes townsendii*	RI	Yes	Yes
Sage thrasher	*Oreoscoptes montanus*	SS, SDS	Yes	Yes
Cliff swallow	*Petrochelidon pyrrhonota*	SS, SDS	Yes	Yes
Common poorwill	*Phalaenoptilus nuttalii*	CC	No	Yes
Black-billed magpie	*Pica hudsonia*	DD, SS, GF	Yes	Yes
Green-tailed towhee	*Pipilo chlorurus*	SS	No	Yes
Spotted towhee	*Pipilo maculatus*	RI	Yes	Yes
Blue-grey gnatcatcher	*Polioptila caerulea*	RI, GF	Yes	Yes
Common grackle	*Quiscalus quiscula*	SDS, DD	Yes	Yes
Rock wren	*Salpinctes obsoletus*	CC	Yes	Yes
Say's phoebe	*Sayornis saya*	SS, SDS	Yes	Yes
Mountain bluebird	*Sialia currucoides*	SS, RI	Yes	Yes
Brewer's sparrow	*Spizella breweri*	SS	Yes	Yes
Chipping sparrow	*Spizella passerine*	SS	Yes	Yes
Western meadowlark	*Sturnella neglecta*	SS, SDS	Yes	Yes
Tree swallow	*Tachycineta bicolor*	Flyover, SS, RI	Yes	Yes
Violet-green swallow	*Tachycineta thalassina*	SS	Yes	Yes
Willet	*Tringa semipalmata*	RI, OW	Yes	Yes
American robin	*Turdus migratorius*	SS, RI, DD, PJF	Yes	Yes
Western kingbird	*Tyrannus verticalis*	SS, SDS, DD	Yes	Yes

Table 3-18
Avian Species Occurring or Potentially Occurring in the Utility Project Study Area

Species	Scientific Name	Habitat	Species Occurring	Species Likely to Occur
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	RI	Yes	Yes
Mourning dove	*Zenaida macroura*	SS, SDS, RI	Yes	Yes
White-crowned sparrow	*Zonotrichia leucophrys*	SS, SDS	Yes	Yes

SOURCE: SWCA 2013d
NOTES:
[1]Evidence of breeding observed.
CC = cliff and canyon
DD = developed/disturbed
GF = greasewood flat
OW = open water
PJF = pinyon-juniper forest
RI = riparian
SDS = salt desert Scrub
SS = sagebrush shrubland.

Migratory birds, particularly long-distance neotropical migrants, face a range of manmade obstacles and landscape-scale habitat changes across their migration routes and in their nesting, migration, and wintering habitat. Because appropriate resources must be present along an entire migratory route, long-distance migrants can be highly sensitive to changes on the landscape. Short-distance migrants and resident birds protected under the MBTA may also be exposed to these threats and changes, but often to a lesser degree.

Sensitive migratory bird species identified in Appendix F use the Utility Project study area at various times of the year, for nesting, migration, wintering, or as year-round residents.

Raptor Nests

Active raptor nests and their occupants are protected under the MBTA and the BGEPA. Additionally, construction and other disturbances are typically prohibited within a certain distance of active nests (depending on the species and season to prevent failed nesting attempts, nest abandonment, and juvenile mortality. Raptors typically return to the same nest site or territory year after year. That is, they display a high degree of fidelity to nest sites (Romin and Muck 2002), making nest protection important for continuance of the species. SWCA and CH2M Hill biologists documented 98 nests while conducting surveys for the Utility Project and South Project. Ninety-six nests were documented during the aerial survey, with an additional two nests located while biologists were conducting surveys on the ground. Of these nests, 91 were inside the 1.0 mile raptor nest study area and seven nests were outside the study area.

Of the wildlife habitat types occurring in the Utility Project study area, raptors are most likely to nest and roost in the cliff and canyon and riparian habitat types. All other habitat types serve as foraging and migration stopover habitat for raptor species.

Utility Project

One inactive eagle nest was identified within the transmission line 250 foot right of way. Approximately 29 acres of potential nesting habitat and 549.4 acres of foraging and roosting habitat exist within the Utility Project area.

South Project

Surveys conducted in 2013 identified a total of 12 raptor/raven nests in the South Project area. Of these, only one appeared to be an active eagle nest. Another active nest was identified as a raven nest.

3.2.9 Special Status Wildlife

For BLM management purposes, special status species include species that are federally listed as Endangered, Threatened, Proposed, and/or Candidate species under the ESA, as well as those species listed as sensitive in the state of Utah by the BLM. Species that are federally listed as threatened or endangered are afforded protection under the ESA (BLM Manual 6840). The BLM is required to confer with the FWS on potential impacts to federally listed species. The FWS also suggests that the BLM consult with them informally when assessing projects that may impact candidate species. Periodic review of the special status species list allows for additions and/or removals depending on the status of populations, habitats, and potential threats. Sensitive species are managed by the BLM and the State of Utah with the same level of protection as candidate species to prevent further listing (BLM Manual 6840). BLM sensitive species are designated by the State Director under 16 U.S.C. 1536 (a)(2).

Also, special status plants (Section 3.2.7) and special status fish (Section 3.2.10) are addressed separately in this document

3.2.9.1 Regulatory Framework

Relevant regulations for special status wildlife resources are presented in this section.

3.2.9.1.1 Federal

- The ESA (16 U.S.C. 1531 - 1544), as amended, provides broad protection for species of fish, wildlife, and plants listed as threatened or endangered by the FWS. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species. All federal agencies in consultation with and with the assistance of the FWS also must use their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of listed species. All federal agencies in consultation with and with the assistance of the FWS must ensure any action authorized, funded, or carried out by federal agency is not likely to jeopardize the continued existence of an endangered, threatened, or proposed listed species, or result in destruction or adverse modification of a critical habitat of a species. Agencies are required to use the best scientific and commercial data available to fulfill this charge.
- The BGEPA (16 U.S.C. 668-668d) prohibits the "taking" or possession or any commerce of bald or golden eagles. The definition of "take" includes: pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb.
- The BLM UT-IM-2010-071 identifies management actions necessary at some sites to ensure environmentally responsible exploration, authorization, leasing, and development of renewable and nonrenewable energy resources within the ranges of the Gunnison sage-grouse and greater sage-grouse.
- The BLM Washington Office Instructional Memorandum (WO-IM) 2012-043 provides interim conservation policies and procedures to the BLM field officials to be applied to ongoing and proposed authorizations and activities that affect the greater sage-grouse (*Centrocerus urophasianus*) and its habitat while the BLM develops and decides how to best incorporate long-term conservation measures into applicable land use plans.

- The BLM WY-Instruction Manual (IM) 2013-005 provides guidance for migratory bird conservation policy on Wyoming BLM-administered public lands including the federal mineral estate.
- BLM Manual 6840 provides BLM's special status species management policy and guidance for the conservation of special status species and their habitats. Under this policy, special status species include animal and plant species listed as threatened or endangered, proposed for listing, or candidates for listing under the provisions of the ESA; those listed as sensitive species by a state; and those listed by a BLM State Director as sensitive. The objective of this policy is to ensure actions requiring authorization or approval by the BLM are consistent with the conservation needs of special status species and do not contribute to the need to list any special status species, under provisions of the ESA.
- The CUP Completion Act of 1992 (P.L. 102-575), which included authorization of the URMCC as an Executive branch agency of the federal government. The Act set terms and conditions for completing the CUP, which diverts, stores and delivers large quantities of water from numerous Utah rivers. The Mitigation Commission is responsible for designing, funding and implementing projects to offset the impacts on fish, wildlife, and related recreation resources caused by CUP and other federal reclamation projects in Utah. Lands owned and managed by the Mitigation Commission for CUP mitigation commitments are located within the Utility Project study area.
- BLM RMPs, Management Framework Plans for Utah, including Vernal (2008) Field Office, specify regulations and goals for management of BLM-administered lands and set restrictions to protect fish and wildlife and the habitats on which they depend. Many of these documents also describe the locations and approximate quantities of known noxious weed species within the jurisdictional boundaries of the field offices.

3.2.9.1.2 State

- UAC R657-48 directs the UDWR to maintain a Utah Sensitive Species List that identifies animal species (1) listed, or candidates for listing, pursuant to the ESA; (2) for which a conservation agreement is in place; or (3) whose population viability is threatened in Utah (i.e., wildlife species of concern). Timely and appropriate conservation actions implemented on behalf of species listed on the Utah Sensitive Species List will preclude the need to list these species under the provisions of the federal ESA.
- The Utah SWAP 2005 is a comprehensive management plan designed to conserve native species populations and habitats within the state of Utah, and prevent the need for additional Federal listings.
- Utah State Code Section 23-14-1 directs the UDWR to protect, propagate, manage, conserve, and distribute protected wildlife throughout the state. This statute also authorizes UDWR to identify and delineate crucial seasonal wildlife habitats.
- Utah Partners in Flight Avian Conservation Strategy, Version 2.0 prioritizes avian species and their habitats and sets objectives designed to determine which species are most in need of immediate and continuing conservation effort. The other purpose of the strategy is to recommend appropriate conservation actions required to accomplish stated objectives.
- Governor's Executive Order for Implementing the Utah Conservation Plan for greater sage grouse. The Executive Order directs state agencies to minimize the impact of activities on sage-grouse, consult with the Utah Division of Wildlife Resources on decisions that could affect sage-grouse habitat, incorporate directives from the conservation plan into state operations and report on Utah efforts.

- Utah Sage-grouse Local Working Groups oversee four conservation areas that would be affected by the Utility Project and South Project: Uintah Basin, Strawberry Valley, Castle County, and Morgan. Each of these Working Groups have developed a Conservation Plan detailing the natural history, threats, and mitigation measures for sage-grouse in each conservation plan area, and conservation guidelines for any project activities occurring in the area.
- BLM Utah Greater Sage-Grouse Approved Resource Management Plan provides guidance for BLM-administered surface and federal mineral estates within greater sage-grouse habitat management areas in the Great Basin Region. The plant will benefit greater sage-grouse and their habitat, as well as the sagebrush-steppe ecosystems that support over 350 other species of wildlife and other multiple uses, including grazing and recreation

3.2.9.2 Issues Identified for Analysis

Issues related to special status species resources identified in agency and public scoping include:

- Potential for impacts to special status species and their habitat from the Utility Project and the South Project.

3.2.9.3 Affected Environment

Table 3-19 lists federally listed threatened and endangered species that are identified as potentially occurring within the Utility Project study area. A total of 13 species of animals are addressed in this EIS (refer to Maps A-7a and A-7b in Appendix A). Special status fish species are discussed in Section 3.2.10.

Table 3-19
Special Status Species with Potential to Occur in the Utility Project Study Area

Species	Scientific Name	Status	Habitat
Birds			
Golden eagle	*Aquila chrysaetos*	BGEPA	Cliff and canyon, sagebrush shrubland
Short-eared owl	*Asio flammeus*	WSC; SS	Sagebrush shrubland, greasewood flat, salt desert scrub, riparian
Burrowing owl	*Athene cunicularia*	WSC; SS	Sagebrush shrubland, greasewood flat, salt desert scrub, developed/disturbed
Ferruginous hawk	*Buteo regalis*	WSC; SS	Cliff and canyon, pinyon-juniper forest
Greater sage-grouse	*Centrocercus urophasianus*	S-ESA (C)	Sagebrush shrubland
Bald eagle	*Haliaeetus leucocephalus*	BGEPA; WSC; SS	Riparian
Lewis's woodpecker	*Melanerpes lewis*	WSC; SS	Riparian
Long-billed curlew	*Numenius americanus*	WSC; SS	Riparian, developed/disturbed
Western yellow-billed cuckoo	*Coccyzus americanus*	S-ESA (T)	Riparian
Mountain plover	*Charadrius montanus*		Sagebrush shrubland
Mammals			
White-tailed prairie-dog	*Cynomys leucurus*	WSC; SS	Sagebrush shrubland, greasewood flat, badland, salt desert scrub, developed/disturbed
Spotted bat	*Euderma maculatum*	WSC; SS	Cliff and canyon, riparian
Black-footed ferret	*Mustella nigripes*	S-ESA (E)	Sagebrush shrubland, greasewood flat, badland, salt desert scrub

Table 3-19
Special Status Species with Potential to Occur in the Utility Project Study Area

Species	Scientific Name	Status	Habitat
Fringed myotis	*Myotis thysanodes*	WSC; SS	Cliff and canyon, riparian
Big free-tailed bat	*Nyctinomops macrotis*	WSC; SS	Cliff and canyon, riparian
Townsend's big-eared bat	*Corynorhinus townsendii*	WSC; SS	Cliff and canyon, riparian

NOTES:
S-ESA (E) = species listed under the ESA as endangered
S-ESA (T) = species listed under the ESA as threatened
S-ESA (C) = species listed under the ESA as candidate
BGEPA = protected under the Bald and Golden Eagle Protection Act
WSC = UDWR wildlife species of concern
SS = BLM sensitive species

3.2.9.3.1 Federally Listed Species

Ten wildlife species that are federally listed under the ESA as endangered, threatened, or candidate species have the potential to occur in Uintah County. Of those, three wildlife species listed in Table 3-19 have potential to occur in the Utility Project study area. The three species include greater sage-grouse, black-footed ferret, and western yellow-billed cuckoo. Four federally listed fish species have potential to occur in the Utility Project study area; the bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius),* humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*). Federally listed fish are further discussed in Section 3.2.10.

Western Yellow-billed Cuckoo

The western yellow-billed cuckoo (*Coccyzus americanus*) is listed as threatened under the ESA. This species is a neotropical migratory species that breeds in the U.S. and Canada and winters in South America (FWS 2002a). Currently, the range of the cuckoo is limited to disconnected populations in different areas of riparian habitats from northern Utah, western Colorado, southwestern Wyoming, and southeastern Idaho, southward into northwestern Mexico, and westward into southern Nevada and California. Cuckoos are long-range migrants that winter in northern South America in tropical deciduous and evergreen forests (Ehrlich et al. 1988).

Historically, cuckoos were probably common to uncommon summer residents in Utah and across the Great Basin (Ryser 1985, Hayward et al. 1976). The current distribution of western yellow-billed cuckoos in Utah is poorly understood, though they appear to be an extremely rare breeder in lowland riparian habitats statewide (Walters 1983, Benton 1987).

Western yellow-billed cuckoos are one of the latest migrants to arrive and breed in Utah. They arrive in extremely late May or early June and breed in late June through July. Cuckoos typically start their southerly migration by late August or early September. Western yellow-billed cuckoos feed almost entirely on large insects that they forage from tree and shrub foliage. They feed primarily on caterpillars, including tent caterpillars. They also feed frequently on grasshoppers, cicadas, beetles, and katydids, occasionally on lizards, frogs, and eggs of other birds, and rarely on berries and fruits (Ehrlich et al. 1988, Kaufman 1996).

The cuckoo is a riparian obligate bird that feeds in cottonwood groves and nests in willow thickets. Nesting habitat is classified as dense lowland riparian that is characterized by a dense sub-canopy or shrub layer (regenerating canopy trees, willows, or other riparian shrubs). Overstory in these habitats may be either large, gallery-forming trees (30 to 90 feet in height) or developing trees (10 to 30 feet in height), usually cottonwoods. Nesting habitats are found at low to mid-elevations (2,500 to 6,000 feet amsl) in Utah. Cuckoos may require large tracts (100 to 200 acres) of contiguous riparian nesting habitat. Nests are usually 4 to 8 feet above the ground on the horizontal limb of a deciduous tree or shrub, but nest heights may range from 3 to 20 feet and higher. In Utah, this species nests in riparian areas and has been documented in cottonwood habitat along the Green River. Within the proposed right-of-way for the utility corridors there is no critical habitat for western yellow-billed cuckoo; however, potential habitat occurs along the White River. In 2013, the BLM identified two western yellow-billed cuckoos upstream of the Utility Project study area; however, these observations are thought to be migrating individuals, as annual surveys by BLM have detected no cuckoos along the White River (EPG 2015a).

Utility Project

Potentially suitable habitat was identified where the Utility Project corridor crossed the White River. Habitat assessments were conducted (SWCA 2013d) to assess the suitability of the potential habitat. The habitat assessment concluded that riparian habitat in the analysis area did not represent yellow-billed cuckoo breeding parameters. Tree canopy was sparse, and although the canopy height was sufficient in areas, the understory was insufficient. Patches within the survey area do not provide the canopy cover necessary for breeding cuckoos. Only one patch in the survey area resembled breeding habitat, but was determined to be too small to sustain a breeding pair.

South Project

No potentially suitable habitat for western yellow-billed cuckoo exists in the South Project area.

Greater Sage-grouse

Declines in greater sage-grouse populations throughout the western U.S. led to a petition to list the species as threatened under the ESA. On March 23, 2010, the FWS published a finding in the *Federal Register* (50 CFR 17) that, based on accumulated scientific data and new peer-reviewed information and analysis, the greater sage-grouse warrants the protection of the ESA but that listing the species is precluded by the need to address higher priority species first. The greater sage-grouse was placed on the candidate list for future action, meaning the species will not receive statutory protection under the ESA at this time, and states will continue to be responsible for managing the bird.

The greater sage-grouse is currently included on the Utah Sensitive Species List because of its limited distribution in Utah and because of recent decreases in its population size (UDWR 2006). Utah Partners in Flight identifies it as a priority species (Parrish et al. 2002), and the FWS has listed it as a bird of conservation concern. A management plan (UDWR 2002a) has been developed to facilitate greater sage-grouse recovery efforts.

In Utah, the greater sage-grouse inhabits upland sagebrush grasslands, foothills, and mountain valleys (BLM 2011a, UDWR 2009). This species occupies different habitat types during the year depending on the season, weather, and nutritional requirements. Important habitat areas for sage-grouse leks include brood rearing areas and wintering areas. Leks may be found between both summer and winter ranges or located in areas described by Call and Maser (1985). The nearest know lek is located approximately 5 miles north of the project area. Nesting habitat for greater sage-grouse may occur in areas within and up to a 5-mile radius from the leks. The State of Utah released a sage-grouse management plan in 2013 (State of Utah 2013) and Governor Herbert's Executive Order on Implementing the Utah Conservation Plan for Greater Sage-grouse (EO/2015/01). This plan designates sage-grouse management areas throughout the state, areas that together support greater than 90 percent of Utah's population of this species. In Uintah County, the entire sage-grouse management area occurs north of Highway 40 and does not overlap with the sage-grouse study area. However, Utility Project and South Project activities must conform to BLM's WO-IM-2012-043 (BLM 2011b). Although the State of Utah has an approved Sage-grouse Management Plan (UDWR, 2013a), the BLM however will follow the BLM/USFS Utah Greater Sage-Grouse: Proposed Land Use Plan Amendment and Final Environmental Impact Statement (2015).

The sage-grouse that would be affected by the Utility Project is the Deadman's Bench sage-grouse population. The habitat occupied by the Deadman's Bench sage-grouse population encompasses 134,650 acres of dry, low elevation habitat (5,400 to 5,700 feet). Wyoming big sagebrush and understory vegetation cover including diverse forbs are present in habitats occupied by the population. Non-native weeds, including cheatgrass, are abundant and pose management concerns. The Wyoming big sagebrush canopy provides adequate sage-grouse winter habitat, though the degraded understory does not provide good nesting and brood-rearing habitat. BLM is responsible for identifying sage-grouse habitat within the project areas as General Habitat Management Areas (GHMA). This includes the Deadman Bench area and the South Project.

Limited telemetry monitoring indicates some sage-grouse equipped with radio transmitters at leks in the Deadman's Bench population stayed in the area year-round. Other radio-equipped grouse moved north of Deadman's Bench into Snake John Reef and Thunder Ranch (10 to 13 miles north of U.S. Highway 40). During recent sagebrush removal projects, wintering sage-grouse have been observed, but the origin of these individuals is unknown (BLM 2013a).

Grazing is the primary historical anthropogenic use of habitats associated with the Deadman's Bench sage-grouse population. More recently, natural gas development has occurred throughout 60 percent of the designated sage-grouse habitat area (80,000 acres). Development currently exceeds one well per section on 45 percent of the UDWR-designated sage-grouse habitat (BLM 2013a). Other disturbances include a 345kV steel-lattice transmission line through Coyote Basin, other lower voltage transmission lines, and pipeline corridors.

There are no known leks in the proposed utility corridors but greater sage-grouse are reported to exist within the study area. There is an unconfirmed lek location reported.

Utility Project

Within the Utility Project corridor surveys concluded that 611.4 acres of habitat for greater sage-grouse was present. This area includes occupied, winter, and brood habitat.

South Project

Within the South Project area only occupied habitat was identified which included about 5,226 acres. No leks occur in the South Project area.

Black-footed Ferret

Since March 11, 1967, the black-footed ferret *(Mustela nigripes)* has been listed as endangered across its entire range, with the exception of several reintroduced populations designated as experimental. In November 2008, the Service completed a 5-year review of black-footed ferret recovery efforts. This review found that the species remains one of the most endangered mammals in the United States, and continues to warrant endangered status.

The black-footed ferret is a highly specialized predator that depends upon prairie dogs for survival. Prairie dogs (*Cynomys* spp.) make up more than 90 percent of the black-footed ferret's diet, and prairie dog burrows provide ferrets with suitable dens to raise their young, as well as a means to escape from predators and harsh weather.

According to the FWS (2010) black-footed ferret depends exclusively on prairie dog burrows for shelter. Historically, ferret habitat largely coincided with the habitats of the black-tailed prairie dog (*C. ludovicianus*), Gunnison's prairie dog (*C. gunnisoni*), and the white-tailed prairie dog (*C. leucurus*). The black-footed ferret is the only ferret species native to the Americas.

A non-essential experimental population of black-footed ferret was established in Uintah County, Utah in 1998 (63 *Federal Register* 52824). This population is managed within the boundary of the Coyote Basin Primary Management Zone (PMZ) as described in the Black-footed Ferret Draft Recovery Plan (FWS 2013b), and A Cooperative Plan for Black-footed Ferret Reintroduction and Management (BLM, 2001). According to SWCA (2013d), approximately 205 acres of the Coyote Basin PMZ occur in the ferret analysis area, including one mapped prairie dog town. The BLM dismissed the requirement that presence/absence surveys be conducted for this EIS because all ferret re-introductions to date have occurred considerably farther north of the analysis area (SWCA 2013d).

Utility Project

No surveys were conducted for black-footed ferret. 1.4 acres of the PMZ occurs in the Utility Project corridor.

South Project

No surveys were conducted for black-footed ferret and the PMZ does not occur in the South Project area.

3.2.9.3.2 BLM Sensitive Species

The BLM has adopted a list of "sensitive species" based on several criteria. By rule, wildlife species that are federally listed, candidates for federal listing, or for which a conservation agreement is in place automatically qualify for the Utah Sensitive Species List. The additional species on the Utah Sensitive Species List (referred to as species of concern) are species for which there are credible scientific evidence to substantiate a threat to continued population viability. The BLM has created its own list of sensitive plant species, while it has deferred to and adopted the list for sensitive animal species created by the UDWR.

Golden Eagle

The golden eagle is protected by the BGEPA and the MBTA. This species ranges throughout western North America in open, mountainous country and is quite common in Utah (UDWR 2007). The breeding season occurs from late February to March, with nests constructed on cliffs or in large trees (UDWR 2007). The species is sensitive to disturbance to its nesting area; nests are usually a minimum of 0.5 mile apart, and the average territory size is approximately 20 to 55 square miles (NatureServe 2007). The species feeds on rabbits, marmots, and ground squirrels but may also eat a variety of other prey including insects, snakes, birds, juvenile ungulates, and carrion (NatureServe 2007). Populations of golden eagles in Utah are considered to be year-round residents.

Utility Project

Three active golden eagle nests were located within 1.0 mile of the utility corridor at distances of 0.47, 0.77, and 0.77 mile.

Four inactive golden eagle nests were located within 1.0 mile of the Utility Project study area.

One nest classified as inactive Golden/Buteo was located inside the utility corridor and six inactive Golden/Buteo nests were within 1.0 mile of the utility corridor.

South Project

One active golden eagle nest was located inside the south project area (this nest is also within 0.77 mile of the utility corridor). Four active golden eagle nests were located within 1.0 mile of the South Project area at distances of 0.29, 0.66, 0.68 and 0.89 mile.

One inactive golden eagle nest was located inside the south project area and nine inactive golden eagle nests were within 1.0 mile of the South Project area and nine inactive nests were within 1.0 mile of the south project area.

Two nests classified as inactive golden/buteo were inside the south project area and three inactive Golden/Buteo nests were within 1.0 mile of the South Project area.

Short-eared Owl

The short-eared owl (*Asio flammeus*) is a Utah state species of special concern. The primary threat to the species is conversion of large, open grassland and shrubland habitats to agriculture. Habitat conversion typically leads to declines in vole and other small mammal populations that short-eared owls depend upon as their primary food source (Dechant et al. 1999). The species breeds in the northern half of Utah, mostly in the northwestern portion of the state, but occurs throughout Utah during non-breeding periods (UDWR 2003). The species is less common in eastern Utah.

The short-eared owl is a medium-sized owl that frequently flies during daylight, especially at dusk and dawn, as it forages for rodents. This owl is usually found in grasslands, shrublands, and other open habitats. It is nomadic, often choosing a new breeding site each year, depending on local rodent densities. The breeding range covers the northern half of the U.S. and all of Canada (Ehrlich et al. 1988). In winter, some birds migrate as far south as southern Mexico, though many remain in the vicinity of their breeding grounds as year-round residents. This owl nests beginning in April on the ground in a small depression excavated by the female (Ehrlich et al. 1988).

Vegetation types that are considered potentially suitable wintering habitat include Agriculture, Colorado Plateau Mixed Low Sagebrush Shrubland, Colorado Plateau Pinyon-Juniper Shrubland, Inter-mountain Basins Big Sagebrush Shrubland, Inter-mountain Basins Greasewood Flat, Inter-mountain Basins Mat Saltbush Shrubland, Inter-mountain Basins Mixed Salt Desert Scrub, Inter-mountain Basins Montane Sagebrush Steppe, Inter-mountain Basins Semi-Desert Grassland, Inter-mountain Basins Semi-Desert Shrub Steppe, Invasive Annual Grassland, Rocky Mountain Alpine-Montane Wet Meadow, and Southern Rocky Mountain Montane-Subalpine Grassland.

Utility Project

Specific surveys for the short-eared owl were not conducted and no nests were identified for this species (SWCA 2013i). 561.2 acres of potentially suitable wintering habitat exists for this species in Utility Project area. This information is based on the UDWR species description and vegetation types present in the proposed right-of-way for the corridor (Table 3-17).

South Project

Specific surveys for the short-eared owl were not conducted and no nests were identified for this species (SWCA 2013i). About 3,143 acres of potentially suitable wintering habitat exists for this species in the South Project area. This information is based on the UDWR species description and vegetation types present in the proposed right-of-way for the corridor (Table 3-17).

Burrowing Owl

The burrowing owl is a Utah state species of concern because it is less abundant than historically documented, and statewide distribution has been significantly reduced (UDWR 2006). In Utah, the species is uncommon during summer in suitable habitat throughout the state. Habitat includes open grasslands, prairies, sagebrush steppe, desert scrub, and other open situations, such as golf courses, cemeteries, and airports. Potentially suitable habitat has been identified within study area boundaries.

Burrowing owls are tolerant of human activity and have been known to make their homes in cow pastures, fields surrounding airports, ranch and farm land, or in proximity to highways. In addition, the owls are prey for larger raptors, foxes, and coyotes. It eats mainly terrestrial invertebrates, but also consumes a variety of small vertebrates, including small mammals, birds, frogs, toads, lizards, and snakes. The nest is in a mammal burrow, usually that of a prairie dog, ground squirrel, or badger; if a mammal burrow is not available the owls will sometimes excavate their own nest burrow (Kaufman 1996; UDWR 2002b). Degradation of habitat and the decline of prairie dog species across the western U.S. are the primary threats to healthy burrowing owl populations. Urban sprawl, conversion of prairie land, road collisions, and exposure to insecticides and other harmful chemicals have negatively impacted owl populations (UDWR 2003). Burrowing owls are known to use sagebrush shrubland, greasewood flat, salt desert scrub and developed/disturbed habitats that are associated with prairie dog burrows and towns.

Eleven active burrowing owl burrows are located in the study area and two active burrows are located in the proposed utility corridors.

Utility Project

According to the data provided (SWCA 2013i), Utah Natural Heritage Project has recorded occurrence for this species within 2 miles of the project area. Eleven active burrowing owl burrows were identified in proximity to the Utility Project corridor and of those, only 2 were within the corridor. Approximately 20.2 acres of prairie dog habitat (active and inactive) occurs in corridor that is potentially suitable habitat for burrowing owl. A total of 422.3 acres of Sagebrush Shrubland, 64 acres of Greasewood Flat, 72.1 acres of Salt Desert Scrub, and 59.6 acres of Developed or Disturbed areas occur within the Utility Project corridor that could provide general habitat for the owl.

South Project

No active prairie dog burrows or towns or burrowing owls were identified in the South Project area according to surveys conducted in 2013. A total of 2,424.9 acres of Sagebrush Shrubland, 391.6 acres of Greasewood Flat, and 79.7 acres of Developed or Disturbed areas occur within the South Project that could provide general habitat for the owl.

Ferruginous Hawk

The ferruginous hawk is a Utah state species of concern, a bird of conservation concern, and a Partner in Flight species. Population numbers are declining across the species' range, and some small, local populations have disappeared in recent years. Primary threats to the species include loss of prey base, removal of nesting trees, and excessive human disturbance during the breeding season (Parrish et al. 2002; UDWR 2002b).

The life history of the species is poorly understood; however, density and productivity of ferruginous hawk populations have been found to be closely associated with cycles of prey abundance (Dechant et al. 1999). The nesting and overwintering dynamics of the species within Utah are also largely unknown. Ferruginous hawks are extremely sensitive to human disturbance, especially during courtship and incubation periods (Parrish et al. 2002). The primary threats to ferruginous hawk nest productivity and population viability include the human disturbance inherent in mining, gas and oil development; removal of nesting trees; conversion of shrubland habitats to agriculture; and prey base reduction associated with degradation of shrubland habitat. Disturbance to nest sites by OHV use and other recreational activities is also an important threat (Parrish et al. 2002).

In Utah, the ferruginous hawk nests at the edge of juniper habitat, open desert, and grassland habitat in the western, northeastern, and southeastern portions of the state. They have experienced a decline across much of their range and have been extirpated from some of their former breeding grounds in Utah. The ferruginous hawk eats prairie dogs and other rodents (UDWR 2002b).

The data referenced was not included in the SWCA or CH2M Hill, 2013. Per direction by the BLM, EPG is to base the analysis on the resource data provided in the 2013 resource reports; no additional data collection has been authorized by BLM.

Utility Project

About 2.8 acres of pinyon-juniper forest and 422.3 acres of sagebrush shrubland occur in the Utility Project area that could serve as foraging and nesting habitat. According to surveys (2013), no active ferruginous hawk nests were observed and occurrence of the hawk was not documented, although it is likely to occur in the area.

South Project

About 326.8 acres of pinyon-juniper forest and about 2,425 acres of sagebrush shrubland occur in the South Project area which could serve as foraging and nesting habitat. According to surveys (2013), no active ferruginous hawk nests were observed and occurrence of the hawk was not documented, although it is likely to occur in the area.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) was formerly listed as threatened in the lower 48 states under the ESA, and was delisted on July 9, 2007 (FWS 2007b). The species is protected under the Bald and Golden Eagle Protection Act (Eagle Act of 1940) and the MBTA. Threats to the bald eagle identified in its recovery plan (FWS 1983) include loss of breeding and wintering habitat, human disturbance leading to breeding failure, pesticides (which are known to prevent successful hatching), as well as shooting, poisoning, electrocution, and trapping.

In Utah, bald eagles primarily nest in cottonwood-dominated riparian areas. Individuals nest in large trees or snags with sturdy branches in areas that provide adequate food (fish and carrion) and access to open water. During non-breeding periods, especially during winter, bald eagles are relatively social and roost communally in sheltered stands of trees. Wintering areas are commonly associated with open water, though other habitats can be used if food resources such as rabbit or deer carrion are readily available. In the lower 48 states, bald eagles generally avoid areas with nearby human activity and development. Bald eagles may roost in the riparian habitat along the White River. According to observations (SWCA 2013i), 11 bald eagles were observed during aerial surveys but locations were not specifically provided. A bald eagle nest was observed but occurs about 2.2 miles outside the Utility Project study area. Breeding eagles likely forage along the White River corridor and would pass through the survey area.

Utility Project

About 2.6 acres of riparian habitat exists along the White River in the Utility Project area that could serve as nesting, roosting, and foraging habitat. No bald eagle nests were observed.

South Project

No riparian habitat or nests were identified in the South Project area.

Lewis's Woodpecker

The Lewis's woodpecker (*Melanerpes lewis*) is listed as a BLM sensitive species because of its limited distribution within the state and recent range-wide decreases in population size. This woodpecker is a permanent resident to western North America and, in Utah, is found primarily in the riparian habitats of the Uinta Basin and along the Green River. In Utah, the species is widespread, but is an uncommon nester along the Green River. Breeding by this species has been observed in Ouray and Uintah counties, and along Pariette Wash (Kingery 1998, Utah Natural Heritage Program [UNHP] 2002).

The species occurs in pine forests, riparian areas, and pinyon-juniper woodlands. Breeding from mid-May through mid-August occurs in ponderosa pine and cottonwood woodlands in stream bottoms and farm areas. In Utah, the species inhabits agricultural lands and urban parks, montane and desert riparian woodlands, and submontane shrub habitats. This woodpecker usually feeds on flying insects in open areas interspersed with trees in the spring and summer. It feeds primarily on fruits and nuts in the fall and winter. It is adversely affected by loss of habitat due to water development and agricultural practices, and may be increasingly affected by competition for nest cavities from non-native bird species.

Utility Project

Approximately 5.4 acres of potentially suitable woodpecker habitat exists in the Utility Project area although no birds were observed.

South Project

Approximately 326.8 acres of suitable habitat was identified in the South Project area. No targeted surveys were conducted for the woodpeckers and based on the data provided (SWCA 2013i), the potential for this species to occur is low.

Long-billed Curlew

The long-billed curlew (*Numenius americanus*) is listed as a BLM sensitive species and UDWR Species of Primary Concern. This species also is protected under the MBTA. As a migratory bird, this species is only present in Utah during the summer, usually arriving in March, and most often inhabits the central and northern valleys of the state. The long-billed curlew is not common within the Colorado River drainage as it prefers to breed in higher and drier meadowlands (UDWR 2007). This species preferred breeding habitat consists of dry grasslands with sufficient cover and a high occurrence of prey species (Pampush 1980). Uncultivated grasslands and pastures are significant habitats for continental long-billed curlew breeding populations (Johnsgard 1981). The long-billed curlew diet typically includes crustaceans, mollusks, worms, toads, insects, and less often berries and nesting birds (UDWR 2007).

Potential nesting and foraging habitat does not exist within the Utility Project area; the potential for this species to occur within the Utility Project area is low.

Utility Project

Targeted surveys for long-billed curlew were not completed, therefore no data on the long-billed curlew is available. Within the Utility Project area, about 2.6 acres of riparian habitat was identified that could provide potential habitat for the curlew.

South Project

Targeted surveys for long-billed curlew were not completed, therefore no data on the long-billed curlew is available. No riparian habitat that could provide potential habitat for the curlew was identified in the South Project area.

White-tailed Prairie Dog

The white-tailed prairie dog (*Cynomys leucurus*) is a Utah state species of concern and a BLM sensitive species. The primary population complexes in Utah are found in the Cisco Complex in Grand County and the Coyote Basin Complex, part of which is located in the project area. The white-tailed prairie dog is one of three prairie dog species found in Utah, occurring in the northeastern section of the state. The species is also found in parts of Colorado, Wyoming, and Montana. The white-tailed prairie dog has been petitioned for listing under the ESA, and the UDWR has also placed the white-tailed prairie dog on its latest revision of the Utah Sensitive Species List (UDWR 2006).

The white-tailed prairie dog is a Utah state species of special concern. Threats to this species include historic and current prairie dog control measures (widespread eradication due to its status as an agricultural pest); habitat fragmentation and degradation; and the Sylvatic plague, an introduced disease that dramatically increases mortality rates within colonies and can result in rapid population declines and local extirpations (Parrish et al. 2002).

Similar to other prairie dogs, white-tailed prairie dogs form colonies and spend much of their time in underground burrows, often hibernating during the winter. The white-tailed prairie dog's diet is composed of grasses and bulbs. The white-tailed prairie dog is the main food source of the Utah population of the endangered black-footed ferret, which was reintroduced to the Coyote Basin of northeastern Utah in 1998. They are a keystone species that provide a major food source for several species of raptors and common carnivores like coyotes and badgers, as well as nesting habitat for burrowing owls.

Utility Project

Approximately 20 acres of active prairie dog burrows is located primarily in the proposed right-of-way for the Utility Project. Approximately 0.2 acre of inactive prairie dog burrows exist within the existing access road and proposed right-of-way for the water line.

South Project

No prairie dog burrows or individuals were identified in the South Project area.

Spotted Bat

The spotted bat (*Euderma maculatum*) is a BLM sensitive species and is listed as sensitive by the state of Utah. It inhabits a wide variety of habitats, including desert shrub, sagebrush, rabbitbrush, pinyon-juniper woodland, and ponderosa pine and montane forests (UDWR 2000). In Utah, the species also uses lowland riparian and montane grassland habitats, and suitable cliff habitats appear to be necessary for roosting and hibernation sites (UDWR 2000). The spotted bat probably occurs throughout Utah, but records from western and extreme northern Utah (except for the southwest corner) are not known (UDWR 2000). However, the species is known to be present in all states bordering Utah, including southwestern Wyoming (Luce et al. 2004), and it is likely that the species occurs statewide.

In Utah, the spotted bat is known to occur in lowland riparian, desert shrub, sagebrush– rabbitbrush, ponderosa pine forest, montane grassland, and montane forest habitats from 2,700 to 9,200 feet amsl (UDWR 2000). Open meadows and riparian areas also appear to be important habitats for the species (UDWR 2000). All spotted bat occurrences in Utah have been found in association with canyons with cracks and fissures; high, bare rock walls; and rock ridges close to permanent water (UDWR 2000). Rocky cliffs near forest foraging sites appears to be the preferred habitat for the species, where it is confined to specific geologic features that provide small crevices or cliff opening roosting sites within approximately 25 miles of foraging habitats (Luce et al. 2004).

Potential spotted bat roosting habitat and foraging habitat exist in the project area, based on the UDWR species description (2003) and vegetation types present in the project area (USGS 2005). The Rocky Mountain Cliff and Canyon vegetation type is considered spotted bat roosting habitat. Vegetation types included in foraging habitat include Colorado Plateau Mixed Bedrock Canyon and Tableland, Colorado Plateau Mixed Low Sagebrush Shrubland, Colorado Plateau Pinyon-Juniper Shrubland, Colorado Plateau

Pinyon-Juniper Woodland, Inter-mountain Basins Big Sagebrush Shrubland, Inter-mountain Basins Greasewood Flat, Inter-mountain Basins Mat Saltbush Shrubland, Inter-mountain Basins Mixed Salt Desert Scrub, Inter-mountain Basins Montane Sagebrush Steppe, Inter-mountain Basins Semi-Desert Shrub Steppe, Invasive Southwest Riparian Woodland and Shrubland, Rocky Mountain Cliff and Canyon, Rocky Mountain Lower Montane Riparian Shrubland, Rocky Mountain Montane Dry-Mesic Mixed Conifer Forest and Woodland, Rocky Mountain Montane Mixed Conifer Forest and Woodland. Although habitat is available, the likelihood of direct impacts as a result of project activities are low.

Utility Project

No surveys were conducted for the spotted bat. Habitat for the bat including foraging, roosting, and water occurs throughout the Utility Project corridor but no occurrence data is available for this species.

South Project

No surveys were conducted for the spotted bat. Habitat for the bat including foraging, roosting, and water occurs throughout the South Project area but no occurrence data is available for this species.

Fringed Myotis

The fringed myotis (*Myotis thysanodes*) is a small bat that occurs in most of the western U.S., as well as in much of Mexico and part of southwestern Canada. The species is widely distributed throughout Utah, but is not very common in the state. The fringed myotis inhabits caves, mines, and buildings, most often in desert and woodland areas. The species commonly occurs in colonies of several hundred individuals.

Females generally give birth to a single offspring during the summer. Beetles, which are plucked from vegetation or the ground, are the major prey item of the fringed myotis. Because the fringed myotis flies so close to rocks and thick vegetation, its wings are particularly strong and puncture resistant. The species hibernates during the winter.

Based on the Utah Gap Analysis, this species occurs primarily in the southern portion of the state and no records of this bat are present in the Utility Project area.

Utility Project

No surveys were conducted for the fringed myotis and no data on occurrences of this bat are available. The bat is not likely to occur in the Utility Project area.

South Project

No surveys were conducted for the fringed myotis and no data on occurrences of this bat are available. However, the bat is not likely to occur in the South Project area.

Big Free-tailed Bat

The big free-tailed bat (*Nyctinomops macrotis*) is a BLM sensitive species, and is also listed as sensitive by the State of Utah due to its limited distribution (UDWR 2000). This migratory species occurs primarily in the southern half of the state and at far north as north-central Utah in rocky and woodland habitats, and roosts in caves, mines, old buildings, and rock crevices from 4,297 to 9,200 feet amsl. However, the species is known to stray to unexpected locations far from its breeding range, and there is evidence that it may occur as far north as the Wyoming boundary in eastern Utah.

The wintering habits of big free-tailed bats in Utah are unknown, but it is presumed to migrate out of Utah for the winter. Potential habitats in Utah include lowland riparian, desert shrub, and montane forests, and high cliffs, which bats may use for roosting, and which occur along the White River. The species has been captured in Utah in desert areas dominated by blackbrush (*Coleogyne ramosissima*), creosote bush (*Larrea tridentata*), sandsage (*Artemisia filifolia*), and snakeweed (*Gutierrezia* spp.), and in riparian habitat dominated by mesquite (*Prosopis* spp.), rabbitbrush (*Chrysothamnus* spp.), saltcedar (*Tamarix pentandra*), and water willow (*Baccharis glutinosa*) (UDWR 2000). The primary habitat requirements of all bat species are roosts, forage, and water (Luce et al. 2004), which includes portions of the study area. Potential impacts on the species from noise from construction activities and reduced habitat and/or prey availability could occur from Utility Project activities and associated disturbance in the project area but are not likely. Although the big free-tailed bat is potentially found in the study area, it is unlikely that the bat or its habitat will be affected.

Utility Project

No surveys were conducted for the big free-tailed bat. Habitat for the big free-tailed bat including foraging, roosting, and water occurs throughout the Utility Project corridor but no occurrence data is available for this species.

South Project

No surveys were conducted for the big free-tailed bat. Habitat for the big free-tailed bat including foraging, roosting, and water occurs throughout the South Project area but no occurrence data is available for this species.

Townsend’s Big-eared Bat

Townsend’s big-eared bat (*Corynorhinus townsendii*) is listed as a BLM sensitive species and UDWR Species of Concern. Townsend's big-eared bats will use a variety of habitats, almost always near caves or other roosting areas. They can be found in pine forests and arid desert scrub habitats. When roosting, they do not tuck themselves into cracks and crevices like many bat species do, but prefer large open areas. Potential habitat within the Utility Project study area includes semi-desert scrublands, pinyon-juniper woodlands from 3,300 to 8,800 feet amsl (Oliver. 2000). Townsend’s big-eared bats will also use abandoned buildings as roosting habitat but do not tolerate disturbances. This bat species occurs throughout Utah including Uintah County according to UDWR (1998).

During the fall and winter, unlike most western bats, these bats do not undertake a major migration and are generally rather sedentary. The hibernation roosts are usually abandoned mines or caves that have low and stable temperatures. While hibernating, they hang solo or in small groups in the open.

Utility Project

The Colorado Plateau Mixed Bedrock Canyon and Tableland vegetation type covers 26.99 acres of land within the Utility Project area. No surveys for Townsend’s big-eared bat were conducted.

South Project

The Colorado Plateau Mixed Bedrock Canyon and Tableland vegetation type covers about 822.3 acres of land within the South Project area. No surveys for Townsend’s big-eared bat were conducted.

Mountain Plover

In addition to being listed as a UDWR SPC, the mountain plover is listed as a Utah Partners in Flight priority species (Parrish et al. 2002), and a UNHP Critically Imperiled S1 species. The species is also listed as a Bird of Conservation Concern for the FWS Mountain-Prairie Region (FWS 2008). The mountain plover was originally proposed as threatened under the ESA in 1999, but the proposal was withdrawn in 2003. The proposed rule for listing was reinstated in 2010, and it was determined in May 2011 that the species does not warrant protection under the ESA (FWS 2011).

Most of the mountain plover breeding range is in Colorado, Montana, and Wyoming. However, known historic breeding populations have been documented in Utah in Uintah and Duchesne Counties, over 30 miles west of the Utility Project area. Individuals in this population have shown consistent site fidelity, returning to the same breeding sites year after year (Manning and White 2001). However, the population has declined greatly in recent years, with no breeding bird sightings since 2005 (UDWR 2011). According to the BLM (2015), sightings of mountain plover have been reported over the last decade outside the known Utah breeding areas but are likely observations of migrating birds.

Utility Project

No mountain plover were observed by surveys conducted in 2013. About 72 acres of salt desert scrub and 422 acres of sagebrush shrubland that could serve as potential mountain plover habitat occur in the Utility Project corridor.

South Project

Mountain plover were observed in the South Project area according to surveys conducted in 2013. About 2,425 acres of sagebrush scrubland that could serve as potential mountain plover habitat occurs in the South Project area.

3.2.10 Special Status Fish

Special status fish are those federally listed as either endangered, threatened, or candidates for protection under the ESA or those considered sensitive by the BLM.

3.2.10.1 Regulatory Framework

Implementation of the Utility Project would be consistent with statutes, regulations, plans, programs, and policies of federal agencies, state, and local governments. Relevant regulations for special status wildlife resources are presented in this section.

3.2.10.1.1 Federal

- BLM Manual 1120: These provide policy and direction regarding fish and wildlife management on BLM administered lands.
- BLM Manual 6840: These provide BLM policy and direction concerning Sensitive Species.
- BLM Vernal Field Office Resource management Plan (2008) specifies regulations and goals for management of BLM-administered lands and sets restrictions to protect fish and wildlife and the habitats on which they depend.
- The ESA (16 U.S.C. 1531 et. seq.), as amended, provides broad protection for species of fish, wildlife, and plants listed as threatened or endangered by the FWS. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species. All federal agencies in consultation with and with the assistance of the FWS also must use their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of listed species. All federal agencies, in consultation with, and with the assistance of, the FWS must ensure any action authorized, funded, or carried out by federal agency is not likely to jeopardize the continued existence of an endangered, threatened, or proposed listed species, or result in destruction or adverse modification of a critical habitat of a species. Agencies are required to use the best scientific and commercial data available to fulfill this charge.
- Executive Order 11990 of 1977: This Executive Order requires agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the beneficial values of wetlands.

- FLPMA, as amended, consolidates and articulates BLM management responsibilities and governs most uses of the federal lands, including authorization to grant or renew rights-of-way. In accordance with FLPMA, BLM must make land use decisions based on principles of multiple use and sustained yield. As such, a grant of right-of-way must be limited to its necessary use and must contain terms and conditions that reflect the agencies' management responsibilities under FLPMA, including minimizing impacts on fish and wildlife habitat.
- The Federal Water Pollution Control Act of 1948 was the first major U.S. law to address water pollution. Growing public awareness and concern for controlling water pollution led to sweeping amendments in 1972. As amended in 1977, the law became commonly known as the CWA, codified generally as 33 U.S.C. 1251 et. seq. The CWA's objective is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Individual sections of the Act maintain and protect the nation's water resources.
- The Fish and Wildlife Coordination Act of 1934: Based on this act, fish and wildlife resources receive equal consideration with other resources in water resource development programs.
- Fish and Wildlife Coordination Act of 1956. 43 CFR 24.6 "By reason of the Congressional policy of state-federal cooperation and coordination in the area of fish and wildlife conservation, State and Federal agencies have implemented cooperative agreements for a variety of fish and wildlife programs on Federal Lands". Utah has entered into conservation agreements with several federal agencies for the conservation and management of several sensitive species that occur within the project area.
- *Upper Colorado Endangered Fish Recovery Program*, under this program, any amount of water removed from the Colorado River system is considered to be a depletion of water, and amounts greater than 0.1 acre-feet/year require formal consultation with the FWS for downstream impacts on threatened and endangered species.

3.2.10.1.2 State

- Utah State Code Section 23-15-2 establishes that all wildlife, including but not limited to wildlife on public or private land or in public or private waters in the State, falls in the jurisdiction of the UDWR. Utah Code Ann. 23-15-2 and 23-13-3 (Repl. Vol. 1991).
- Utah State Code Section 23-14-1 of the Utah State Code directs the UDWR to protect, propagate, manage, conserve, and distribute protected wildlife throughout the state. This statute also authorizes UDWR to identify and delineate crucial seasonal wildlife habitats.
- Utah State Code Section 23-14-18 of the Utah State Code provides for the establishment of hunting/fishing seasons, locations and harvest limits.
- Utah State Code Section 23-14-19 establishes that the Wildlife Board shall exercise its powers by making rules and issuing proclamations and orders pursuant to this code.
- Utah State Code Title 23-22-1 indicates the UDWR may enter into cooperative agreements and programs with other state agencies, federal agencies, states, educational institutions, municipalities, counties, corporations, organized clubs, landowners, associations, and individuals for purposes of wildlife conservation. All parties to this Agreement recognize that they each have specific statutory responsibilities that cannot be delegated, particularly with respect to the management and conservation of wildlife, its habitat and the management, development, and allocation of water resources. Nothing in this Agreement or Strategy is intended to abrogate any of the parties' respective responsibilities. This Agreement is subject to and is intended to be consistent with all applicable federal and state laws and interstate compacts.

- UAC R657-48 directs the UDWR to maintain a Utah Sensitive Species List that identifies animal species (1) listed, or candidates for listing, pursuant to the ESA; (2) for which a conservation agreement is in place; or (3) whose population viability is threatened in Utah (i.e., wildlife species of concern). Timely and appropriate conservation actions implemented on behalf of species listed on the Utah Sensitive Species List will preclude the need to list these species.
- Utah Comprehensive Wildlife Conservation Strategy directs the integration and implementation of ongoing and planned management actions that will conserve native species and thereby prevent the need for additional listings under the ESA. The regulatory framework for protection of fish and aquatic resources provides that state agencies (e.g., UDWR) manage aquatic species. The FWS would have jurisdiction over the management of ESA-listed aquatic species, and the BLM would continue to assist in managing aquatic habitats in coordination with the FWS and appropriate state wildlife agencies.

3.2.10.2 Issues Identified for Analysis

Issues specific to special status fish were identified during agency and public scoping. These included:

- Potential impacts to aquatic special status species; and
- Identification of mitigation to reduce the likelihood of introducing aquatic invasive species by construction equipment.

3.2.10.3 Affected Environment

Aquatic habitats identified in the Water Resources section (Section 3.2.5) have the potential to support fish and/or aquatic species. The Green River is a large, perennial river that provides federally designated critical habitat for the bonytail chub (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius),* humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*).

The White River contains perennial aquatic habitat in the study area; Evacuation Creek is also a perennial water source that provides habitat for aquatic species. Fish common in the White River include red shiner (*Notropis lutrensis*), roundtail chub (*Gila robusta*), flannelmouth sucker (*Catostomus latipinnis*), speckled dace (*Rhinichthys osculus*), fathead minnow (*Pimephales promelas*), common carp (*Cyprinus carpio*), and channel catfish (*Ictalurus punctatus*) (Lanigan and Berry 1981). Other less common species include bluehead sucker (*Catostomus discobolus*), black bullhead *(Ameiurus melas*), green sunfish (*Lepomis cyanellus*), brown trout (*Salmo trutta*), and Colorado pikeminnow (*Ptychocheilus lucius*). Several of these species are sensitive and are discussed in more detail in Table 3-20. The White River provides federally designated critical habitat for the Colorado pikeminnow and razorback sucker (*Xyrauchen texanus*).

Table 3-20
Fish and Aquatic Species with Potential to Occur in the Utility Project Area

Species	Scientific Name	Status	Habitat
Fish			
Bonytail	*Gila elegans*	S-ESA (E)	Open water
Bluehead sucker	*Catostomus discobolus*	SS	Open water
Flannelmouth sucker	*Catostomus latipinnis*	SS	Open water
Humpback chub	*Gila cypha*	S-ESA (E)	Open water
Roundtail chub	*Gila robusta*	SS	Open water
Colorado pikeminnow	*Ptychocheilus lucius*	S-ESA (E)	Open water
Razorback sucker	*Xyrauchen texanus*	S-ESA (E)	Open water

NOTES:
S-ESA (E) = species listed under the ESA as endangered
CS:SS = BLM sensitive species

3.2.10.3.1 Aquatic Habitats

Aquatic habitat in the study area includes streams that support aquatic species. Refer to Section 3.2.5.4 for a description of wetlands. Stream habitats consist of perennial, intermittent, and ephemeral waterbodies. Perennial streams contain water continuously during a normal or average year, while intermittent (sporadic or periodic flows) and ephemeral (short-lived or transitory flow) streams provide temporary habitat during the year. Due to the presence of water throughout the year, perennial waterbodies provide key habitat for fish and other aquatic communities. Perennial streams represent the predominant type of aquatic habitat located within the Utility Project study area.

Aquatic habitats are managed by the agency that owns or has jurisdiction for the land (e.g., BLM or FWS refuges). On lands with federally listed species, their habitat and species management is under the regulatory oversight of the FWS. Aquatic habitat quality is included in waterbody classifications that are used by the state agencies. The Utility Project study area contains habitat for both game and special status fish species.

3.2.10.3.2 Fish

Within the White River and its associated tributaries, fish species are managed by the state agency (UDWR), with coordination and cooperation with federal agencies (National Marine Fisheries Service, FWS). Collectively, the state and federal agencies develop and implement management plans and strategies for both game and nongame fish species and determine management practices that involve fishing regulations and habitat protection. Management direction and guidance are provided through the implementation of management plans, agreements, and their wildlife plans (e.g., Utah Comprehensive Wildlife Conservation Strategy [UDWR 2005]).

3.2.10.3.3 Federally Listed Threatened and Endangered Fish

Four federally listed fish species have the potential to occur in the study area, particularly the Green River and White River. These species include the bonytail chub (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius),* humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*). Table 3-20 includes species listed under the ESA and their federally listed status.

Bonytail Chub

Bonytail chub is a minnow species native to the main-stems of the Colorado River basin. The bonytail's distribution and population has declined over the last century, and according to the FWS, is functionally extinct. This species was one of the first fish species to reflect the changes that occurred to the Colorado River system attributed to the construction of Hoover Dam, which caused an alternation to the natural flow regime of the river. Other causes for the near extinction of this fish include habitat loss/alteration and competition with non-native fishes in the Colorado River. Bonytail was added to the U.S. list of endangered species on April 23, 1980.

In Utah, the bonytail has been historically and currently known to occur in the Green River and Colorado River. FWS has designated 139 river miles and the associated 100-year floodplain as critical habitat for the bonytail chub in these rivers (FWS 2007a).

Colorado Pikeminnow

The Colorado pikeminnow is a large minnow native to the Colorado River system of the western U.S. and northern Mexico. The current range of the Colorado pikeminnow has been reduced due to flow regulation, habitat loss, migration barriers (i.e., dams), and the introduction of nonnative fishes. The species now exists only in the upper Colorado River system. The Colorado pikeminnow is both federally listed and Utah state-listed as endangered. There is a recovery plan in place for this species (FWS 2002b).

Adult Colorado pikeminnows prefer medium to large rivers, where they can be found in habitats ranging from deep, turbid rapids to flooded lowlands. Slow-moving backwaters serve as nursery areas for young pikeminnows. The Colorado pikeminnow is primarily piscivorous (eats fish and minnows), but smaller individuals will also feed on insects and other invertebrates.

The FWS designated six reaches of the Colorado River System as critical habitat, including portions of the Colorado, Green, Yampa, White, and San Juan rivers, totaling 1,148 miles of critical habitat for the species (59 *FR* 13374). The White River is the primary habitat for Colorado pikeminnow in the Utility Project study area.

In Utah, the FWS has designated 726 miles of critical habitat in portions of the Green, Colorado, White, and San Juan Rivers and their associated 100-year floodplains (FWS 2007a). FWS developed a recover plan for the Colorado pikeminnow in 1991 and subsequently revised the plan in 2002 (FWS 2002b).

Humpback Chub

Humpback chub mainly occur in river canyons where they use a variety of habitats including deep pools, eddies, upwells near boulders, and areas near steep cliff faces. Young and spawning adults are generally found in sandy runs and backwaters (FWS 2002c). Currently, there are six known self-sustaining populations. Five occur in the Upper and one in the Lower Colorado Basin Recovery Units. No surveys for fish were conducted for this species but potentially suitable habitat is present in the White River and its tributaries (i.e., Evacuation Creek).

Humpback chub occurs in portions of the main-stem Colorado River and four tributaries including the Green, Yampa, White, and Little Colorado Rivers. Historic distribution of this species is not fully understood, although presently the humpback chub is found only in the Little Colorado River and adjacent portions of the Colorado River. Its habitat preferences also are not well understood but it is associated with a variety of habitats, including pools ranging from 1 meter to 15 meters in depth with turbulent to no current. Substates have been documented to include silt, sand, boulder, or bedrock (FWS 2014b). According to the FWS, Desolation and Gray Canyons of the Green River hold one of three abundant populations of this species (FWS 2002c).

FWS has designated 139 river miles and associated 100-year floodplain as critical habitat for the humpback chub in portions of the Green and Colorado Rivers (FWS 2007a).

Razorback Sucker

Razorback sucker is listed as federally endangered under the ESA. Populations of this species are found in the Green River, upper Colorado River, and San Juan River. According the FWS (2002d), razorback sucker can be found in the Green River between the Duchesne and Yampa River confluence in low-gradient, flat-water reaches. Habitat occupied by the sucker appears to be seasonal and prefer warm water rivers.

In Utah, the FWS has designated 688 river miles and the associated 100-year floodplain as critical habitat. Critical habitat occurs in portions of the Green, Colorado, Duchesne, White, and San Juan Rivers (FWS 2007a).

3.2.10.3.4 BLM Sensitive Species

3.2.10.3.4.1 Special Status Fish Species

Five special status fish are found in aquatic habitats in the Utility Project study area. Bluehead sucker (*Castostomus discobolus*), flannelmouth sucker (*C. latipinnis*), and roundtail chub (*Gila robusta*) have existing conservation easements in Utah and are listed sensitive species.

Bluehead Sucker

The bluehead sucker is a BLM sensitive species in Utah as well as a state-listed sensitive species in Utah (Ptacek et al. 2005). Bluehead sucker occur in mountain streams and large rivers that are often turbid or muddy and sometimes alkaline. It is usually found in swift currents but has been found in moderate to still water with very little vegetation (UDWR 1998). Current known distribution of the bluehead sucker includes the Little Snake (Carbon County) and Green (Sweetwater County) river drainages in Wyoming; the Little Snake and Green (Moffatt County), White (Rio Blanco County), and Colorado (Mesa County) river drainages in Colorado; and the Colorado River drainage including the Colorado (Grand County), Green (Uintah, Emery, and Grand counties), San Rafael (Emery County), Price (Carbon County), and White (Uintah County) rivers in Utah (UDWR 1998). The bluehead sucker is threatened by habitat alteration and loss, introduction of exotic fishes, and hybridization with other species of sucker (UDWR 1998). Populations of the species may be declining (UDWR 1998). The bluehead sucker is known to occur in the White River in the study area.

Flannelmouth Sucker

The flannelmouth sucker is a BLM sensitive species in Utah as well as a state-listed sensitive species in Utah. In Utah, the species occurs in the mainstem Colorado River, as well as in many of the Colorado River's large tributaries. Flannelmouth suckers are usually absent from impoundments. Recently, Utah flannelmouth sucker populations have been reduced in both numbers and distribution, primarily due to flow alteration, habitat loss/alteration, and the introduction of nonnative fishes. Threats to the species include habitat fragmentation and competition and hybridization with non-native fishes. The flannelmouth sucker in Utah is known to occur in the White River in the study area.

Roundtail Chub

The roundtail chub is a BLM sensitive species in Wyoming, Colorado, and Utah as well as a state-listed sensitive species in Wyoming and Utah. Roundtail chub are endemic to rivers and streams in the Colorado River drainage (CRFWC 2004). The species is threatened by fragmentation and loss of habitats and competition and predation by nonnative species. The species has been extirpated from about 45 percent of its historical range, including the White River and portions of the San Juan, Gunnison, and Green rivers. Data on smaller tributary systems are largely unavailable, and population abundance estimates are available only for short, isolated river reaches.

Roundtail chub eat terrestrial and aquatic insects, mollusks, other invertebrates, fishes, and algae. The species spawns over areas with gravel substrate during the spring and summer. Eggs are fertilized in the water, and then drop to the bottom where they adhere to the substrate until hatching about 4–7 days later (UDWR 2002b). The roundtail chub is known to occur in the White River in the study area and could be affected by the Utility Project or South Project.

3.2.11 Cultural Resources

Cultural resources, as broadly defined in BLM Manual 8100, are locations of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term "cultural resources" includes archaeological, historical, or architectural sites, structures, or places with important public and scientific uses and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups. They are recognized as fragile and irreplaceable material, places, and things with potential public and scientific uses.

3.2.11.1 Regulatory Framework

Federal agencies must consider the effects of their actions on cultural resources under the NEPA and under Section 106 of the NHPA (54 U.S.C. 306108; 36 CFR 800). Specifically, Section 106 of the Act directs federal agencies to take into account the effects of their actions on historic properties and provide the ACHP a reasonable opportunity to comment. The Section 106 process is separate from, but often conducted parallel with, the preparation of an EIS.

Other federal legislation applicable to cultural resources in the Utility Project study area includes:

- The American Antiquities Act of 1906 (16 U.S.C. 432-433) authorizes federal land-management agencies to manage through a permit process the excavation and/or and removal of archaeological resources on federal lands.
- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa to 470ee) authorizes federal land-management agencies to manage through a permit process the excavation and/or removal of archaeological resources on federal lands. These agencies must consult with American Indian tribes with interests in resources prior to issuance of permits.
- NAGPRA (25 U.S.C. 3001-3002) provides a process through which federal agencies consult with affected Native Americans regarding the treatment and return of human remains, funerary objects, sacred objects, and items of cultural patrimony identified on federal lands as a result of a federal action.
- Executive Order 13007, issued in 1996 directs federal land-management agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.
- Executive Order 11593, issued in 1971 directs federal land-management agencies to (1) administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations; (2) initiate measures necessary to direct their policies, plans, and programs in such a way that federally owned sites, structures, and objects of historical, architectural, or archaeological significance are preserved, restored, and maintained for the inspiration and benefit of the people; and (3) in consultation with the ACHP (54 U.S.C. 304102), institute procedures to assure that federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures, and objects of historical, architectural, or archaeological significance.

In addition, the Utah SHPO is responsible for ensuring that the Utility Project and South Project's effects on lands under the jurisdiction of the state are considered under applicable state laws and that state cultural resources and historic properties laws are followed.

State of Utah statutes and guidelines applicable to cultural resources in the Utility Project study area include the following:

- The UAC Sections 9-8-305 and R694-1 require a permit be obtained from Utah Governor's Public Lands Policy Coordination Office (PLPCO) to survey or excavate on any lands owned or controlled by the state, its political subdivisions, or by SITLA.
- UAC Section 9-8-309 provides a process through which landowners or land-management agencies consult with the state regarding the treatment of human remains discovered on non-federal lands that are not state owned.
- UAC Section 9-8-403 provides a process for the ownership and disposition of Native American human remains discovered on non-federal lands that are not state owned.
- UAC Section 9-8-404 establishes agency responsibilities where the SHPO will comment on state-funded undertakings. Specifically, this portion of the code directs state agencies to take into

account the effects of their actions on historic properties and provide the SHPO and PLPCO a reasonable opportunity to comment.

- UAC Section 76-9-704 provides the definitions and penalties for the abuse or desecration of a dead human body.
- UAC Section R212-4 provides a process to assure the respectful, lawful, and scientifically sound treatment of Native American burial sites discovered on non-federal state lands and provides procedures for the final disposition of unidentified or unaffiliated Native American remains discovered on non-federal state lands.
- UAC Section R230-1 requires that if human remains are discovered in conjunction with a project subject to Section 106, the project proponent is responsible for all efforts associated with the excavation, analysis, curation, or repatriation of the human remains and for notifying the SHPO.

3.2.11.1.1 Defining Historic Properties

As previously stated, Section 106 directs federal agencies to take into account the effects of their actions on historic properties. Historic properties are cultural resources that are either eligible for or listed in the National Register of Historic Places (NRHP). Historic properties must demonstrate importance in American history, architecture, archaeology, engineering, or culture. Per 36 CFR 60.4, properties are considered significant in these categories if they meet one or more of the following criteria:

> (A) are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (B) are associated with the lives of persons significant in our past; or
>
> (C) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (D) have yielded, or may be likely to yield, information important in prehistory or history.

In addition to demonstrating significance, a historic property must demonstrate integrity, which is based on the following seven aspects: location, setting, design, materials, workmanship, feeling, and association.

3.2.11.2 Issues Identified for Analysis

Issues related to cultural resources identified in agency and public scoping include:

- Potential for impacts on prehistoric and historic sites and from the Utility Project and South Project;
- Potential for impacts on archaeological and historic cultural resources (especially those located along the White River, Evacuation Creek, Coyote Wash, and Dragon Road), trails and other linear sites;
- Potential for Native American concerns and impacts to Traditional Cultural Properties (TCPs) and NRHP-listed properties; and

- Potential for impacts to the White River Stage Station site, a historic stage station and prehistoric campsite, recommended eligible for the NRHP. This multi-component site was identified during Class III cultural resources survey conducted for the Project (Lechert et al. 2013).

3.2.11.3 Cultural Context

To assess the periods of significance for the cultural resources that exist in the Utility Project area, it is crucial to understand specific themes and events influential in the region's past. As a result, a cultural context is presented that addresses the chronological and thematic framework for cultural resources that occur in the Utility Project study area. The following culture history is divided into two thematic periods: prehistory and history.

Regional models of prehistory, settlement patterns, and paleo-environments provide a basis for generating expectations regarding the types of archaeological resources that might occur in a given area. This information also provides a context for evaluating the significance of any identified archaeological remains. The following cultural context has been extracted from the Draft Class III Cultural Resources Inventory of the Utah Oil Shale Project, in Uintah County, Utah, prepared for the Applicant’s Utah Oil Shale Project (Lechert et al. 2013).

3.2.11.3.1 Prehistoric Overview

Prehistoric human occupation of the Uinta Basin has been divided into four distinct and temporally bounded time periods: Paleoarchaic, Archaic, Formative, and Protohistoric (Spangler 1995, 2002). These time periods serve as general temporal foundations for explaining human behavior and associated trends through time. Although the divisions between time periods have been defined temporally, behaviorally, and technologically, they have been determined primarily by differences in artifact assemblage. In many instances, this type of fine-scale division is informative. As new sites and artifacts are routinely discovered, these divisions are susceptible to significant revision. The dates provided herein serve as general timeframe markers, and any new discoveries or advances in dating technology will likely alter these date ranges.

3.2.11.3.1.1 Paleoarchaic Period (ca. 10,000-6000 B.C.)

The precise timing and nature of human entry into North America is open to debate (Dillehay 2000; Swedlund and Anderson 1999). The oldest accepted evidence of human occupation in North America dates to ca. 10,000 B.C., when the climate was more cool and moist than at present. This climate supported various species of large mammals such as bison, mammoths, camels, and ground sloths, and traditional interpretations of human behavior from this period have suggested that human populations focused on the exploitation of these large mammals (Grayson 1993). Diagnostic artifacts from this period, such as fluted Clovis and Folsom points, have frequently been recovered in association with the remains of several species of large mammals. In fact, the Paleoarchaic Period is generally characterized by a reliance on big-game hunting, low populations, and high mobility (Fagan 1991; Fiedel 1992). It must be noted, however, that although a focus on big-game hunting has been interpreted from archaeological data, it is likely that small-game and plant resources constituted a significant portion of the Paleoarchaic diet (Johnson et al. 1991)

In the Uinta Basin, evidence of Paleoarchaic occupation has generally been inferred because archaeological sites with stratified deposits and dateable materials have not been documented to any great extent (Patterson et al. 2011:7; Spangler 1995:340-345). At present, this period of prehistory in the Uinta Basin is poorly understood because most sites dating to this time are not stratified deposits, but instead consist of surface discoveries of isolated projectile points. Occupations dating to terminal phases of the Paleoarchaic period are slightly better known. Several different complexes have been defined for this period in the Uinta Basin: isolated diagnostic artifacts and occasional excavations indicate the presence of

Agate Basin, Hells Gap, Alberta, and Cody complex occupations that reflect influences from the Northwestern Plains and Colorado Plateau (Spangler 1995:340-345; 2002:213-224).

In summary, a lack of Paleoarchaic-age materials in the Uinta Basin makes it difficult to infer the exact nature of human behavior during this period, particularly during the earlier portions. Current notions of Paleoarchaic behavior in the Uinta Basin have instead been inferred from patterns observed in neighboring regions such as the Northwestern Plains and Colorado Plateau. The discovery of Paleoarchaic-Period projectile points in the Uinta Basin implies that Paleoarchaic peoples may have used the area. However, the exact nature of their presence is not well understood and remains the subject of additional research (Spangler 1995:345; 2002:224-225). Because there is currently limited data for the Paleoarchaic Period in the Uinta Basin, any Paleoarchaic resource identified in the field would have significant data potential to contribute further understanding of Paleoarchaic occupations in the region. In particular, Paleoarchaic resources with the potential for stratified deposits and dateable material would have significant data potential to contribute further understanding of Paleoarchaic behavior in the Uinta Basin.

3.2.11.3.1.2 Archaic Period (6000 B.C. – Anno Domini [A.D.] 500)

The Archaic Period has been described as a time when prehistoric populations followed broadly similar hunting and gathering lifeways with distinct regional adaptations to local environmental conditions (Spangler 1995:351). Contrasting the pursuit of big-game species that characterized the earlier Paleoarchaic Period, the Archaic Period has traditionally been defined as a period in which hunter-gatherer populations emphasized a "broad-spectrum" pattern of resource exploitation that encompassed a wide array of plant and animal species. Evidence for human occupation in the Uinta Basin increased during the Archaic period, and has been subdivided into three periods: Early, Middle, and Late (Spangler 1995, 2002).

The Early Archaic Period (6000–3000 B.C.) is poorly represented in the archaeological record of the Uinta Basin. Sites from the surrounding regions that date to this period are more numerous, and evidence of human abandonment of portions of the Great Basin and Colorado Plateau may suggest that the Uinta Basin was sparsely populated or abandoned during this phase of prehistory. The Early Archaic occupation in this area has been inferred based on the presence of temporally diagnostic projectile points that have been found in association with temporary camps and lithic scatters (Spangler 1995:372-373; 2002:244-245). Current evidence from locations in the lower White River drainage, along the Green River, and in other Uinta Basin contexts indicates sporadic use of the area by highly mobile groups that exploited abroad range of resources. Currently, the presence of Elko and Pinto Series projectile points indicates use of the area by groups that appear to reflect Great Basin subsistence patterns, as opposed to influences from the Northwestern Plains and the Colorado Plateau (Spangler 1995:378; 2002:250).

The Middle Archaic Period (3000–500 B.C.) is distinguished from the Early Archaic in the Uinta Basin by an apparent increase in human population (Spangler 1995:378; 2002:251-252). Numerous sites from this period have been identified, and the increased use of this area was likely facilitated by a return to relatively favorable wet and cool climatic conditions and an expansion of food resources (Frison 1991; Jennings et al. 1980). Archaeological sites dating to this time period are often characterized by the presence of McKean Complex and Elko Series projectile points that suggest influences from the Northwestern Plains and Great Basin, respectively. These projectile points have been found in association with an assemblage that includes scrapers, knives, and cutting implements. Although a large part of the tool assemblage from this time period implies an emphasis on hunting, a greater presence of ground stone artifacts such as slab metates and unifacial manos in the archaeological record suggests increased use of plant resources (Spangler 1995:392). Generally, the settlement-subsistence pattern during the Middle Archaic is characterized by a high degree of mobility; however, evidence from sites in the Uinta Basin such as Thorne Cave (Day 1964) and Deluge Shelter (Leach 1970) indicate the use of semi-permanent encampments by prehistoric inhabitants to exploit locally available resources. Archaeological evidence from this period also suggests use of different environmental zones such as high-altitude and riverine settings, indicating the development of a seasonally based pattern of mobility and subsistence.

The Late Archaic Period (500 B.C.–A.D. 500) has generally been characterized as a transitional period from an Archaic hunter-gather subsistence pattern to the horticultural pattern of later periods. Spangler tentatively defines the Late Archaic as a period where reliance on wild plant and animal resources was comparable to dependence on domesticated foods (Spangler 1995:400; 2002:278). The archaeological record from this period reflects influences from both the Great Basin and the Northwestern Plains. The material assemblage of this period is characterized by the disappearance of McKean Complex projectile points and the persistence of Elko Series projectile points. However, toward the end of the Late Archaic period, use of Elko Series points appears to decline, and they are replaced by smaller projectile points such as the Rose Springs type that developed synonymously with the introduction of the bow and arrow into the region around 50 B.C. Hunting and gathering activities from this period are represented at a number of archaeological sites near Browns Park, in Clay Basin, and in Dinosaur National Monument. Analysis of these sites suggests increased seasonality in hunting and gathering activities, and there is some evidence of extended periods of occupation that likely indicates development of more complex logistical organization within the regional settlement-subsistence pattern.

Although the pattern of mobilized hunting and gathering by Late Archaic groups remains consistent across the Uinta Basin, evidence of temporary and permanent architecture begins to appear in the archaeological record (Spangler 1995, 2002). Sites such as Cockleburr Wash, 42DA0393, and Steinaker Gap show evidence of shallow, circular surface depressions that likely denote semi-permanent housing as early as 300 B.C. The site of Burnt House Village shows evidence of permanent architecture that includes semi-subterranean structures with compacted earthen floors, internal fire pits, post holes, and storage pits beginning around A.D. 50 (Biggs 1970). Many of these sites contain chipped stone and ground stone assemblages indicating hunting and gathering activities. However, maize samples recovered from many of these sites also suggest increased use of horticultural resources. The appearance of semi-permanent and permanent architecture, coupled with the use of maize and other horticultural resources, marks the transition to more complex forms of habitation and subsistence in the Uinta Basin that continue into later periods. Although a substantial number of Archaic period sites have been identified in the Uinta Basin, any additional Archaic resources identified in the field would have significant data potential to contribute further understanding of Archaic occupations and subsistence patterns in the region. In particular, Archaic resources with the potential for stratified deposits and dateable material would have significant data potential to contribute further understanding of Archaic behavior in the Uinta Basin.

3.2.11.3.1.3 Formative Period (A.D. 1-1300)

There is not a distinct division in the archaeological record between the Archaic and Formative periods. Instead, the early Formative Period overlaps with the end of the Late Archaic Period and encompasses the time span from approximately A.D. 1 to A.D. 1300. During the latter portion of the first millennium A.D., portions of the Great Basin and surrounding regions exhibit an apparent intensification of horticulture and sedentary lifeways. This intensification is reflected in the rise of more permanent architecture and an expansion in the size, frequency, and complexity of related storage structures. The cultural complex of the Formative Period in the Uinta Basin is referred to as the Fremont Complex.

Fremont occupations most commonly date from A.D. 300 to A.D. 1300 (Madsen and Simms 1998; Marwitt 1986). Traditionally characterized as a "culture" with a number of "variants" (San Rafael, Uinta Basin, Great Salt Lake, Sevier, etc.), the Fremont culture has more recently been reconceived as a "complex" (Madsen and Simms 1998). Typical Fremont material culture—pottery, agriculture, pit structure dwellings, and basketry —varies from site to site, and therefore may not indicate a "culture" in the sense of an ethnic group. Instead, what has traditionally been referred to as Fremont culture is more likely a host of traits and activities that varied over the entire region. In particular, Fremont subsistence behavior is highly variable and can encompass "… full-time sedentary farmers, full-time mobile foragers, sedentary foragers, seasonal farmer/foragers, and people who could have been all of these at one time or another in their lives" (Marwitt 1986).

The Fremont occupied the Uinta Basin later than other areas of the Great Basin. Material culture consistent with the Fremont complex has been dated in the Uinta Basin from shortly after A.D. 550 through at least A.D. 1300 (Johnson and Loosle 2002; Madsen and Simms 1998). Like Fremont groups in other regions, the Uinta Basin Fremont practiced horticulture, lived in permanent pit structures, and used a plain, limestone-tempered, gray ware pottery. The Uinta Basin Fremont, however, differed slightly from other Great Basin Fremont groups, possibly due to the Uinta Basin's relative geographic isolation. As seen at sites such as Caldwell Village and Boundary Village, the Uinta Basin Fremont built shallow, saucer-shaped pit houses and surface structures with off-center hearths and little or no surface storage structures (Barton 1998). Another characteristic feature of the Uinta Fremont is their use of gilsonite to repair pottery.

In general, Fremont sites in the Uinta Basin are distinguished from Fremont sites in other regions by two traits. First, the Uinta Basin Fremont groups appear to have lived in smaller social units because few large-scale Fremont villages have been found in the Uinta Basin (Marwitt 1986). Second, the use of lowland settings for horticultural practices was supplemented by use of higher elevation settings during brief logistic forays to obtain other resources. A number of upland Fremont sites contain ceramics, ground stone implements, and maize, suggesting simultaneous use of both upland and lowland areas (Johnson and Loosle 2002; Loosle et al. 2000). Available data indicate that in the Uinta Basin, the Fremont stage ended around A.D. 1300 (Johnson and Loosle 2002; Madsen and Simms 1998). With the demise of the Fremont complex, intensive farming, storage, and use of pottery also appear to have declined in the Uinta Basin (Spangler 1995). The reasons for the demise of the Fremont complex have been the subject of much archaeological debate and research. Any significant Fremont site identified in the field would have the potential to help expand existing knowledge of the Fremont complex and better understand the shift away from intensive farming and use of pottery in the Uinta Basin.

3.2.11.3.1.4 Protohistoric Period (A.D. 1300 – 1800)

The archaeological record of the Great Basin and the Northwestern Plains at the end of the Formative Period is characterized by the decline of intensive-level farming and a return to a hunting and gathering-based subsistence economy. The migration of non-farming peoples into the region has traditionally been used to explain cultural transitions during this period. The so-called "Numic expansion" hypothesis proposes that Numic language-speakers moved into the Great Basin region late in the prehistoric sequence, replacing or subsuming people already living there (Lamb 1958; Steward 1940).

A review of available archaeological data from the eastern Great Basin and Uinta Basin suggests that significant changes occurred between A.D. 1300 and A.D. 1600, including new variations in settlement patterns, subsistence behavior, material culture, trade patterns, and mortuary practices. It has been proposed that Steward's 1940 model of migrationist expansion best fits the changes noted in the archaeology of the eastern Great Basin (Janetski 1994). It must be noted, however, that an in situ adaptation might also have occurred (Janetski 1994:157).

By the time of historical contact with Euro-Americans in the late 1700s, the ethnographically known groups occupying the region were the Ute, Shoshone, and Paiute, all of whom spoke Numic languages (Newton 2001). Despite some promising models (Aikens 1994; Bettinger 1994), the details of the Numic expansion are still hotly debated. Identification of any significant protohistoric sites in the field may help characterize reasons for the variations in settlement patterns, subsistence behavior, material culture, trade patterns, and mortuary practices.

3.2.11.3.2 Historic Overview

As evidenced by the diversity of cultural resources, the Utility Project study area lies in an area of extensive historic use and complex economic and socio-cultural interactions. The Utility Project study area is situated approximately 12 miles southeast of the community of Bonanza in southeastern Uintah County, Utah. The following outlines are intended to provide a historical framework in consideration of the significance of cultural resources located in the Utility Project study area. The regional chronology and cultural events presented herein reflect the synthesis of a large body of archaeological and historical investigations in the Utility Project study area. For further investigation of the history of Uintah County, consult Burton (1996).

3.2.11.3.2.1 Early Exploration and Settlement Period (A.D. 1776-1870)

Numic-speaking tribes were the dominant groups in the Uinta Basin upon European entrance into the area (Embry 1996; Hampshire et al. 1998; Poll et al. 1989). The Ute tribe was the dominant Native American group in the Uinta Basin when the Dominguez-Escalante expedition of 1776 became the first documented European group to visit northeastern Utah. Many other Euro-American groups soon followed, using the same route out of Santa Fe, New Mexico, in subsequent years. In particular, the Green River became a heavily traveled corridor in the Uinta Basin. The earliest sustained Euro-American presence in the region is attributed to fur trappers and traders. By the early 1840s, declining beaver populations and falling fur prices resulted in a rapid decline in the fur trade across the nation. In 1837, Fort Davy Crockett was established in Browns Park, Utah, but was abandoned only three years later. Similarly, as many as four other fur trading posts were established and abandoned at various locations in the Uinta Basin between 1839 and 1844 (Spangler 1995:778-782; 2002:480-484).

In 1850, the Utah territory was established, with Mormon (members of the Church of Jesus Christ of Latter Day Saints [LDS]) leader Brigham Young acting as Governor (Bringhurst 2012; May 1987). Mormon settlements rapidly developed across the new territory. In 1861, Young sent an expeditionary group to the Uinta Basin to assess the region's potential for settlement. This initial survey reported that the region was undesirable for settlement due to a lack of readily arable lands (Papanikolas 1976). This unfavorable report slowed Mormon and Euro-American interest in the region until the early 1870s, when more favorable reports from John Wesley Powell's 1869 and 1871 expeditions facilitated the development of ranching and farming in the region (Bearnson 2012; Papanikolas 1976).

3.2.11.3.2.2 Industry and Growth Period (A.D. 1870-1928)

Motivated by various economic and demographic factors, the U.S. government forcefully moved several Ute bands onto the newly established Uintah Valley Reservation in 1864. In 1905, much of the Uintah Reservation was declared open to white settlement under the Dawes Severalty Act of 1887, spurring further settlement of the area (Poll et al. 1989:367-368). Rapid growth of new Euro-American settlements also caused water reclamation activities to increase. Beginning in 1872, settlers in the region began constructing irrigation ditches to carry water to their lands. Several of these ditches, such as Dodd's Ditch located north of Maeser, are still in use today. The Uintah Indian Irrigation Project and the Dry Gulch Irrigation Company constructed most of the canals and reservoirs in the Uinta Basin after 1905. In turn, the construction of more canals and reservoirs made agriculture an increasingly attractive enterprise throughout the 1900s (Spangler 1995:811-812; 2002:496-500).

The excellent winter rangelands found in the Uinta Basin allowed for the development of the livestock industry during the late 1800s. A lack of sufficient law enforcement allowed less legitimate enterprises to take hold in the Uinta Basin between 1870 and the early 1900s. Cattle and horse rustling, in particular, became commonplace. As Browns Park was remote and difficult for law enforcement officials to enter undetected, many of the region's outlaws, including the infamous Wild Bunch led by Butch Cassidy, used the area as a place of refuge. After 1898, increased cooperation between lawmen from Utah, Wyoming, and Colorado led to the decline of the outlaw era in Browns Park (Spangler 1995:806-807; 2002:493-495).

In addition to agriculture and ranching, the prospect of mineral wealth brought numerous settlers to the region. The discovery of gilsonite in 1888 led to one of the first large commercial undertakings in the region. The USGS *2006 Minerals Yearbook* (USGS 2009) states the following: "Gilsonite is an unusual solid hydrocarbon that has been mined in Utah for more than 100 years. Gilsonite is marketed worldwide for use in more than 150 products ranging from printing inks to explosives. All gilsonite mines are located in southeastern Uintah County." Numerous mines were established, and the gilsonite industry eventually led to the construction of the only railroad to enter the Uinta Basin in 1904. The Uintah Railway narrow-gauge railroad was established initially as far as Dragon, Utah, with the intent of hauling gilsonite to the main Denver and Rio Grande Western railroad (Burton 1996:130-133). In 1911, the Uintah Railway extended the line to Watson, Utah (Bender 1970:95). The Uintah Toll Road was constructed by the Barber Asphalt Company in 1905. The toll road, run by the Uintah Toll Road Company, provided stage and freight wagon service between the towns and mines to the Uintah Railway (Bender 1970:95:57; Covington 1964; Hilton 1990). The toll road ran from Dragon, Utah, to Vernal, Utah, and Fort Duchesne (Spangler 1995:826; 2002:500). Other resources that were commonly extracted and transported by rail included coal, copper, gold, iron, oil, shale, silver, and asphalt. The Uintah Railway was discontinued in 1939, and resources were transported thereafter by truck. The old railroad bed "was utilized and was built into a road over Baxter Pass" (Covington 1964). The mining industry played a significant role in the financial development of the Uinta Basin region by providing jobs, bringing valuable revenue through the purchase of goods and services, and providing tax revenue for Uintah County. The mining industry continues to serve this vital role today (Burton 1996:134).

Of equal importance to the economy of the Uinta Basin has been the development of the oil and gas industry. The first known exploratory oil drilling occurred in 1900 at the John Pope No. 1 Well (Burton 1996:139). The venture proved unsuccessful, and further efforts in the area showed few positive results. Further exploration during the 1920s led to the discovery of a producing gas well between Jensen and Vernal near Ashley Creek, and the ensuing establishment of the Ashley Field resulted in increased exploration throughout the Uinta Basin. In addition, early exploration and mining of oil shale began in 1921, but was discontinued shortly thereafter because the operation proved unfeasible (Burton 1996:144-145).

3.2.11.3.2.3 Great Depression and World War II (A.D. 1929-1945)

The entrance of the U.S. into World War I in 1917 provided a boost to both national and local industries. However, this boom was short lived, and the beginning of the Great Depression left millions of Americans jobless (Burton 1996:174-175). The Uinta Basin region did not escape the effects of the Depression. A hard winter in 1932–1933, followed by a severe drought, resulted in the loss of many livestock and crops. Many inhabitants in the Uinta Basin lost ranches, lands, and homes as banks foreclosed on loans. Most families were soon living below the poverty line (Burton 1996:175-176). Despite the efforts of several New Deal programs designed to create jobs, recovery from the Depression was slow. The Depression ended as a result of the economic upswing created by the nation's entrance into World War II (Burton 1996:180-181). The demand for oil and gas resources during the war resulted in increased exploration and the development of large-scale oil-producing wells across the region.

3.2.11.3.2.4 Postwar Period (A.D. 1945-Present)

After the war, Uinta Basin communities experienced a period of prosperity and growth. In the 1970s, another attempt was made at mining oil shale in the region. The White River Company, Geokinetics, Inc., and several other companies leased lands from the federal government and the state of Utah to mine oil shale in the Uinta Basin. Geokinetics, Inc. successfully mined oil shale and extracted oil from it for nearly 10 years at its plant called Kamp Kerogen. Oil shale mining production ceased in the area due to high production costs and low oil prices in 1984 (Burton 1996:145-146). Further oil and gas exploration resulted in the discovery of oil in commercial quantities by the Equity Oil Company. The discovery unleashed an oil and gas boom that would persist at various levels through the 1980s. The rapid expansion of oil and gas fields in the Uinta Basin resulted in significant community and economic development as workers and families entered the region to take advantage of the expanding market. After the Equity Oil discovery, oil and gas development became one of the leading industries in the Uinta Basin, and it soon became apparent that the strength of the local economy was affected by fluctuating production in the oil and gas fields. During the 1980s, a slump in oil shale projects and declining oil prices led to an economic crisis throughout the region. By the end of 1987, Uintah County had the highest out-migration rate in Utah, at 4.9 percent. During the 1990s, job opportunities improved, and the trend toward a shrinking population began reversing. The Uinta Basin population increased 29 percent between 2000 and 2010 due to increased energy production (Office of Legislative Research and General Counsel 2012).

The growth of the tourism industry has helped improve the economic situation of the region. In particular, the dinosaur quarry near Jensen, Utah, and the Utah Field House of Natural History in Vernal have proven to be popular tourist attractions (Burton 1996:185-187). As the Uinta Basin area continues to develop, oil, mining, agriculture, and the growing tourism industry will continue to play vital economic roles.

Very few significant historic sites have been documented in the Utility Project study area. The documentation of significant historic sites that can be tied to the themes of early exploration and settlement; industry and growth (e.g. water works, roads, railroads and other infrastructure expansion); the ranching, mining, or oil and gas industry; depression recovery efforts; and/or tourism will greatly contribute to the history and understanding of the region.

3.2.11.4 Study Methodology

Baseline cultural resource data were collected in a study area for the Proposed Action. Baseline data consists of Class I data, TCPs, NRHP-listed properties, National Historic Trails (NHTs), and Areas of Critical Environmental Concern (ACECs). A search of the GLO records also was conducted. Additional cultural data examined for the Class I inventory includes historic maps. A Class III inventory also was conducted to facilitate federal and state agency consultation with the ACHP, the SHPO, Native American tribes, and other consulting parties, as required by Section 106.

3.2.11.4.1 Class I Inventory

A Class I inventory (literature search) for the Utility Project study area involved obtaining existing information on known cultural resource sites and significant cultural resource inventories previously conducted from the files of a number of agencies and institutions, including the SHPO, the BLM Vernal Field Office, and other appropriate land-management agencies. In addition to this information, the NRHP also was reviewed in order to identify historic properties in the project study area.

3.2.11.4.2 Class III Inventory

A Class III inventory was conducted by SWCA Environmental Consultants (SWCA) from April 24 through May 22, 2013 (Lechert et al. 2013). The purpose of the Class III inventory was to identify, record, and determine the extent and significance of identified cultural resources sites located in the

Utility Project's Area of Potential Effect (APE) (refer to Lechert et al. 2013). This area consists of a mining and industrial plant area, 24 linear miles (34 linear kilometers) of utility rights-of-way, and ancillary utility areas. The inventory corridors varied in width from 15 to 76 meters (50 to 250 feet) wide and totaled 24 miles (38.6 kilometers) long. SWCA followed the requirements for documenting and evaluating cultural resources as outlined in Section 106 of the NHPA and its implementing regulations in 36 CFR 800 (as amended, 2000). All historic properties were evaluated for eligibility for the NRHP as outlined in 36 CFR 60 and defined by 36 CFR 60.4. Additionally, all sites located during the Class III inventory were fully documented and were reported in the Draft Class III Cultural Resource Report (refer to Lechert et al. 2013).

In accordance with 36 CFR 800 (implementing regulations for the NHPA), the BLM has identified an APE in which direct and indirect effects on cultural resources from the Proposed Action could occur. The APE is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR 800.16[b]). The APE consists of the following:

- The Applicant private property mining and industrial plant area, totaling approximately 8,516 acres (3,446 hectares);
- Utility rights-of-way located primarily on BLM land and some SITLA-administered lands between the BPP and the Applicant plant site, totaling approximately 24 linear miles and 635 acres (257 hectares); and
- Ancillary utility areas located primarily on BLM land and some SITLA-administered lands in various locations along the rights-of-way, including construction temporary laydown areas, switching yards, and metering stations, totaling approximately 40 acres (16 hectares).

3.2.11.5 Affected Environment

3.2.11.5.1 Class I and Class III Inventory

The Class I inventory resulted in the identification of 150 sites in the study area. Sites consist of 77 prehistoric sites, 66 historic sites, and 7 multi-component (prehistoric and historic components) sites. Although sites counts and site types are known for the overall Class I inventory area, no differentiation between sites associated with the Utility Project and South Project areas can be made at this time as these data are not currently available. Prehistoric sites include lithic scatters, campsites, rock shelters, rock art, a lithic procurement area, a tepee pole cache, and a rock alignment of unknown function. Historic sites include trash scatters, habitation sites, campsites, mining-related sites (adits, mining claims, and mines), and linear features (railroad, road, and utility line segments). Multi-component sites include several prehistoric lithic scatters and campsites with small historic components, cairns, and the White River Stage Station site. The White River Stage Station site contains both historic (refuse, features, structures, and rock art) and prehistoric elements (lithic scatter, ground stone, and fire-cracked rock). Overall, cultural resources encompass a broad range of cultural and temporal affiliations. A total of 11 historic linear features and 8 mining-related resources were identified during the GLO search; these include roads, trails, and mining claims.

The Class III inventory resulted in the identification of 89 newly recorded sites and 9 known sites in the APE. These sites include 6 prehistoric sites, 82 historic sites, and 1 multi-component (prehistoric and historic components) site. Prehistoric sites include non-diagnostic lithic scatters and a rock shelter. Historic sites include numerous trash scatters (primarily associated with sheepherding, gilsonite mining, and other industrial activities), campsites, cairns, a drill pad, prospector pits, and a utility corridor (east of Evacuation Creek). The multi-component site is the White River Stage Station site. Historic sites in the project area primarily date between 1900 to the mid-1930s. Table 3-21 provides a summary of the cultural resource sites that were identified during the Class I and Class III inventories. There are no NRHP-listed properties, NHTs or potential NHTs, TCPs, or ACECs with cultural components in the APE or in its vicinity.

Table 3-21
Summary of Cultural Resources Inventory Data

Inventory	Number of Class I and Class III Sites									
	NRHP-Eligible Sites			Not Eligible Sites			Unevaluated Sites			Total Number
	Prehistoric	Historic	Multi-component	Prehistoric	Historic	Multi-component	Prehistoric	Historic	Multi-component	
Class I	41	10	3	29	52	3	13	1	3	155
Class III	1	2	1	5	80	0	0	0	0	89

NOTE: Due to several sites with multiple recordings, the total number of sites does not match the total number of Class I sites (n=150)

3.2.11.5.2 Utility Project

As previously stated, no differentiation between Class I sites associated with the Utility Project and South Project can be made at this time as these data are not currently available; therefore, specific site locations with respect to the reference centerline cannot be identified.

A total of 13 sites were identified in the Class III inventory, including one prehistoric rock shelter, seven trash scatters, the White River Stage Station site, one historic campsite, one historic cairn alignment, one historic rock alignment, and one prospect pit. These sites would potentially be subject to direct impact. Significant resources include the White River Stage Station site and one newly recorded prehistoric rock shelter. There is a high potential for unrecorded sites along the Utility Project. Additionally, highly sensitive resources (TCPs and GLO features [e.g., mining claims and roads]) have the potential to be intersected by the Utility Project.

3.2.11.5.3 South Project

As previously stated, no differentiation between Class I sites associated with the Utility Project and South Project areas can be made at this time as these data are not currently available; therefore, specific site locations with respect to the reference centerline cannot be identified.

A total of 76 sites were identified in the Class III inventory, including 5 prehistoric lithic scatters, 59 trash scatters, 10 prospector pits, 1 drill pad, and the remnants of 1 utility line. These sites would potentially be subject to impacts. Significant resources include two newly recorded historic mining sites. Additionally, highly sensitive resources (TCPs and GLO roads/trails) have the potential to be intersected by the South Project.

3.2.12 Paleontological Resources

3.2.12.1 Regulatory Framework

Paleontological resources occurring on federal and state lands are afforded protection by federal and state laws and regulations. Protection for paleontological resources includes the requirements for: (1) the assessment of areas containing paleontological resources that could be directly or indirectly affected, damaged, or destroyed by development prior to, and as a consequence of, authorization of ground-disturbing activities; and (2) the formulation and implementation of measures (e.g. permanent preservation of the discovered fossil localities and/or permanent preservation of mitigated paleontological resources at repositories approved by the land management agency) to mitigate potentially adverse impacts.

The FLPMA serves as the primary federal legislation providing for the protection and conservation of paleontological resources occurring on federally administered lands. FLPMA (P.L. 94-579) provides for management and mitigation of adverse impacts on federally administered lands by protecting "the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archaeological values."

The Omnibus Public Land Management Act–Paleontological Resource Preservation (OPLMA-PRP) codifies specific protection for paleontological resources that provide information about the history of life on earth; it contains criteria for the issuance of paleontological collection permits, directing the U.S. Secretaries of the Interior and Agriculture to ensure paleontological resources discovered on federal lands are curated properly into collections of approved repositories.

The Paleontological Resources Preservation Act (PRPA) requires the Secretaries of the Interior and Agriculture to manage and protect paleontological resources on federal land using scientific principles and expertise (16 U.S.C. 470aaa et seq.). The PRPA includes specific provisions addressing management of these resources by various agencies.

The BLM's policy for addressing potential impacts on paleontological resources on BLM-administered lands also applies, and is included in the following documents: (1) *Paleontological Resource Management Handbook* (H-8270), (2) *General Procedural Guidance for Paleontological Resource Management* (H-8270-1), (3) *PFYC System for Paleontological Resources on Public Lands* (WO-IM 2008-009), and (4) *Assessment and Mitigation of Potential Impacts to Paleontological Resources* (WO-IM 2009-011).

Utah State Code (63-73-11 through 63-73-19) currently states that paleontological resources are important and requires the preservation of critical fossil resources on state lands. The Utah State Code mandates that those removing or excavating critical fossils on Utah state lands be qualified and permitted under joint jurisdictional cooperation from the Utah Geologic Survey, Utah Museum of Natural History, and SITLA. Utah State Code (53B-17-603) also requires extracted fossils be curated by an approved and qualified institution.

3.2.12.2 Issues Identified for Analysis

Issues related to paleontological resources identified in agency and public scoping include:

- Potential for impacts to paleontological resources from the Utility Project and South Project.

3.2.12.3 Study Methodology

Information for the Paleontological resources inventory was obtained from a review of the scientific literature and geologic maps, a record search with the Utah Geological Survey, and information obtained from the baseline report and paleontological survey previously performed (SWCA 2013b).

Information about the geologic units and known fossil localities in the region were used to identify the paleontological potential of areas within 1 mile of the reference centerline (refer to Maps A-8a and A-8b in Appendix A) for the Project components. Paleontological potential levels were assigned to each geological unit using the PFYC system adopted by the BLM in 2007 for assessing paleontological potential on federal lands. Each class is defined as follows:

Class 1 – Very Low. Geologic units that are not likely to contain recognizable fossil remains.

- Units that are igneous or metamorphic, excluding reworked volcanic ash units.
- Units that are Precambrian in age or older.

(1) Management concern for paleontological resources in Class 1 units is usually negligible or not applicable.
(2) Assessment or mitigation is usually unnecessary except in very rare or isolated circumstances.

The probability for impacting any fossils is negligible. Assessment or mitigation of paleontological resources is usually unnecessary. The occurrence of significant fossils is non-existent or extremely rare.

Class 2 – Low. Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant nonvertebrate fossils.

- Vertebrate or significant invertebrate or plant fossils not present or very rare.
- Units that are generally younger than 10,000 years before present.
- Recent aeolian deposits.
- Sediments that exhibit significant physical and chemical changes (i.e., diagenetic alteration).

(1) Management concern for paleontological resources is generally low.
(2) Assessment or mitigation is usually unnecessary except in rare or isolated circumstances.

The probability for impacting vertebrate fossils or scientifically significant invertebrate or plant fossils is low. Assessment or mitigation of paleontological resources is not likely to be necessary. Localities containing important resources may exist, but would be rare and would not influence the classification. These important localities would be managed on a case-by-case basis.

Class 3 – **Moderate** or **Unknown**. Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential.

- Often marine in origin with sporadic known occurrences of vertebrate fossils.
- Vertebrate fossils and scientifically significant invertebrate or plant fossils known to occur intermittently; predictability known to be low.

(or)

- Poorly studied and/or poorly documented. Potential yield cannot be assigned without ground reconnaissance.

Class 3a – Moderate Potential. Units are known to contain vertebrate fossils or scientifically significant nonvertebrate fossils, but these occurrences are widely scattered. Common invertebrate or plant fossils may be found in the area, and opportunities may exist for hobby collecting. The potential for a project to be sited on or impact a significant fossil locality is low, but is somewhat higher for common fossils.

Class 3b – Unknown Potential. Units exhibit geologic features and preservational conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known. This may indicate the unit or area is poorly studied, and field surveys may uncover significant finds. The units in this Class may eventually be placed in another Class when sufficient survey and research is performed. The unknown potential of the units in this Class should be carefully considered when developing any mitigation or management actions.

(1) Management concern for paleontological resources is moderate; or cannot be determined from existing data.
(2) Surface-disturbing activities may require field assessment to determine appropriate course of action.

This classification includes a broad range of paleontological potential. It includes geologic units of unknown potential, as well as units of moderate or infrequent occurrence of significant fossils. Management considerations cover a broad range of options as well, and could include predisturbance surveys, monitoring, or avoidance. Surface-disturbing activities will require sufficient assessment to determine whether significant paleontological resources occur in the area of a proposed action, and whether the action could affect the paleontological resources. These units may contain areas that would be appropriate to designate as hobby collection areas due to the higher occurrence of common fossils and a lower concern about affecting significant paleontological resources.

Class 4 – High. Geologic units containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. Surface disturbing activities may adversely affect paleontological resources in many cases.

Class 4a. Unit is exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two acres. Paleontological resources may be susceptible to adverse impacts from surface disturbing actions. Illegal collecting activities may affect some areas.

Class 4b. These are areas underlain by geologic units with high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts on the bedrock resulting from the activity.

- Extensive soil or vegetative cover; bedrock exposures are limited or not expected to be impacted.
- Areas of exposed outcrop are smaller than two contiguous acres.
- Outcrops form cliffs of sufficient height and slope so that impacts are minimized by topographic conditions.
- Other characteristics are present that lower the vulnerability of both known and unidentified paleontological resources.

(1) Management concern for paleontological resources in Class 4 is moderate to high, depending on the proposed action.
(2) A field survey by a qualified paleontologist is often needed to assess local conditions.
(3) Management prescriptions for resource preservation and conservation through controlled access or special management designation should be considered.
(4) Class 4 and Class 5 units may be combined as Class 5 for broad applications, such as planning efforts or preliminary assessments, when geologic mapping at an appropriate scale is not available. Resource assessment, mitigation, and other management considerations are similar at this level of analysis, and impacts and alternative routes can be addressed at a level appropriate to the application.

The probability for impacting significant paleontological resources is moderate to high, and is dependent on the proposed action. Mitigation considerations must include assessment of the disturbance, such as removal or penetration of protective surface alluvium or soils, potential for future accelerated erosion, or increased ease of access resulting in greater looting potential. If impacts on significant fossils can be anticipated, on-the-ground surveys prior to authorizing the surface disturbing action will usually be necessary. On-site monitoring or spot-checking may be necessary during construction activities.

Class 5 – Very High. Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation.

Class 5a. Unit is exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two contiguous acres. Paleontological resources are highly susceptible to adverse impacts from surface disturbing actions. Unit is frequently the focus of illegal collecting activities.

Class 5b. These are areas underlain by geologic units with very high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has very high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts on the bedrock resulting from the activity.

- Extensive soil or vegetative cover; bedrock exposures are limited or not expected to be impacted.
- Areas of exposed outcrop are smaller than two contiguous acres.
- Outcrops form cliffs of sufficient height and slope so that impacts are minimized by topographic conditions.
- Other characteristics are present that lower the vulnerability of both known and unidentified paleontological resources.

(1) Management concern for paleontological resources in Class 5 areas is high to very high.
(2) A field survey by a qualified paleontologist is usually necessary prior to surface disturbing activities or land tenure adjustments. Mitigation will often be necessary before and/or during these actions.
(3) Official designation of areas of avoidance, special interest, and concern may be appropriate.

The probability for impacting significant fossils is high. Vertebrate fossils or scientifically significant invertebrate fossils are known or can reasonably be expected to occur in the impacted area. On-the-ground surveys prior to authorizing any surface disturbing activities will usually be necessary. On-site monitoring may be necessary during construction activities.

The methodology for assessing the potential impacts on paleontological resources associated with implementing the Utility Project and South Project includes; (1) identifying the types of potential effects on paleontological resources that could result from the construction, operation, and maintenance ; (2) developing criteria for assessing the intensity of potential effects on paleontological resources based on the relative sensitivity of paleontological resources associated with each geologic unit that could be affected by the project; and (3) using the resource sensitivity level assigned to a geologic unit as an indication of the intensity of impacts on paleontological resources associated with implementation of the Utility Project and South Project.

3.2.12.4 Affected Environment

The Utility Project study area lies within the Uinta Basin, an east-west trending synclinal basin bounded by the Uinta Mountains to the north, the Douglas Creek Arch and Roan Plateau to the east, the Book Cliffs/Tavaputs Plateau to the south, and the Wasatch Range to the west (Murphey and Daitch 2007). Geologic units within the Uinta Basin span a long geological history beginning in the Cambrian Period and ending with the Pleistocene Epoch (Murphey and Daitch 2007). Within the Utility Project study area there are 15 geologic units of Tertiary and Quaternary age (Table 3-22). Of these, four formations are classified with PFYCs of 3-5 as summarized below.

Table 3-22
Geologic Units and Paleontological Potential in Utility Project Study Area

Geologic Unit	Acres	PFYC
Alluvial fan deposits (Qaf)	1,943.8	2
Colluvium (Qc)	1,119.6	2
Mass movements, slides, slumps and flows (Qms)	191.4	2
Mixed alluvium and colluvium (Qac)	4,053.4	2
Mixed alluvium and eolian deposits (Qae)	376.0	2
Stream alluvium (Qal)	169.7	2
Stream terrace deposits (Qat)	5.2	2
Talus deposits of baked rocks (Qmtb)	18.3	1
Member A of the Uinta Formation (Tua)	9,743.7	5
Member B of Uinta Formation (Tub)	9820	5
Member C of the Uinta Formation (Tuc)	1,867.3	5
Douglas Creek Member of Green river Formation (Tgd)	1,740.5	3
Parachute Creek Member of Green River Formation (Tgp)	17,003.0	3
Green River-Wasatch Formations Transition Zone (Tg-Tw)	190.0	4
Wasatch Formation (Tw)	95.2	4

The Uinta Formation has a long history of geological and paleontological research, but the complexity of the Formation has resulted in inconsistencies in its nomenclature and stratigraphy (Murphey and Daitch 2007). In the Utility Project study area Members A, B, and C of the Uinta Formation are mapped. These members are delineated by amount of sandstone, conglomerate, shale, and claystone as well as color and lithology of each rock type. The Uinta Formation has produced numerous fossils including selenodont artiodactyls, rhinoceratoid perissodactyls, rodents, uintatheres, primates, condylarths, creodonts, horse, marsupials, and carnivores (Rasmussen et al. 1999, Robinson et al. 2004, Murphey and Daitch 2007).

The Green River Formation also has a long history of geologic and paleontological research (Bradley 1964, Moussa 1968, Lucas and Kihm 1982, Roehler 1991, Murphey and Daitch 2007). The Green River Formation's stratigraphic nomenclature and subdivisions are complex. There are two members of the Green River Formation found within the Uinta Basin (Rowley et al. 1985, Murphey and Daitch 2007), both of which are mapped within the Utility Project study area. These are the Douglas Creek and Parachute Creek (formerly Evacuation Creek Member) members. The Parachute Creek Member comprises mostly marlstone, oil shale, siltstone, sandstone, and tuff. The Douglas Creek Member is composed mostly of sandstone, siltstone, shale, oolitic, algal, and ostracodal limestone, and some oil shale (Murphey and Daitch 2007). The Green River Formation fossils include plants, fish, insects, invertebrates, fish, birds, mammals, and ichnofossils (Bradley 1964, Murphey and Daitch 2007).

The Wasatch Formation comprises claystone, sandstone, siltstone, and conglomeratic sandstone (Cashion 1967, Rowley et al. 1985, Murphey and Daitch 2007), which in the Uinta Basin constitutes two geologic units: the main body, and the Renegade Tongue. Fossils previously found within the Wasatch Formation include plants, ichnofossils, invertebrates, fish, reptiles, birds and mammals (Lucas and Kihm 1982, Kihm 1984, Zonneveld et al. 2000, Murphey and Daitch 2007).

The paleontological technical report previously performed for the Utility Project study area noted that there were 81 fossil localities previously recorded within one-mile, and that 86 new fossil localities were recorded during the paleontological resources survey (SWCA 2013b). Of these newly recorded fossil localities, 53 were found within the Parachute Creek Member of the Green River Formation, and 31 were found in Member B of the Uinta Formation. Fossils collected during survey are discussed in Section 4.2.12.

3.2.13 Visual Resources

3.2.13.1 Regulatory Framework

The following section describes the inventory of visual resource values in proximity to the Utility Project and South Project. To provide context in which the visual resource assessment was developed, below are pertinent BLM visual resource policies and regulations.

As directed by the FLPMA, the BLM is required to consider scenic values of public land as a resource that merits management and preservation, where appropriate, determined through the land use planning process. In response to this direction, the BLM developed the BLM Manual 8400 Series – Visual Resource Management to: (1) inventory existing scenic values, (2) assign management objectives to all lands administered by the BLM, and (3) describe visual design considerations that should be incorporated into all surface-disturbing activities.

Two specific BLM manuals were developed to address those above three items. BLM Manual 8410-1 – Visual Resource Inventory (VRI) first focuses on developing an inventory of scenic values based on the following factors: (1) diversity of landscape features that define and characterize landscapes in a given planning area (scenic quality rating units [SQRU]), (2) public concern for the landscapes that make up a planning area (sensitivity level rating units [SLRU]), and (3) landscape visibility from public viewing locations (distance zones). These factors are collectively described as the VRI and are referred to as the VRI specifically for BLM-administered lands. Combined, these three factors determine VRI Classes, which indicate the existing scenic values of BLM-administered lands. Through the BLM's land use planning process, as described in BLM Manual 8410-1, VRM Classes are established to provide management objectives in terms of allowable levels of disturbance (visual contrast) and noticeability. The definitions from BLM Manual 8410-1 of the four VRM class objectives are described in Table 3-23:

Table 3-23
BLM Visual Resource Management Classes

VRM Class	Objective
Class I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
Class II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
Class III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Table 3-23
BLM Visual Resource Management Classes

VRM Class	Objective
Class IV	The objective of this class is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.
SOURCE: BLM 1986	

Compliance with these objectives is assessed using *BLM Form 8400-4 – Visual Contrast Rating Worksheet*, as directed by *BLM Manual 8431 – Visual Resource Contrast Rating*, from selected KOPs, which in addition to determining compliance with VRM Class objectives, also include the identification of additional visual mitigation to further reduce visual contrast. *BLM Manual 8400* defines KOPs as "one or a series of points on a travel route or at a use area or potential use area, where the view of a management activity would be most revealing".

BLM Instructional Memorandum No. 98-164 provided additional guidance on the implementation of VRM. It stated that "(1) when VRM is addressed during the RMP process, and VRM management decision are made, the implementation of those decisions is mandated just as they are for any other resource allocation decisions. The implementation of those decisions is not at the discretion of the field manager, and (2) the current BLM VRM Manuals and Handbooks dictate how we conduct VRM business".

3.2.13.1.1 BLM Vernal Field Office Resource Management Plan Visual Resource Direction

The BLM Vernal Field Office RMP (BLM 2008f) has the following project-associated direction in regard to the management of visual resources:

Goals and Objectives:

- Manage the public lands (refer to Figure 16a [in Vernal Field Office RMP]) in such a way as to preserve those scenic vistas, which are deemed to be most important:
  - In their impact on the quality of life for residents and communities in the areas;
  - In their contribution to the quality of recreational visitor experiences; and
  - In supporting the regional tourism industry and segments of the local economy dependent on public land resources.
- Seek to complement the rural, agricultural, historic, and urban landscapes on adjoining private, state, and tribal lands by maintaining the integrity of background vistas on public lands.

Management Decisions:

- VRM-1: Maintain or improve the scenic quality of the landscape and design and mitigate visual intrusions consistent with the objectives established for the specific VRM classes outlined in the BLM Handbook H-8410-1.

3.2.13.2 Compliance with Visual Resource Management Class Objectives

As described in Regulatory Framework, the BLM assigns VRM Classes through the land use planning process to guide planning and project-level decisions. Compliance with the VRM Class objectives and conformance with the BLM Vernal Field Office RMP are an FLPMA requirement. To determine compliance with the VRM Class objectives, a contrast analysis is conducted from KOP locations as directed by BLM Manual 8431.

3.2.13.3 Issues Identified for Analysis

Issues related to visual resources identified in agency and public scoping include:

- Potential for impacts on the visual landscape from the Utility Project and South Project.

3.2.13.4 Affected Environment

3.2.13.4.1 Scenery

Scenery is defined as a continuous unit of land comprising harmonizing features that result in and exhibit a particular character. The BLM Vernal Field Office conducted their VRI in 2011 to identify existing scenic values including the delineation of SQRUs and SLRUs (BLM 2011c). The rating of SQRUs is based on the diversity of seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications to assign a scenic quality rating (Class A [most diverse], Class B, and Class C). SLRUs are inventoried to define the level of concern the public would express toward the visible modification of a particular landscape. The BLM assigns either a high, medium, or low sensitivity level that corresponds to the level of public concern. When reviewed together, SQRUs and SLRUs identify a landscape's visual appeal as well as the public concern to modification of these landscapes.

The Utility Project study area is located in the Uinta Basin section of the Colorado Plateaus physiographic province. The landscape consists of gentle to moderate rolling hills, escarpments, and creek and river drainages. The area is vegetated by desert shrub plans such as sagebrush, pinyon-juniper, saltbrush, and rabbitbrush. The White River crosses through the central portion of the Utility Project and north of the South Project. Excavation Creek, a tributary of the White River, is located west of the Utility Project and the South Project. Existing development in the area includes the BPP (at the northern terminus of the Utility Project study area), oil and gas extraction operations, and existing transmission lines and pipelines.

Specifically, the Utility Project and South Project could potentially influence the following SQRUs (refer to Maps A-9a and A-9b in Appendix A), and associated SLRUs located within the Utility Project study area (Table 3-24):

Table 3-24
BLM Scenic Quality Rating Units And Sensitivity Level Rating Units Potentially Influenced by the Utility Project

Scenic Quality Rating Unit		Associated Sensitivity Level Rating Unit(s)	
Name	**Class**	**Name**	**Level**
White River	Class A	White River Book Cliffs Full-field Development Area	Medium Medium Low
Hell's Hole	Class B	White River Book Cliffs	Medium Medium
Red Wash/Kennedy Wash/ Devil's Playground	Class B	Full-field Development Area	Low
Southam	Class B	White River Book Cliffs	Medium Medium
Bonanza	Class C	Full-field Development Area	Low
Deadman's Bench	Class C	Full-field Development Area	Low

Specifically, the South Project could potentially influence the following SQRUs (refer to Maps A-9a and A-9b in Appendix A), and associated SLRUs, located within 5 miles of the South Project (Table 3-25):

Table 3-25
BLM Scenic Quality Rating Units And Sensitivity Level Rating Units In The Vicinity Of The South Project

Scenic Quality Rating Unit		Associated Sensitivity Level Rating Unit	
Name	**Class**	**Name**	**Level**
White River	Class A	White River Book Cliffs Full-field Development Area	Medium Medium Low
Hell's Hole	Class B	White River Book Cliffs	Medium Medium
Long Draw	Class B	Book Cliffs	Medium
Park Canyon	Class B	Book Cliffs	Medium
Southam	Class B	White River Book Cliffs	Medium Medium
Weaver Canyon	Class B	Book Cliffs	Medium

3.2.13.4.2 Viewing Locations

Viewing locations represent places where the public would have potential views of the project. In the development of the Vernal Field Office VRI, distance zones were identified in accordance BLM Manual 8410-1, which identify public viewing locations at a broad planning scale. As described in BLM Manual 8431, KOPs are used to assess the level of change (contrast) introduced by a proposed project within a specific viewshed.

A total of nine KOP locations were identified to assess both impacts on views and determine compliance with BLM VRM Class objectives (refer to Maps A-9a and A-9b in Appendix A).

- KOP #1 – Atchees Wash Road;
- KOP #2 – Rainbow Ghost Road;
- KOP #3 – Former IOP;
- KOP #4 – White River;
- KOP #5 – Highway 45/Dragon Road;
- KOP #6 – Goblin City;
- KOP #7 – Fidlar/Little Bonanza;
- KOP #8 – Kennedy Wash;
- KOP #9 – Duck Rock.

These locations were selected by (1) reviewing a viewshed analysis of the study area using a Geographic Information System (GIS) and digital elevation model to show which areas in the study area have the potential for unobstructed views of the Utility Project and/or South Project, (2) reviewing the BLM Vernal Field Office RMP to determine relevant scenic areas, recreational uses, or other areas of public use or concern that fall within the viewshed of the survey area, and (3) through coordination with the BLM on the proposed and final selection of KOP locations (SWCA 2013c).

3.2.13.4.3 Compliance with Visual Resource Management Class Objectives

The majority of the Utility Project would occur in areas designated by the BLM as VRM Class III, to partially retain the existing character of the landscape, or VRM Class IV, to provide for management activities that require major modifications of the existing character of the landscape. A small portion of the Utility Project, approximately 0.6 mile, would cross VRM Class II lands adjacent to the White River (refer to Map C-8a). In order to determine project compliance with these VRM Class objectives, and conformance with the BLM Vernal Field Office RMP, BLM contrast rating worksheets were completed from the nine identified KOP locations (located in Appendix G).

Since the South Project is located entirely on non-BLM-administered lands, this component of the visual resource analysis is not applicable.

3.2.14 Lands and Access

3.2.14.1 Regulatory Framework

Land use resources include existing and future land use. Land use resources were identified and evaluated for all jurisdictions occurring in the study area. Potential impacts on and inventory for travel management and recreation area are discussed in Section 3.2.15 and 3.2.16, respectively.

Various regulatory systems are in place throughout the Utility Project study area that direct management to all levels of jurisdiction (federal, state, tribal, and local). BLM-administered lands occurring in the Utility Project study area are managed by direction provided in the RMP that establish the goals and objectives for the management of resources for the Vernal Field Office. Approved management plans and their amendments relevant to the Utility Project study area are listed in Section 1.6.

Utah State lands are managed by SITLA, UDWR, and FFSL (who owns and manages some sovereign lands). Each state entity manages various active leases for present and future development, as well as other activities that occur on the lands.

Privately owned lands are regulated by Uintah County local zoning ordinances and general plan. The Utah Land Use Development Management Act (10 Utah State Code 09a [municipal] and 17 Utah State Code 27a [county]) requires counties to develop a zoning map, zoning ordinance, and general plan.

3.2.14.2 Issues Identified for Analysis

Issues related to lands and access identified in agency and public scoping includes:

- Potential for impacts on existing utility infrastructure from the Utility Project and South Project
- Potential for impacts to proposed oil and/or gas well pads from the Utility Project
- Concerns related to colocating the proposed transmission line with the proposed pipelines were raised as it relates to cathodic protection and induced currents
- Concern for future land use (e.g., oil and gas development and other extraction mining) is related to potential impact to the ability of industrial projects to expand and interference with planned leases.

3.2.14.3 Affected Environment

3.2.14.3.1 Existing Land Use

The study area is located in Uintah County with the majority of lands administered by the BLM. The terrain includes large stretches of plateau areas, rolling hills, and some steep mountain terrain. The northern portion of the study area is split by Utah State Route 45 running north to south (refer to Maps A-10a and A-10b in Appendix A).

Lands within the study area are managed for multiple existing land uses (e.g., industrial projects, rural residential, and utilities), objectives such as agricultural and conservation, and realty authorizations (e.g., proposed and designated rights-of-way or corridors, etc.). In addition to these uses, the majority of the lands within the study area are managed for livestock grazing and rangeland. The concern for existing land use and livestock grazing is related to interference livestock grazing and rangeland health, disturbance to interference existing utility infrastructure and oil and gas operations, and interference with other land uses and active leases.

The study area includes a variety of ownership and management entities including federal, tribal, and state land management agencies, and private lands. Small pockets of residential development exists the northern portion of the Utility Project study area in the unincorporated community of Bonanza, Utah. Additional industrial development is scattered throughout the undeveloped lands west of State Route 45. Land ownership or management responsibilities within the study area are listed below in Table 3-26.

Table 3-26
Land Ownership in the Utility Project Study Area

Entity	Acres
BLM	31,822.5
Tribal	53.5
State of Utah	6,760.6
Private Ownership	17,577.4
NOTE: Acres rounded to the nearest tenth.	

3.2.14.3.1.1 Existing Utility Infrastructure

Existing linear utility facilities in the study area include transmission lines and pipelines. Table 3-27 identifies the known utilities.

Table 3-27
Utility Infrastructure Crossed or Paralleled

Entity	Type	Crossed or Parallel Condition
American Gilsonite	6" natural gas pipeline	Crossed
Chevron	10" petroleum pipelines (2)	Crossed
Colorado Interstate Gas Company	20" natural gas pipeline	Crossed and paralleled (2 miles)
Mid-American Pipeline Company (Mapco)	10" liquid natural gas pipelines (2) [inactive]	Paralleled (8 miles)
MLEA	138kV transmission line 14.4kV distribution line	Crossed Paralleled (5 miles)
Questar Pipeline Company	16" natural gas pipeline	Crossed and paralleled (2 miles)
Summit Midstream	6" natural gas pipeline [inactive]	
Western Area Power Administration	345kV Bears Ears to Bonanza transmission line	Parallels (0.9 miles)
SOURCE: Enefit 2014		

3.2.14.3.1.2 Designated Utility Corridors

The BLM Vernal Field Office has designated utility corridors identified in their RMP. These corridors are shown on Maps A-10a and A-10b in Appendix A. These approved transportation/utility corridors are the preferred location for future major linear rights-of-way which meet the following criteria:

- Pipelines with a diameter greater than 20 inches.
- Transmission lines (not distribution) with a voltage capacity of 69kV or greater.
- Paved routes or routes consisting of more than two lanes.
- Significant canals, ditches, or conduits requiring a permanent width greater than 50 feet.

The Utility Project would be sited in a designated utility corridor in the Vernal Field Office for 765.7 acres. There are no West-Wide Energy Corridors within the Utility Project study area.

Uintah Basin Energy Zone

In February 2012, the State of Utah established the State of Utah Resource Management Plan for Federal Lands, by creating the Uintah Basin Energy Zone (UBEZ). The Proposed Action and the South Project are located within the UBEZ. Specifically, Utah Code Ann. §63J-8-105.5(3)(b) of the Utah Resource Management Plan for Federal Lands states, "the highest management priority for all lands within the UBEZ is responsible management and development of existing energy and mineral resources in order to provide long-term domestic energy and supplies for Utah and the United States". Further, Utah Code Ann. §63J-8-105.5(5)(c) and (d) indicate that the State calls upon federal agencies to "allow continued maintenance and increased development of roads, power lines, pipeline infrastructure, and other utilities necessary to achieve the goals, purposes, and policies described in this section" and "refrain from any planning decisions and management actions that will undermine, restrict, or diminish the goals, purposes, and policies for the Uintah Basin Energy Zone".

3.2.14.3.1.3 General Developed Land Uses

Typical development patterns within the study area include residential development, grazing, industrial, oil and gas development, public/quasi-public uses, and utilities. Vast remote, vacant, and undeveloped lands also occur throughout the study area. Table 3-28, lists the types of general development within the Utility Project study area that could potentially be affected.

Table 3-28
General Developed Land Uses

Type of Development	Description	Acres in Utility Project Area
Residential	The community of Bonanza, Utah is located in the northern portion of the study area. Residential developments are composed of single-family dwellings or multi-family developments.	22.0
Industrial	Industrial uses in the study area includes light and heavy industrial areas, oil/gas liquid extraction, and tailing ponds. The main types of mining are liquid extraction (oil and gas) and mining extraction (gilsonite). Liquid extraction occurs throughout the study area, with large authorized oil and gas leases. Mining extraction is also prevalent, with operations for uintaite (common name for gilsonite). Refer to discussion below for more information on oil and gas projects in the study area.	285.3
Public/Quasi Public	Public/quasi-public uses in the Utility Project study area may include buildings used for community purposes.	13.2
Power Plant	The BPP is a coal fired power plant located in the northern portion of the study area	1,144.5
NOTE: Acres have been rounded to the nearest tenth.		

Oil and Gas Projects

Oil and gas development projects in the study area include:

- Questar Exploration and Production Company Greater Deadman Bench Project
- Kerr-McGee Oil and Gas Onshore LP Greater Natural Buttes Project
- Encana North Chapita Wells Natural Gas Development
- EOG Resources, Inc. Chapita Wells-Stagecoach Area Natural Gas Development

- Various oil and gas development leases throughout the Vernal and White River field offices and on state lands

3.2.14.3.2 Future Land Use

Future land uses in the study area include the following:

- PacifiCorp Energy Gateway South 500kV Transmission Project – proposed
- Applicant American Oil South Project – proposed
- State of Utah Department of Natural Resources (UDNR) Division of Water Resources dam and reservoir project on the White River – planned

Table 3-29 describes these future land use projects.

Table 3-29
Future Land Use in the Utility Project Study Area

Future Land Use	Description	Acres
PacifiCorp Energy Gateway South Project	PacifiCorp, dba Rocky Mountain Power, proposed 500kV interstate transmission line from central Wyoming across northwestern Colorado, to central Utah. The right-of-way width is 250 feet. The Draft EIS was published in February 2014 and is currently ongoing.	150.4
Applicant's South Project	The South Project is designed to develop a green field oil shale mining and shale oil production complex, producing approximately 28 million tons of raw oil shale ore per year and 50,000 BPD of premium quality, refinery-ready shale oil from the Green River Formation at full build-out. Shale oil would be produced from multiple surface retorts, with onsite upgrading of the raw shale oil. *Note: This project is being analyzed in this EIS as a non-federal connected action.*	6,585.7
UDNR Division of Water Resources reservoir project on the White River	Proposed reservoir on the White River to provide water and energy for proposed oil shale developments. In December 1982, BLM granted a right-of-way (UTU-30745) for a portion of the dam and reservoir footprint and has, based on input from the Division, kept that right-of-way active. As of July 2013, there were no active plans to develop the reservoir, but a need may arise in the future. During scoping, the Division requested the BLM include a condition that if the reservoir is built, Applicant or any successor would need to relocate or rebuild facilities to be compatible with the reservoir.	Unknown, no data available for this project.

NOTE: Acres have been rounded to the nearest tenth.

The Applicant's lease and land holdings are listed in Table 3-30, (refer to Map 1-1 for location). The leases indicate potential future land uses in the area that may be proposed by the Applicant. No developments or projects are proposed at this time.

Table 3-30 Applicant's Resource Holdings		
Entity	**Lease Type**	**Acres**
BLM	Preferential Lease	4,960.0
	Research, Development, and Demonstration (RD&D) Lease	160.0
SITLA	State Leases	6,760.6
Private	Applicant's North	4,592.0
	Orion Property	3,070.0
	Applicant's South[1]	13,441.0
NOTE: [1]Included in this EIS as a non-federal connected action.		

3.2.15 Travel Management

3.2.15.1 Regulatory Framework

State and local transportation and access facilities and systems are located throughout the study area, including roadways and railroad facilities. Transportation facilities were evaluated to identify where the Utility Project crosses facilities. Roadways were also identified for potential to be used for construction, operation, and maintenance of the Utility Project and South Project.

As part of Applicant's POD submitted to BLM, a Traffic and Transportation Management Plan addresses regulatory compliance, outlines traffic management practices, and identifies levels of right-of-way access.

3.2.15.1.1 BLM Roadways

Roads on BLM-administered land are typically managed through travel management planning. BLM travel management plans identify designated areas and roads for type of motorized use, motorized travel restricted areas, and seasonal restrictions. New and improved road construction on BLM-administered land, used for Utility Project and South Project construction, operation, and maintenance, must meet or exceed the minimum standards of width, alignment, grade, surface, and other requirements identified by the BLM Travel Management Program and the BLM Manual Section 9113 (BLM 2011c). The BLM's 2007 The Gold Book – Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development is also an applicable standard for road construction and maintenance on BLM land (BLM 2007).

3.2.15.1.2 State Roadways

State departments of transportation are responsible for building and maintaining state highways and routes. UDOT receives administrative and operations and maintenance powers through Title 72 of the State of Utah code (UDOT 2006). Design standards, specifications and guidelines are defined in UDOT's Standards and Specifications (UDOT 2012) and UDOT's Access Management Program. UDOT also provides for encroachment and occupancy permits for utility construction and operation activities.

3.2.15.1.3 Local Roadways

County and local roads have standards set by each county or city to guide the building and maintenance of these roads. Similar to the UDOT, Uintah County would have encroachment permitting requirements for utility construction and operation activities.

3.2.15.1.4 Railroads

Title 49 CFR, Federal Railroad Administration, U.S. Department of Transportation (USDOT), applies to all private, common, and contract carriers by rail in interstate and/or intrastate commerce. The Federal

Transit Administration and the Federal Railroad Administration regulate railroad operations and each individual state has a railroad commission.

The NESC Institute of Electrical and Electronics Engineers (IEEE) Standards Association (2012) provides polices for overhead utility crossing of railroads. Installation, operation, or maintenance of the Utility Project and South Project would have to conform to the NESC requirements.

3.2.15.2 Issues Identified for Analysis

Issues related to travel management identified in agency and public scoping include:

- Potential for impacts from opening the area for the Utility Project and the South Project on travel management
- Potential for conflicts between construction equipment, large trucks, and creation of new access points and ongoing uses such as recreation, industrial activities, and OHV use.

3.2.15.3 Affected Environment

State Route 45 runs north-south through the study area connecting to U.S. 40. Highway 45 supports state, regional, and interstate travel, commerce, and energy development. This roadways support high speed and high traffic volumes. The Uinta Basin Energy and Transportation Study (UBETS) provided traffic counts for Highway 45 for 2011, representing existing conditions, based on traffic data published by the UDOT. The annual average daily traffic (AADT) for 2011 was 4,000. According to the UBETS, the northern 6 miles of the road carry nearly 10 times more traffic than the southern 30 miles. Highway 45 also provides access to the Deseret Power Station, where approximately 25 percent of Highway 45's traffic is generated. At its southern end, Highway 45 carries about 10 percent of the traffic as compared to the northern portion, meaning approximately 400 average daily vehicle trips occur in the vicinity of the Utility Project study area (Transportation Management Plan, 2014). A study in 2013 indicates that crash rates on State Route. 45 are more than double the statewide average (UDOT 2013). There are no planned capacity or safety improvement projects for Highway 45 through at least 2040.

3.2.15.3.1 Local Roads

3.2.15.3.1.1 Stanton Road

Stanton Road heads east off of Highway 45 just south of Bonanza, turning northeast and then east-southeast before arriving in Rangely, Colorado after approximately 28 miles. Stanton Road is classified by Uintah County as a Class 1-B Paved road. Existing traffic information for Stanton Road is limited. The UDOT's Program Development Division published the traffic analysis report Traffic on Utah Highways 2012 in cooperation with the Federal Highway Administration (FHWA). While Stanton Road itself is not specifically measured for truck traffic volumes, the stretches of Highway 45 immediately north and immediately south of Stanton Road are included, which give an indication of the traffic in the vicinity of Stanton Road. According to that repot, the AADT for the 4.7-mile stretch of Highway 45 from Stanton Road north to Old Highway 45 was 360, while the 4.6-mile stretch of Highway 45 south to Dragon Road was 170. This could be interpreted to mean roughly half the truck traffic turns off of Highway 45 and on to Stanton Road.

3.2.15.3.1.2 Dragon Road and Rabbit Mountain Road

Dragon Road heads generally southeast and south from Highway 45, through Applicant's private property, continuing south along Evacuation Creek. Rabbit Mountain Road turns east off of Dragon Road near the center of Applicant's private property and continues east into Colorado. Both roads are designated Class 1-B Unpaved roads by Uintah County. Existing traffic information on Dragon Road and

Rabbit Mountain Road is even more limited than Stanton Road. Traffic counting completed in May of 2013 is identified in Table 3-31.

Table 3-31
Traffic Counts for May 20 through 28, 2013

Date	Dragon Road	Rabbit Mt. Road
Monday, May 20	0	Not applicable
Tuesday, May 21	12	4
Wednesday, May 22	28	4
Thursday, May 23	12	6
Friday, May 24	27	11
Saturday, May 25	31	20
Sunday, May 26	21	16
Monday, May 27	27	10
Tuesday, May 28	150	15

SOURCE: Enefit Traffic and Transportation Plan 2014
NOTE: Numbers represent total trips for the day, all directions

3.2.16 Recreation

3.2.16.1 Regulatory Framework

BLM-administered lands in the Utility Project study area are managed by direction provided in the RMP that establishes the goals and objectives for the management of recreation resources. The approved management plan and their amendments relevant to the study area are listed in Section 1.6. The planning documents relevant to the Utility Project study area are listed below:

- Uintah County General Plan, 2005
- BLM Vernal Field Office RMP, 2008

3.2.16.2 Issues Identified for Analysis

Issues related to recreation identified in agency and public scoping include:

- Potential for conflict from the Utility Project and South Project on OHV use.

3.2.16.3 Affected Environment

Because of the rural character of the Utility Project study area, municipal and county parks are not found. In addition, there are no designated campgrounds, trailheads, or restroom facilities for recreation users in the study area.

This section identifies recreation resources inventoried in the study area, including recreation sites and OHV use (Table 3-32). These recreation resources can occur in developed recreation settings or in unimproved and dispersed recreation situations on BLM, county, and private lands.

Table 3-32
Recreation Uses in the Utility Project Study Area

Recreation Use	Acres
OHV areas	32,019.0
Duck Rock Recreation Site (Information kiosk and overlook for White River)	Less than 1.0 acre

NOTE: Acres rounded to the nearest tenth.

3.2.16.3.1 Off-Highway Vehicle Use

OHV use is a popular dispersed recreation activity in the study area. These activities mainly occur in areas with motorized trails that also allow for OHV users to set up dispersed camp sites. OHVs, as defined by BLM Regulation Part 8340 Off-Road Vehicles, are any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: (1) any non-amphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used in times of national defense emergencies. Types of OHVs include 4-wheel drive jeeps, automobiles, pickups or sport utility vehicles; motorcycles designed for cross-country use; All-terrain vehicles (ATVs); and other specially designed or modified off-road motor vehicles used in a wide variety of ways (Cordell et al. 2008). In addition to being a recreation activity, OHV use can occur on public lands for business and commuting purposes such as managing animals on grazing leases, accessing oil and/or gas development areas, or as transportation to reach recreational areas for hunting, fishing, and/or camping.

The BLM's OHV designations are determined through travel management planning and are incorporated into their RMPs. All of the OHV areas in the Utility Project study area on BLM land are identified in the RMP as limited and is defined in (43 CFR 8342.1) as follows:

- Limited: an area restricted at certain times, in certain areas, and/or to certain vehicular use. These restrictions may be of any type, but can generally be accommodated in the following categories: numbers of vehicles; types of vehicles; time or season of vehicle use; permitted or licensed use only; use on existing roads and trails; use on designated roads and trails; and other restrictions.

OHV use also occurs on state lands and is regulated by Utah State law (Title 41, Chapter 22 *Utah Off-Highway Laws & Rules)* in the Utility Project study area.

3.2.16.3.2 Duck Rock Recreation Site

The Duck Rock recreation site is an information kiosk and overlook to the White River. It is located approximately 140 feet away from the Utility Project right-of-way, south of White River. This site is primarily an overlook to the White River, which is a Class A SQRU. Refer to Section 3.2.13 for impacts on viewers from this location.

3.2.17 Social and Economic Conditions

The Utility Project and the South Project are entirely located within Uintah County in Utah. However, it has been determined that the project may have impacts in three counties that surround the project site: Uintah and Duchesne counties in Utah, and Rio Blanco County in Colorado. These counties are identified as the study area for the social and economic analysis and are included in the regional setting, affected environment, and environmental consequences, unless noted otherwise.

3.2.17.1 Regulatory Framework

NEPA or CEQ regulations do not provide specific thresholds of significance for socioeconomic impact assessment because significance is contextual in nature and varies with the setting of the Proposed Action (40 CFR 1508.27(a)).

The BLM, as the lead agency, requires the utilization and evaluation of social science in the preparation of informed, sustainable land-use planning decisions. The FLPMA requires the BLM to integrate physical, biological, economic, and other sciences in developing land-use plans (43 U.S.C. 1712(c)(2)). FLPMA regulations 43 CFR 1610.4-3 and 1610.4-6 also require the BLM to analyze social, economic, and institutional information. In addition, NEPA requires federal agencies to "insure the integrated use of the natural and social sciences... in planning and decision making" (42 U.S.C. 4332(2)(A)).

The BLM is required to manage public lands on the basis of multiple use and sustained yield and to meet the needs of present and future generations. As the human population continues to increase and social values evolve, resource conflicts are likely to increase. The American public is increasingly aware of the importance of the public lands to its well-being and is demanding a larger voice in resource management decisions. Given these realities, the planning process can represent a constant balancing of competing needs, interests, and values. The effective use of social science can be critical to understanding and reconciling these differing perspectives.

The BLM Land Use Planning Handbook (BLM Handbook H-1601-1) states that social science information can include the economic, political, cultural, and social structure of communities, regions, and the nation as a whole; social values, beliefs, and attitudes; how people interact with the landscape; and sense-of-place issues. The social sciences integrate a wide variety of disciplines, generally including economics, sociology, demography, anthropology, archaeology, political science, geography, history, and landscape architecture. Though the information appropriate to a given analysis depends on the specific issues being assessed, the social science information usually important to resource planning decisions can be grouped in the following categories (BLM 2005a):

- Demography and social indicators
- Social organization and institutions
- Attitudes and values
- Human geography
- Economic value
- Employment, income, and subsistence
- Public finance and government services

3.2.17.2 Issues Identified for Analysis

Issues related to social and economic conditions identified in agency and public scoping includes:

- Potential for impacts to existing and future economic growth in Uintah County from the Utility Project and South Project
- Potential for impacts to existing and future economic growth in the State of Utah from the Utility Project and South Project
- Potential for impacts to the availability of employment caused by the Utility Project and South Project
- Potential for impact to minority, low-income, and/or tribal communities in the geographic scope of the impact area

3.2.17.3 Affected Environment

3.2.17.3.1 Social Conditions

3.2.17.3.1.1 Population and Demographics

This section describes demographic characteristics of the three-county study area including population trends, age and gender, and race and ethnicity.

The average population for the years 2009 to 2013 was approximately 33,722 for Uintah County, 19,109 for Duchesne County, and 6,770 for Rio Blanco County. All three counties in the ROI experienced population growth for the period 2000 to 2010, and are projected to see continued growth through 2040. There are four main population centers in the ROI: Vernal and Naples (Uintah County) and Roosevelt

(Duchesne County), and Rangeley, located in Rio Blanco County, in Colorado (U.S. Department of Commerce, 2013a, State of Utah, 2015b, State of Colorado, 2015). Population statistics are provided in Table 3-33.

Table 3-33
County Population and Population Projections

State or County	2000	2010	2013	2020	2030	2040	Total Change 2010-2040	Percent Change 2010-2040
Utah	2,233,169	2,763,885	2,813,673	3,309,234	3,914,984	4,570,433	1,806,548	65.4
Uintah County	25,224	32,588	33,722	38,982	41,099	42,690	10,102	31.0
Duchesne County	14,371	18,607	19,109	22,797	24,836	25,721	7,114	38.2
Colorado	4,338,801	5,049,717	5,119,329	5,924,692	6,915,379	7,752,887	2,703,170	53.5
Rio Blanco County	5,969	6,144	6,770	7,065	8,067	8,865	2,721	44.3
Vernal City, Utah	7,714	9,089	9,531	10,872	11,463	11,907	2,818	31.0
Roosevelt City, Utah	4,299	6,046	6,282	7,407	8,070	8,358	2,312	38.2
Naples, Utah	–	1,755	–	2,099	2,213	2,299	544	31.0
Rangely, Colorado	2,096	2,365	2,238	2,632	3,270	3,601	1,236	52.3
SOURCES: U.S. Department of Commerce 2013a; State of Utah 2015; State of Colorado 2015; GSBS Richman 2014								

3.2.17.3.1.2 Population Characteristics

Individuals that identify themselves as white alone represented the majority of the population in all three counties, at 86 percent for Uintah, 91 percent for Duchesne, and 95 percent for Rio Blanco. American Indian and Alaska native represent the next largest race in all three counties, at 7.6 percent for Uintah, 4.6 percent for Duchesne and 1.8 percent for Rio Blanco. These race and ethnicity figures are provided in Table 3-34 (U.S. Department of Commerce 2013a).

Table 3-34
County and State Population by Race/Ethnicity, 2009-2013

State or County	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and other Pacific Islander Alone	Some Other Race Alone	Hispanic Ethnicity
Utah	2,813,673	2,487,467	31,101	31,696	58,150	26,145	112,795	368,552
Uintah County	33,722	28,879	64	2,568	226	79	929	2,514
Duchesne County	19,109	17,443	32	883	62	78	289	1,284
Colorado	5,119,329	4,301,096	203,755	49,177	141,719	6,549	241,998	1,064,009
Rio Blanco County	6,770	6,428	32	123	30	0	49	732
SOURCE: U.S. Department of Commerce 2013a								

Table 3-35 presents population by age and gender for the three counties in the ROI, as well as Utah and Colorado. Both age and gender distributions for Uintah, Duchesne, and Rio Blanco counties are similar to those of Utah and Colorado (U.S. Department of Commerce 2013a).

Table 3-35
Population by Age and Gender, 2009-2013

State or County	Total Population	Male				Female			
		Total	By Age			Total	By Age		
			0-24	25-59	60+		0-24	25-59	60+
Utah	2,813,673	1,414,267	614,565	625,493	162,347	1,399,406	588,506	610,557	180,797
Uintah County	33,722	17,161	7,417	7,554	2,097	16,561	6,889	7,382	2,068
Duchesne County	19,109	9,722	4,126	4,178	1,338	9,387	4,053	3,950	1,311
Colorado	5,119,329	2,568,343	891,123	1,275,336	377,613	2,550,986	839,423	1,244,177	418,914
Rio Blanco County	6,770	3,536	1,195	1,681	621	3,234	1,093	1,509	562
SOURCES: U.S. Department of Commerce 2013a									

3.2.17.3.1.3 Economic Conditions

Labor Force and Unemployment

A majority of the ROI's workforce works in the City of Vernal, located in Uintah County, as well as adjacent city of Naples and village of Maeser. The City of Roosevelt is another area employment node. Within Rio Blanco County in Colorado, the town of Rangely contains most of that county's employment (U.S. Department of Commerce 2015).

As of 2013, both Uintah and Duchesne counties, as well as Utah and Colorado, had seen declines in annual average unemployment from 2011. After climbing from 2011 to 2012, annual average unemployment in Rio Blanco County declined from 2012 to 2013, and stood at 5.4 percent in that year (U.S. Department of Labor, 2013). Table 3-36 illustrates trends in unemployment for the three counties that comprise the ROI, as well as Utah and Colorado.

Table 3-36
Percent of Annual Unemployment, 2011-2013

State or County	2011	2012	2013	Percent Change 2011- 2013
Utah	6.8	5.4	3.9	-74.4
Uintah County	5.2	3.8	3.8	-36.8
Duchesne County	5.5	3.9	3.6	-52.8
Colorado	8.3	7.8	6.8	-22.1
Rio Blanco County	5.4	5.8	5.4	0.0
SOURCE: U.S. Department of Labor 2013				

Employment by Industry

Employment by industry sector is presented in Table 3-37, Table 3-38, and Table 3-39 for each of the counties in the study area. Total employment for Uintah County increased 4.6 percent from 2011 to 2013, with finance and insurance, education services, and accommodation and food services enjoying the largest percent gains for the same time period. Overall employment in Duchesne County saw 11.2 percent growth from 2011 to 2013, with wholesale trade, mining, and accommodation and food services experiencing the largest percent gains. Rio Blanco County experienced 0.8 percent growth in total employment from 2011 to 2013.

In real terms, both Uintah and Duchesne counties have large numbers of employment in the construction, retail trade, and transportation and warehousing sectors. Of the industry sectors examined for Rio Blanco County, state and local government comprises the largest sector in real terms, with 1,125 employees as of 2013 (U.S. Census Bureau 2013).

Table 3-37
Uintah County Employment by Industry, 2013

Industry	Number Employed	Percent Change 2011-2013	Percent of Total
Total Employment	**19,962**	**4.6**	**100**
Farm Employment	981	1.4	5
Forestry, fishing, and related	78	-33.3	0
Mining	3,631	7.1	18
Utilities	139	-2.9	1
Construction	1,226	5.6	6
Manufacturing	280	3.6	1
Wholesale Trade	727	6.7	4
Retail Trade	1,969	4.5	10
Transportation and Warehousing	1,090	1.4	5
Information	166	4.8	1
Finance and Insurance	784	13.4	4
Real estate and rental and leasing	883	9.2	4
Professional, scientific, and technical services	619	4.5	3
Management of companies and enterprises	(D)	(D)	(D)
Administrative and waste management services	(D)	(D)	(D)
Educational services	110	11.8	1
Healthcare and social assistance	1,074	-5.4	5
Arts, entertainment, and recreation	114	1.8	1
Accommodation and food services	1,227	11.7	6
Other services, except public administration	1,248	9.2	6
Government- federal, civilian	362	-10.5	2
Government- military	154	1.3	1
Government- state and local	2,542	3.8	13

SOURCE: U.S. Census Bureau 2013
NOTE: (D) = Not provided for 2011 or 2013

Table 3-38
Duchesne County Employment by Industry, 2013

Industry	Number Employed	Percent Change 2011-2013	Percent of Total
Total Employment	**13,541**	**11.2**	**100**
Farm Employment	888	1.5	7
Forestry, fishing, and related	(D)	(D)	(D)
Mining	2,748	27.7	20
Utilities	34	2.9	0
Construction	1,021	11.2	8
Manufacturing	242	2.9	2
Wholesale Trade	344	39.0	3
Retail Trade	1,127	7.1	8
Transportation and Warehousing	1,120	8.5	8
Information	206	-5.3	2
Finance and Insurance	281	-9.3	2

Table 3-38 Duchesne County Employment by Industry, 2013			
Industry	**Number Employed**	**Percent Change 2011-2013**	**Percent of Total**
Total Employment	**13,541**	**11.2**	**100**
Real estate and rental and leasing	491	-0.2	4
Professional, scientific, and technical services	288	13.2	2
Management of companies and enterprises	(D)	(D)	(D)
Administrative and waste management services	(D)	(D)	(D)
Educational services	42	-28.6	0
Healthcare and social assistance	501	8.6	4
Arts, entertainment, and recreation	107	6.5	1
Accommodation and food services	498	13.7	4
Other services, except public administration	799	10.0	6
Government- federal, civilian	74	-13.5	1
Government- military	87	2.3	1
Government- state and local	1,981	4.6	15
SOURCE: U.S. Census Bureau 2013 NOTE: (D) = Not provided for 2011 or 2013			

Table 3-39 Rio Blanco County Employment by Industry, 2013			
Industry	**Number Employed**	**Percent Change 2011-2013**	**Percent of Total**
Total Employment	**4,776**	**0.8**	**100**
Farm Employment	333	-0.6	7
Forestry, fishing, and related	(D)	(D)	(D)
Mining	867	-3.0	18
Utilities	(D)	(D)	(D)
Construction	418	2.9	9
Manufacturing	46	-54.3	1
Wholesale Trade	(D)	(D)	(D)
Retail Trade	295	-3.4	7
Transportation and Warehousing	143	0.0	7
Information	38	10.5	7
Finance and Insurance	111	-4.5	7
Real estate and rental and leasing	151	-2.0	7
Professional, scientific, and technical services	115	(D)	7
Management of companies and enterprises	0	(D)	(D)
Administrative and waste management services	227	12.3	(D)
Educational services	20	-5.0	7
Healthcare and social assistance	82	19.5	7
Arts, entertainment, and recreation	70	5.7	7
Accommodation and food services	287	0.3	7
Other services, except public administration	162	-4.3	7
Government- federal, civilian	73	-6.8	7
Government- military	17	-5.9	7
Government- state and local	1,125	5.7	7
SOURCE: U.S. Census Bureau 2013 NOTE: (D) = Not provided for 2011 or 2013			

Total and Annual Average Wages

As presented in Table 3-40, annual average wages per job increased from 2011 to 2013 in Uintah and Duchesne counties, while Rio Blanco County saw a decline. Total wages followed a similar pattern, increasing in both Uintah and Duchesne counties, and declining 2.1 percent in Rio Blanco County (BEA 2013b)

Table 3-40
Total Wage and Annual Average, 2011-2013

State or County	2011 (dollars)	2012 (dollars)	2013 (dollars)	Percent Change 2011 - 2013
Total Wages (000s)				
Utah	52,008,129	55,159,146	57,480,071	9.5
Uintah County	682,363	743,323	739,717	7.8
Duchesne County	370,503	439,698	457,121	18.9
Colorado	118,559,035	125,135,249	129,597,201	8.5
Rio Blanco County	174,870	165,175	171,207	-2.1
Annual Average Wage per Job				
Utah	41,133	42,264	42,693	3.7
Uintah County	45,765	47,364	48,206	5.1
Duchesne County	43,810	46,284	47,048	6.9
Colorado	49,664	51,196	51,537	3.6
Rio Blanco County	51,936	49,424	49,973	-3.9
SOURCE: BEA 2013b				

Housing Characteristics

Of the geographies examined in Table 3-41, the State of Utah and Uintah and Duchesne counties enjoyed higher annual average percentages of owner-occupied housing, compared to Colorado and Rio Blanco County, from 2009 to 2013. For the same time period, however, median house values were $200,400 for Rio Blanco County, compared to $187,900 and $168,000 for Uintah County and Duchesne County, respectively (U.S. Census Bureau 2013).

Table 3-41
Evaluation Area of Household and Housing Characteristics, 2009-2013

Evaluation Area	Total Housing Units	Percent Occupied Housing Units	Percent Vacant Housing Units	Total Occupied Housing Units	Percent of Owner Occupied Housing Units	Percent Renter Occupied Housing Units	Median Housing Values (dollars)
Utah	988,571	90	10	886,770	70	30	212,800
Uintah County	12,184	90	10	11,007	75	25	187,900
Duchesne County	9,510	72	28	6,850	76	24	168,000
Colorado	2,222,782	89	11	1,977,591	65	35	236,200
Rio Blanco County	3,260	81	19	2,638	69	31	200,400
SOURCE: U.S. Department of Commerce 2013a							

3.2.17.3.1.4 Tax Base and Services

Community and Public Services

Fire protection, law enforcement, and healthcare are analyzed below to determine both the level of support that they could provide if an emergency occurs on the project site and the degree to which the

Proposed Action could affect these services. The location of educational facilities, particularly children's educational facilities, is identified to determine if the Proposed Action would impact services where populations of children reside.

Law Enforcement

The three county ROI has several separate law enforcement agencies. Within Uintah County, the Vernal City police department provides law enforcement services to Vernal City. The department has 21 sworn officers (Vernal City, 2015). The Uintah County Sherriff's Department, based in Vernal City, provides law enforcement for unincorporated Uintah County and manages the jail which is utilized for the county and Vernal City. Naples also has a separate police department with two sworn officers (Naples City, 2015).

Duchesne County is serviced by the Duchesne County Sherriff's Department, which employs 50 people, 37 of whom are sworn officers. The department also provides animal control, and a 160 bed jail facility (State of Utah 2015a). In addition, Roosevelt City operates its own police force as well. Within Rio Blanco County, the City of Rangely provides law enforcement services, with six sworn officers in its police department (City of Rangely 2015). Meeker, also within Rio Blanco County, has a six-officer police force (City of Meeker 2015). In addition, the Rio Blanco County Sherriff's Department provides further law enforcement support within the county.

Fire Protection Services

The Uintah Fire District includes separate fire departments across Uintah County. These include Vernal/Uintah County (18 volunteers), Naples (18 volunteers), Jensen (17 volunteers), Lapoint-Tridell (15 volunteers) and Avalon (Uintah County, Utah 2015). Duchesne County has seven total fire departments: four city departments and three county departments, with 95 volunteer firefighters. The county contributes tax dollars to city fire departments to provide coverage to unincorporated areas (State of Utah, 2015a). Within Rio Blanco County, fire protection services are provided by the Meeker Volunteer Fire and Rescue Department and the Rangeley Rural Fire Protection District.

Medical

Despite its rural location, several medical facilities are located within the ROI. Pioneers Medical Center, located in Meeker, in Rio Blanco County, provides full hospital inpatient services, laboratory, home health services and long-term care, and emergency care (Pioneers Medical Center 2015). Rangely District Hospital in Rangely also provides inpatient and emergency care, as well as dental, physical therapy, and assisted living care (Rangely District Hospital 2015).

Based in Roosevelt City, in Duchesne County, Uintah Basin Medical Center provides inpatient services, laboratory and emergency services. The facility includes an intensive care unit, a medical surgical unit, and occupational medicine (Uintah Basin Healthcare 2015). Ashley Regional Medical Center, located in Vernal City, is a 39-bed acute care facility. The medical center has inpatient facilities, a laboratory, intensive care unit, radiology, physical therapy, and nuclear medicine (Ashley Regional Medical Center 2015).

Educational and Child Support Services

There are a total of 32 primary and secondary schools within the three county ROI. With a total enrollment of 7,486, Uintah County has the highest enrollment of these three counties. Rio Blanco County enjoys the lowest student/teacher ratio (Institute of Education Sciences 2015). Data for the four school districts located within the ROI are presented in Table 3-42.

Table 3-42
Region of Influence School Districts, Total Schools and Enrollment, 2015

County and State	Districts	Total Schools	Total Enrollment	Number of Teachers (FTE)	Student/ Teacher Ratio
Uintah County, Utah	Uintah[1]	13	7,486	315.0	23.8
Duchesne County, Utah	Duchesne	14	4,906	228.7	21.5
Rio Blanco County, Colorado	Meeker re-1	3	699	37.5	18.7
	Rangely Re-4[2]	2	561	30.9	18.2

SOURCE: Institute of Education Statistics 2015
NOTES:
[1]Contains Vernal and Roosevelt cities
[2]Contains Rangely

Property Valuation and Taxation

Local and state government entities generate a portion of their tax revenues by assessing and taxing certain categories of property. Real property is typically categorized by properties that are state assessed; mineral properties; and other classes of personal property, usually assessed at the county-level. Transmission lines and substations are usually termed industrial property and assessed through the state through various approaches, including market, cost, and income approaches to value.

Property tax receipts are usually distributed to the county in which the property resides. The majority of the tax receipts fund school districts and can provide funding to cities, counties, and special districts for roads and streets, police, fire protection, and other services. This section describes the property tax information for Uinta County where the facilities would be located.

The state of Utah assesses and taxes utilities and natural resources located anywhere in the state's boundary. The amount of taxes owed to either the county or the state is determined by applying an appropriate tax rate to the taxable value of a category of property. Taxable value is equal to the fair market value of the property, minus any tax exemptions.

In Utah, property classified as real property includes land and buildings, while personal property refers to property that can be geographically moved (Utah State Tax Commission 2013). Local counties in Utah have the authority to assess and tax real and personal property located in county boundaries. Electric transmission lines are considered unitary energy properties[1], which include units that cross county lines and are assessed centrally through the state. The state also assesses natural resources, while real and personal property are assessed through county governments.

In 2013 the Utah total taxable value for both state and locally assessed property was approximately $201.3 billion, while total property tax revenue was $2.6 billion, an effective average tax rate of approximately 1.3 percent (Utah State Tax Commission 2013).

Table 3-43 summarizes total property taxes levied as well as utility property taxes levied for the 2013 fiscal year in Uintah County and in Utah. During 2013, Uintah County generated $54 million in property tax revenue, of which 7.38 percent was from utilities. This is a slightly higher percentage for utilities taxes for Utah as a whole.

[1]Energy properties include the operating property of natural gas pipelines, natural gas distribution companies, liquid petroleum products pipelines, and electric corporations, including electric generation, transmission, and distribution companies, and other similar entities (Utah State Tax Commission 2008).

Table 3-43
2013 Utah Property Tax Revenue by County

County	Property Tax Levied (dollars)	Percent of State Property Tax Levied	Utility Property Tax Levied (dollars)	Utility Tax to Total Tax Levied in the County (Percent)
Uintah	54,495,957	2.09	3,993,421	7.33
State of Utah	2,603,159,199	100	165,828,317	6.37
SOURCE: Utah State Tax Commission 2013				

3.2.17.4 Environmental Justice

The ROI for the environmental justice assessment is the same as described for socioeconomic resources and includes the three counties that surround the project site: Uintah and Duchesne Counties in Utah and Rio Blanco County in Colorado.

3.2.17.4.1 Regulatory Framework

The Environmental Justice analysis was conducted in compliance with Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and follows guidance published by the EPA (1994). The EPA defines a community with potential environmental justice populations as one that has a meaningfully greater percentage of minority or low-income populations compared to other neighboring communities.

Environmental Justice is also addressed under the BLM Land Use Planning Handbook (BLM Handbook H-1601-1), which states that social science information can include the economic, political, cultural, and social structure of communities, regions, and the nation as a whole; social values, beliefs, and attitudes; how people interact with the landscape; and sense-of-place issues.

3.2.17.4.2 Affected Environment

An Environmental Justice analysis was conducted to determine if any environmental justice populations are present in the ROI.

The environmental justice analysis involves two basic steps:

- Determine if environmental justice populations exist in the relevant study area; and
- If environmental justice populations exist, determine if they would be disproportionately affected by development and operation of the Utility Project and South Project.

Once the locations of the environmental justice populations have been identified, adverse effects occurring as a result of the proposed action are considered in order to determine if the proposed action has the potential to create "disproportionately high and adverse" impacts on human health or the environment in these environmental justice populations. Impacts of the proposed action include cumulative and multiple impacts, and are evaluated to determine which, if any, disproportionately and adversely affect these populations.

Based on CEQ guidance, the following definitions of minority and low-income have been used to determine the presence of environmental justice communities and populations in the study area:

- **Minority** includes all racial groups other than "white, not Hispanic or Latino." Individual(s) identified as "minority" include members of the following population groups: American Indian and Alaskan Native; Asian, Black or African American; Non-white Hispanic; Native Hawaiian and other Pacific Islander; Some other race; and two or more races.

- **Minority populations** are defined as those with populations having either (1) 50 percent minority population in the affected area; or (2) a population percentage of the affected area that is meaningfully greater than the minority population percentage in the general population. U.S. EPA has not specified any percentage of the population that can be characterized as "significant" to define environmental justice populations. Therefore, a conservative approach is used to identify potential environmental justice populations in which it is assumed that if the affected area minority population is more than 10 percentage points higher than that of the general population in the reference area, the population can be defined as an environmental justice population of concern. Data at the census block level is reported in the Census Bureau's 2010 decennial census.
- **Low-income population** are defined by the annual statistical poverty thresholds from the Bureau of the Census Current Population Reports, Series P-60 on Income and Poverty. Poverty is generally described as a condition in which a person or community lacks the financial resources to enjoy a minimum standard of life and well-being considered acceptable in society. Thresholds of income related to poverty are adjusted annually by the U.S. Census Bureau for inflation using the federal Consumer Price Index, which reflects annual changes in the price of consumer goods and services. Table 3-44 shows recent national poverty income thresholds at several family size levels.

Table 3-44
Weighted Average Poverty Income Thresholds by Family Size (dollars)

Family Size	2013	2012	2011	2010	2009
One person	11,888	12,119	11,484	11, 139	10,956
Two persons	15,142	15,600	14,657	14,218	13,991
Three persons	18,552	18,222	17,916	17,374	17,098
Four persons	23,834	24,028	23,021	22,314	21,954

SOURCE: Poverty thresholds by Size of Family and Number of Children
https://www.census.gov/hhes/www/poverty/data/threshld

To determine poverty status, this analysis considered poverty statistics for the Utility Project study area from the Census Bureau's 5-year American Community Survey (ACS) 2009-2013, which presents poverty data at the block group level. Census block groups are ascribed poverty status if 20 percent or more of the population is living below the poverty line. Poverty data is not reported below the census block group level and is thus only presented at the county and census block group level.

In determining and analyzing potential environmental justice concerns associated with the proposed project, a broader area was identified that encompassed populations and communities that were projected to most likely bear the adverse effects, if any, of the project. This Utility Project study area comprises the 1-mile study corridor, which includes the census blocks and block groups noted below in Table 3-45 and depicted in Figure 3-3. Only two of a total 87 census blocks contained populations of 1 or more people.

Table 3-45
Demographics for Utility Project Study Area Census Block Groups and Blocks

Geography	Population	Income below Poverty (percent)	Percent Minority
Uintah County, Utah[1]	33,722	11.6	17.5
Census Block Group[1], Tract 9402.011	821	17.6	44.3
Census Block 1370[2]	1	Not reported	0
Census Block 1376[2]	5	Not reported	60.0

SOURCES:
[1]U.S. Census 2013 5-year ACS
[2]U.S. Census 2010 Decennial Census, 1,000 percent data

3.2.17.4.2.1 Low-income status

Poverty data is not available at the block level, so for this analysis it is measured at the block group level. During the past 12 months, the study area reported a higher percentage of the population below the poverty level than Uintah County.

3.2.17.4.2.2 Minority status

Data for census blocks in southern Uintah County indicates a substantially higher percentage of total minority population at the block and block group level (60 percent and 44.3 percent, respectively) than at the county level (17.5 percent). This indicates that a higher proportion of minority residents are represented at the block and block group levels in the Utility Project study area as compared to the county generally. However, it should be noted that the percentages reported here are expressed as a proportion of total population, which in the case of census blocks in the study area, constitutes only one to five individuals residing in the area.

There are individual areas of the Utility Project study area that appear to contain concentrations of environmental justice communities. At the block group level, the percentage of minority and low income residents is substantially higher than that of the county population. While no data is available to measure poverty at the block level, minority status was found to be higher at the block level as compared to the county. It should be noted, however, that only two census blocks located within the study area contain any resident populations. Although these blocks exhibit low-income and minority characteristics, the percentages reported here are expressed as a proportion of total population, which in the case of census blocks in the study area, constitutes only one to five individuals residing in the area.

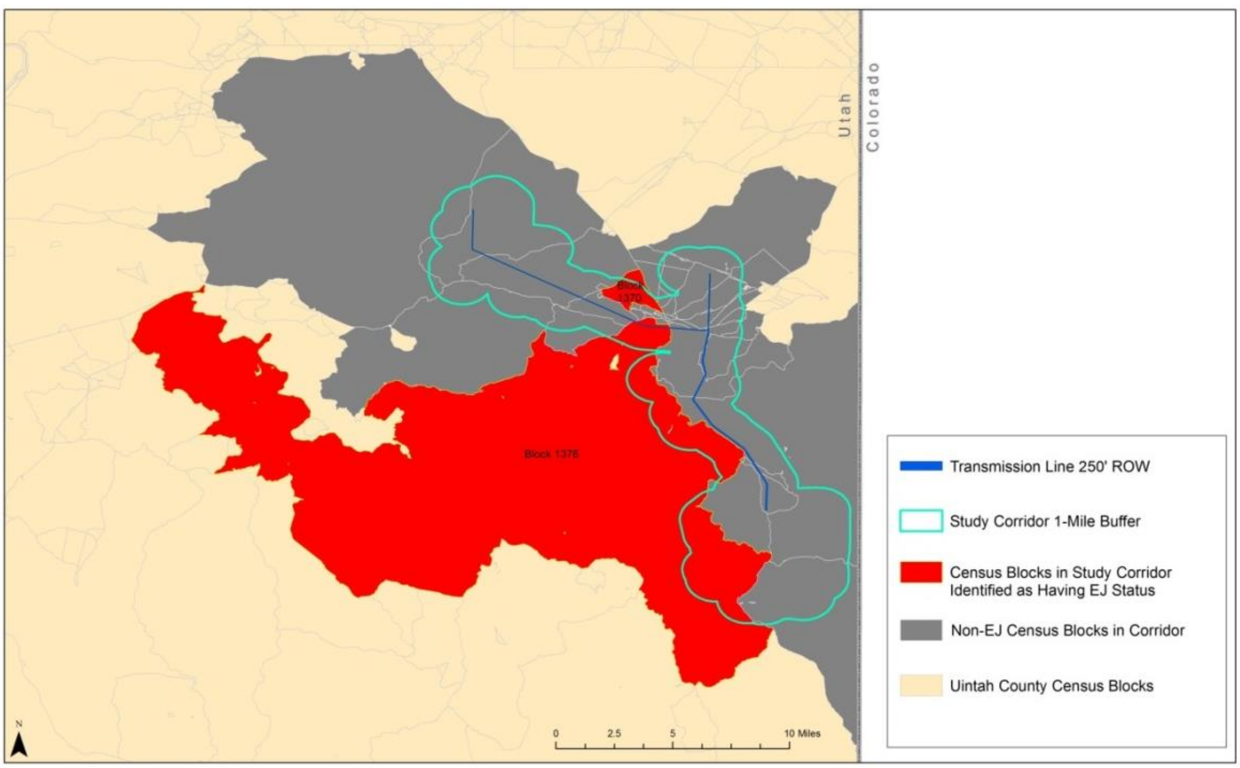

Figure 3-3 Census Blocks and Block Groups

3.2.18 Public Health and Safety

3.2.18.1 Solid Waste

3.2.18.1.1 Regulatory Framework

3.2.18.1.1.1 Federal

- Solid Waste Disposal Act (40 CFR 279) -- Requires generators of used oil to prevent spills and correctly label, store, transport, and dispose/recycle used oil.

3.2.18.1.1.2 State and County

- Utah Solid and Hazardous Waste Act, (UAC R315-1 through 15) incorporated the federal Resource Conservation and Recovery Act (RCRA) requirements with requirements for the generation, storage, transfer and storage of solid and hazardous waste in the state of Utah.
- Used Oil Management Act (UAC R315-15) regulates the collection, processing, recycling, and reusing used oil and prohibited the disposal of used oil in landfills or anywhere in the environment.
- Uintah County, Utah, Code of Ordinances (UCCOD, Ch. 8.24) regulates the management, transport, and disposal of solid, non-hazardous wastes within Uintah County, and would be applicable to the transport and disposal of wastes from the Utility Project and South Project outside of tribal land.

3.2.18.1.2 Issues Identified for Analysis

Issues related to Public Health and Safety identified in agency and public scoping includes:

- Potential for impacts from mining (dust) and shale-oil production emissions in the Uinta Basin (addressed in Air Quality);
- Potential health effects from emissions associated with refining South Project Shale (addressed in Air Quality);
- Potential health effects from potential contamination of water from the South Project and potential rupture of product delivery pipeline (addressed in Water Resources);
- Potential effects and mitigation options for hazardous and solid wastes; and
- Concern regarding response and mitigation for clean up on unapproved releases of hazardous waste in to the environment.

3.2.18.1.3 Affected Environment

The Affected Environment includes the roads into and out of the facility and the solid waste generation and storage areas. On-site disposal of sanitary wastewater is expected (septic system/leach field), but not construction trash and other industrial solid waste. Therefore, the Affected Environment extends to landfill disposal facilities that would serve the Utility Project construction and the South Project. Uintah County Landfill, located in Vernal, Utah, is the likely receiving facility for wastes generated by the Utility Project and South Project. For the entirety of Uintah County, this facility serves to manage the disposal of solid waste in an economical and environmentally sound manner using modern land filling technology.

The industrial generators of solid wastes are largely concentrated along the U.S. 40/191 corridor, and in the vicinity of Vernal, Utah, north of the Utility Project study area. Activities that may generate solid wastes in the vicinity of the Utility Project study area are sparse. A substantial number of remote well-sites and compressor stations are located in southeastern Uintah County; however, these operations do not generate substantial amounts of solid wastes for disposal.

3.2.18.2 Hazardous Materials and Waste

3.2.18.2.1 Regulatory Framework

Federal and state laws govern the hazardous materials and waste. Applicable laws and regulations address the use and storage of hazardous materials and the generation, storage, transportation and disposal of hazardous and solid waste to protect the environment from contamination. These laws are also intended to protect facility workers and the surrounding community from exposure to hazardous materials. The presence of hazardous materials at a site can affect the applicable requirements programs not directly addressing hazardous materials, i.e. storm water permitting and dry well management.

3.2.18.2.1.1 Federal

- OSHA Hazardous Communication (HAZCOM)—29 CFR 1910.1200 This Standard establishes uniform requirements to assure that the hazards of all chemicals imported into, produced, or used in U.S. workplaces are evaluated, and that the resultant hazard information and associated protective measured are transmitted to affected employers and potentially exposed employees.
- Emergency Planning and Community Right-to-Know Act (EPCRA)—40 CFR 370 establishes requirements for federal, state, and local governments, and industry regarding emergency planning and "Community Right-to-Know" reporting on hazardous and toxic chemicals. The law established a nationwide emergency planning and response program and imposed reporting requirements for businesses that store, handle, or produce significant quantities of hazardous materials.
    - Section 304 – This section requires immediate notification to the Local Emergency Planning Commission (LEPC) and the State Emergency Response Commission (SERC) when a hazardous material is released in excess of its reportable quantity (RQ), which is specific to given categories of chemicals. If a CERCLA-listed hazardous substance RQ is released, notification must also be given to the National Response Center in Washington, D.C. (RQs are listed in 40 CFR Part 302, Table 302.4). These notifications are in addition to notifications given to the local emergency response team or fire personnel.
    - Section 311 – This section requires that either material safety data sheets (MSDS) for all hazardous materials or a list of all hazardous materials be submitted to the SERC, the LEPC, and local fire department.
    - Section 312 - This section requires owners or operators of a facility such as the Applicant to submit an emergency and hazardous chemical inventory to the SERC, the LEPCs, and the local fire departments with jurisdiction over the facility. A Tier II report that must be filed by March 1st of each year. Hazardous chemicals covered by Section 312 are those for which facilities are required to prepare or have available MSDS under OSHA regulations, and that were present at the facility at any time during a given calendar year above specified thresholds. Federal rules require reporting these hazardous chemicals if the inventory exceeds 10,000 pounds at any one time, and for extremely hazardous chemicals when the inventory exceeds 500 pounds or the Threshold Planning Quantity (TPQ).
    - Section 313 – This section applies to a facility that has 10 or more employees; is in an EPCRA-listed Standard Industrial Category (SIC) code, which manufactures, processes, or otherwise uses any of the EPCRA Section 313 chemicals; and that exceeds the usage thresholds for a chemical or chemical category.

- Hazardous Materials Transportation Act (HMTA) -- 49 CFR Parts 171-179 regulates transportation of hazardous materials, and is implemented by the USDOT. Analogous requirements are promulgated for hazardous waste under 40 CFR Part 263 by the U.S. EPA. The act requires chemical manufacturers and hazardous waste generators and transporters to follow certain preparation, packaging, handling, loading/off-loading, routing, emergency planning, notification, and insurance requirements.
- RCRA 40 CFR 260, 261, 263 --RCRA provides authority to the U.S. EPA to regulate all aspects of hazardous waste management, including generation, transportation, storage, and disposal.
- 40 CFR 273 Universal waste rules were promulgated by the U.S. EPA to regulate the handling of certain specific categories of waste materials designated as "universal". These include batteries, pesticides, and thermostats (which can contain mercury). Most industrial and commercial facilities routinely generate some quantity of universal wastes, and this is the case for the Applicant facility.
- Oil Management is regulated under Section 311 of the CWA and Title 40 of the Code of Federal Regulations, Part 112 (40 CFR 112). These provide guidance for the regulation of oil storage and management in the U.S. Facilities with aboveground oil storage capacity greater than 1,320 gallons (excluding containers that are <55 gallons in capacity) must prepare and implement an SPCC Plan.

3.2.18.2.1.2 State and County

- Utah Solid and Hazardous Waste Act, (UAC R315-1 through 15) incorporated the federal RCRA requirements with requirements for the generation, storage, and transfer of solid and hazardous waste in the state of Utah.
- Standards for the management of Universal Waste Management are covered in UAC. R315-16. These follow the federal RCRA and have requirements for the generation, storage, transfer and storage of hazardous waste.
- Utah has adopted the federal EPCRA regulations. MSDSs of hazardous materials used on site above the TPQs and Tier II reports are submitted to Uintah County Emergency Management, Deseret Power Safety Administrator and Uintah Fire Districts.
- Utah has adopted the federal hazardous materials regulations as they apply to motor carriers. Standards for motor carriers transporting hazardous materials are found in UAC R909-75-1.

3.2.18.2.2 Affected Environment

The Affected Environment includes the roads into and out of the facility, the hazardous material and waste generation, processing, and storage areas. On-site hazardous waste treatment may be employed to stabilize materials for shipping; however, on-site disposal is not expected and would require a separate RCRA permit. Therefore, the Affected Environment extends to landfills or other disposal facilities that would serve the Utility Project construction and the South Project. The landfill resource closest to the Utility Project study area, Uintah County Landfill in Vernal, Utah, does not accept hazardous wastes. Hazardous waste transfer and disposal facilities (e.g., Stericycle) are located in the relatively industrialized corridor near Salt Lake City, which would be a possible receiving facility for hazardous wastes generated by the Utility Project and South Project.

Review of the Nationwide Environmental Title Research network site (http://environment.netronline.com/state/UT/county/uintah/rcragenerators/) indicates that the industrial generators of hazardous wastes are largely concentrated along the industrialized portions of the U.S. 40/191 corridor, and in the vicinity of Vernal, Utah, north of the locale of the Utility Project study area. The registered generators are conditionally exempt small quantity generators (CESQG) or Small-quantity Generators (SQGs). There are few, if any, activities that may generate reportable quantities of hazardous wastes in the vicinity of the Utility Project study area. A substantial number of remote well-sites and compressor stations are located in southeastern Uintah County; however, these operations do not routinely generate hazardous wastes for disposal.

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Chapter 4
Environmental Consequences

CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

The following sections describe the environmental impacts (including direct, indirect, and cumulative effects) associated with Proposed Action and the No Action Alternative presented in Chapter 2. Because approval or disapproval of the South Project is outside the BLM's authority, the BLM is evaluating the South Project, for the purpose of compliance with the CEQ's regulatory requirements at 43 CFR 1508.25, as a "non-federal connected action," as discussed in the BLM NEPA Handbook H-1790-1. Thus, the potential indirect and cumulative effects associated with the South Project are described in separate sections for each resource.

4.1.1 Types of Impacts to Be Addressed

Impacts are defined as modifications to the existing environment brought about by implementing an alternative after application of the Applicant-Committed Environmental Protection Measures (ACEPM) identified in the Applicant's Detailed Plan of Development for the Utility Project (Enefit 2014). For this project, design features of the Proposed Action are presented as the ACEPM identified in Section 2.2.11. Impacts can be beneficial or adverse, result from the action directly or indirectly, and can be long-term, short-term, temporary, or cumulative in nature. This analysis provides a quantitative or qualitative comparison (depending on available data and the nature of the impact) between the Proposed Action and the No Action Alternative.

Direct impacts are attributable to implementation of an action or alternative that affects a specific resource, and generally occur at the same time and place. Indirect impacts are reasonable foreseeable effects from one resource affecting another (e.g., sedimentation affecting the quality of fish habitat) or can occur later in time or at incidental location. Long-term impacts are those that would substantially remain for many years or the life of the Project. Temporary impacts are short-term or ephemeral changes to the environment that return to the original condition once the activity is stopped, such as air pollutant emissions caused by earthmoving equipment during construction. Short-term impacts result in changes to the environment that are mitigated rapidly and without long-term impacts. Cumulative impacts are the impacts on the environment that result from the incremental impact of the federal action when added to past, present, and reasonably foreseeable future actions by federal, state, and local governments, private individuals, or other entities in or near the Utility Project study area (refer to Section 4.3). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

For the purpose of this analysis, discussion of impacts is broken out to more clearly identify impacts that are specific to the Utility Project and those that are specific to the Non-federal Connected South Project, which is anticipated to be developed regardless of whether the BLM authorizes the Utility Project. Refer to Section 2.2 for further explanation of activities unique to each portion of the Proposed Action.

4.1.1.1 Proposed Action – Utility Project

Impact assessment for the Proposed Action – Utility Project addresses the potential environmental impacts of constructing, operating, and maintaining the Utility Project. Based on the analysis presented in this EIS, the BLM will issue a ROD on whether or not to grant the requested rights-of-way to facilitate development of the Utility Project on land administered by the BLM.

4.1.1.1.1 Non-federal Connected Action South Project

Because the South Project is outside the BLM's authority to approve and could proceed regardless of the BLM's Utility Project decision, the South Project is considered, for purposes of this analysis, as a non-federal connected action. Impacts from the South Project are considered to be an indirect effect of the Utility Project. The BLM has no jurisdiction over the South Project; therefore, no decision regarding the South Project will result from this EIS. Because the South Project is considered a non-federal connected action, the effects of the South Project do not count toward the significance of the BLM's Proposed Action to approve the rights-of-way associated with the Utility Project. Therefore, the effects of the South Project would not be part of the incremental difference in effects between the No Action Alternative and the Proposed Action.

4.1.1.2 No Action Alternative – No Utility Project

The No Action Alternative assumes that the South Project would go forward should the rights-of-way not be approved. The BLM would deny the Applicant's rights-of-way to construct, operate, and maintain the facilities described in the Proposed Action on land they administer.

4.1.1.2.1 No Action Alternative – Non-federal Connected Action South Project

In the case of a No Action decision, the Applicant would seek to obtain the utilities required for the South Project by alternative means as described in Section 2.3.1.1.

4.1.1.3 Unavoidable Adverse Impacts

Unavoidable adverse impacts are the effects on natural and human resources that would remain after implementation of design features of the Proposed Action, along with agency recommended environmental protection and mitigation measures. Additional mitigation measures identified and required by the agencies to avoid, minimize, rectify, reduce, or eliminate over time the anticipated adverse effects associated with the Utility Project are described in Section 4.1.2.

While unavoidable adverse impacts pertain only to the Proposed Action—in this case, authorization of the rights-of-way required for development of the Utility Project—in most cases, the South Project, expected to be built under either alternative, would result in similar impacts, and this is noted throughout.

4.1.1.4 Irretrievable and Irreversible Commitment of Resources

Irreversible and irretrievable commitments of resources (i.e., irreversible and irretrievable impacts) associated with the Proposed Action are disclosed in this section and throughout the chapter for each resource. An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed despite any manageable length of time or any practicable effort. Such impacts or losses are permanent. Examples include destruction of cultural resources or permanent conversion of wetlands. Irreversible is a term that describes the loss of future options, and applies primarily to the effects of use of nonrenewable resources, such as mineral or cultural resources, or to those factors, such as soil productivity, that are renewable only over a long period of time. Irretrievable is a term that applies to the loss of product or use of natural resources for a period of time. For example, the loss of ecological function of a particular wildlife habitat, while an approved allowable use, such as oil or gas well development within the habitat is in production. In this case, the ecological function of the habitat is lost during well production but the action is not irreversible.

While irretrievable and irreversible commitment of resources pertains only to the Proposed Action—in this case, authorization of the rights-of-way required for development of the Utility Project—in most cases, the South Project, expected to be built under either alternative, would result in similar commitment of resources (albeit non-federal), and this is noted throughout.

4.1.1.5 Relationship of Short-term Uses to Long-term Productivity

The relationship of how short-term project use would affect long-term productivity is described throughout the chapter for each resource.

While the relationship of short-term uses to long-term productivity pertains only to the Proposed Action—in this case, authorization of the rights-of-way required for development of the Utility Project—in most cases, the South Project, expected to be built under either alternative, would result in a similar relationship (albeit of non-federal resources), and this is noted throughout.

4.1.2 Mitigation Measures and Residual Effects

The Proposed Action includes mitigation measures for Applicant-committed measures (refer to Section 2.2.11) and mitigation measures identified by the BLM and cooperating agencies (refer to Table 4-1). As discussed in Section 2.2.11, the ACEPMs identified by the Applicant in the Detailed POD for the Utility Project (Enefit 2014) are part of the Applicant's project description. The Applicant would implement the measures as standard practice of construction, operation, and maintenance.

The BLM may require mitigation measures and conservation actions in order to achieve the purpose and need for the Proposed Action, or to meet land use plan goals and objectives, and to provide for sustained yield of natural resources on Public Lands while continuing to honor the agency's multiple-use missions. The sequence of mitigation action will be the mitigation hierarchy, as identified by the White House CEQ (40 CFR 1508.20), Secretarial Order 3330, the Department of the Interior Mitigation Policy in Chapter 6 of Part 600 of the Departmental Manual, and the BLM Draft - Regional Mitigation Manual Section 1794. The mitigation hierarchy includes:

- **Avoiding**
  - Identification of avoidance areas and/or measures (e.g., timing limitations or no surface occupancy areas) already included in laws, regulations, and/or governmental decision documents (e.g., RMPs) that govern permit authorizations. Example: requiring no surface disturbance within the area of potential effect of NRHP-eligible cultural resource sites.
  - Identification of additional avoidance measures for the BLM to consider (e.g., additional avoidance Best Management Practices [BMPs]).
- **Minimizing**
  - Identification of minimization measures (e.g., surface use controls, conservation measures, BMPs) already included in BLM decision documents (e.g., RMPs; FWS Biological Opinions); example: requiring traffic to avoid sage-grouse breeding areas during peak activity hours to minimize disturbance to breeding pairs.
  - Identification of additional minimization measures for the BLM to consider (e.g., applicant committed environmental protective measures).
- **Rectifying**
  - Identification of measures for the BLM to consider including repairing, rehabilitating, or restoring affected landscapes.
- **Reducing or Eliminating**
  - Identification of measures for the BLM to consider to reduce or eliminate the impact over time (e.g., interim reclamation best management practices; adaptive management mitigation) by preservation and maintenance operations during the life of the action.

- **Compensating**
  - Identification of measures for the BLM to consider to compensate for the impact by replacing or providing substitute resources or environments (e.g., contribution to monitoring fund; implementing best available technology to reduce emissions from existing wells to offset new wells).

The agency-identified mitigation measures are listed in Table 4-1.

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
Greenhouse Gases									
1. Under the No Action Alternative, implementation of this mitigation measure would require the applicant identify a different fuel gas source (natural gas fuel rather than diesel for fuel-burning equipment and vehicles) and supply means. Speculation on the location of that different source and supply means, other than the pipeline routes considered, is beyond the scope of this EIS.				✓		✓		✓	
2. Capture for beneficial use and/or destruction of CH_4 released during oil shale extraction -to the extent that underground mining is conducted during operation of the South Project, a mechanism may prove practical for partial CH_4 capture.			✓	✓		✓		✓	
3. Capture and/or destruction of vapor from hydrocarbon storage tanks.				✓		✓		✓	
4. Piping of liquid products to shipping destinations, rather than truck shipping.	✓								
5. Use of vehicles with low GHG emissions to the extent feasible.			✓	✓		✓		✓	
6. Use of renewable energy for on-site or added off-site electrical generation. Implementation of this mitigation may be feasible on a small scale, but is likely not feasible on a large scale due to the lack of developed renewable energy sources in the Uinta Basin.			✓	✓		✓		✓	
7. Decreases in vehicle idling times during on-site activities.			✓	✓		✓		✓	
Air Quality									
1. The construction right-of-way, access roads, and other disturbed areas would be routinely sprayed with water to reduce fugitive dust generated by traffic and construction related activities (e.g., clearing and grading, trenching, etc.). Water would not be treated before use and would not require post-use	✓			✓		✓		✓	

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
treatment as the water would either infiltrate or evaporate from the ground surface.									
2. Vehicle speeds on unpaved roadways would be reduced as appropriate.			✓	✓		✓			
3. Additional treatment of Dragon Road, such as using mag-water, or graveling, will occur as directed by the Authorized Officer, to maximize durability of the road and to minimize fugitive dust.	✓			✓		✓		✓	
4. Use diesel engines that meet current EPA emission performance standards, which apply to engines between 100 and 750 horsepower. Construction vehicles and equipment that are compliant with EPA Tier 2 performance will be utilized for engines greater than 100 horsepower.			✓	✓		✓		✓	
5. Use ultra-low sulfur diesel fuels, to the extent practically feasible, in off-road and non-road vehicles.			✓	✓		✓		✓	
6. Construction activities would occur in winter to reduce ozone issues encountered during summer time.			✓	✓		✓		✓	
Soils									
1. Post-construction activities would follow the Applicant's Upland Erosion Control, Revegetation, and Maintenance Plan and Noxious Weed Plan included as POD Appendix B and C. Both temporary and permanent erosion control structures would be installed during construction to minimize potential for soil loss due to wind and water erosion. Temporary structures may include sediment barriers, silt fence, culverts, pocking, and erosion control matting and would be used until permanent revegetation is deemed successful or other permanent structures have been installed. Permanent structures could include pocking, culverts, rock check dams or other flow-	✓		✓	✓		✓	✓	✓	

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
energy dissipaters, and riprap. Surfaces would be roughened to reduce potential for wind and water erosion and to facilitate moisture capture.									
2. Detailed geotechnical analyses during mine design may be necessary to address the stability of quarry walls, underground mines, and the stability of slopes, including assessment of slope cuts and the creation of roads or work areas.			✓	✓	✓	✓	✓		
3. Topsoil should be removed from the working areas of the right-of-way and laydown areas to protect it from compaction and erosion during pipeline and transmission line installation. Topsoiling of the entire right-of-way would be anticipated for the pipeline construction areas, whereas only topsoil in the vicinity of a given tower would be removed for the transmission line construction areas. Topsoil removed during clearing and grading operations should be segregated from subsoils.			✓	✓	✓	✓			
4. To minimize impacts to vegetation left in place under the topsoil and spoil piles, these piles will only be placed on vegetation when the spoil is dry. The stockpiled topsoil will be buried under the trench or footing subsoil on BLM land, identified by a thin layer of weed-free straw, to prevent the loss of topsoil to wind erosion during construction. The two soil layers will be replaced in the proper order during backfilling and final grading.	✓		✓	✓		✓	✓		
5. Heavy equipment working in wet soils shall be placed on mats. When feasible, working in areas with wet soils during the winter when the ground is frozen, or potentially in late summer when soils are drier would be the best practice.			✓	✓	✓	✓			

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
6. Sediment fences will be cleaned and inspected regularly to maintain function. Ground disturbance will not occur during wet conditions (i.e., during or immediately following rain events).			✓	✓	✓	✓			
7. Fill materials should be free of fines, waste, pollutants, and noxious weeds/seeds.			✓	✓	✓				
8. Employees and contractors will be instructed to travel at appropriate speeds to limit disturbance to soils on unpaved roads.			✓	✓		✓			
9. All temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations.			✓	✓	✓			✓	
10. Sediment control measures will be implemented to prevent sediment from entering the flowing stream channel.	✓		✓	✓	✓				
11. The disturbed area would be restored to natural grade, tilled if necessary to loosen compacted soils, and planted with a combination of riparian trees, shrubs and other native plants.			✓	✓			✓	✓	
Mineral Resources									
1. Power line: Micro-siting of the power lines through active oil and gas fields, and coordination with the lease and facility owners, will be required to ensure that sufficient distance is maintained between the well bores and power lines to allow safe rig operations for future work-overs.			✓	✓	✓	✓			
2. Coordination with gilsonite lease owners will occur prior to installation of the power lines or pipelines across gilsonite leases to ensure safe installation, preservation of the integrity of any existing or future mines, and preservation of the ability to safely maintain the power and pipelines in the future.			✓	✓	✓	✓			

Design Feature or Mitigation Measure	Applicant Design Feature[1]: Proposed Action	Applicant Design Feature[1]: No Action Alternative	Bureau of Land Management Mitigation Measure[2]: Proposed Action	Bureau of Land Management Mitigation Measure[2]: No Action Alternative	Mitigation Strategy: Avoid	Mitigation Strategy: Minimize	Mitigation Strategy: Rectify	Mitigation Strategy: Reduce/Eliminate Overtime	Mitigation Strategy: Compensate
Table 4-1 Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures									
3. Coordination with oil and gas lease owners of minerals beneath the plant and mine area would occur prior to construction of the plant and mine. Tracking or enforcing of this stipulation would be outside the jurisdiction of the BLM since the leases in that area were issued by the private (Applicant) or state owners. This coordination would allow for proper placement of the mine in relation to any existing or planned wellbores, and for accurate mapping of future well bores in relation to the proposed mine, to ensure safety of both the well and mine workers and the integrity of both the well and mine.			✓	✓	✓				
Water Resources									
1. Water used for hydrostatic testing would not be treated before use and would not require post-use treatment; however, because of high-discharge rates from the pressure tested pipelines, hydrostatic test water would be discharged to an energy dissipation device to prevent erosion and offsite sediment transport. The discharge location would be at least 0.5 mile from any perennial stream with a flow greater than 1 cfs. The discharge location would be nearly level or gently rolling, vegetated upland areas to prevent erosion issues.	✓				✓				
2. Use trenchless construction method of pipelines for crossing the White River called micro-tunneling, and an overhead, aerial span crossing for the 138kV transmission lines.	✓				✓	✓			
3. Both temporary and permanent erosion control structures would be installed during construction to minimize potential for soil loss due to wind and water erosion. Temporary structures may include sediment barriers, silt fence, culverts, pocking, and erosion control matting and would be used until	✓			✓		✓		✓	

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
permanent revegetation is deemed successful or other permanent structures have been installed. Permanent structures could include pocking, culverts, rock check dams or other flow-energy dissipaters, and riprap. Surfaces would be roughened to reduce potential for wind and water erosion and to facilitate moisture capture.									
4. Extra work spaces for vehicle parking, refueling, or construction staging areas should be located a minimum of 300-feet from wetland and surface-water boundaries. Temporary extra workspaces and additional temporary workspaces for stockpiling of excavated material should be located a minimum of 150-feet from wetland and surface water boundaries.			✓	✓		✓			
5. The nominal right-of-way width should be reduced where the Project passes through riparian areas to minimize riparian disturbance. Disturbed riparian areas should be re-vegetated after completion of project construction using native vegetation from local sources and monitored until a minimum cover is achieved.			✓	✓		✓	✓	✓	
6. It is the Applicant's responsibility to ensure that the contractor is made aware of the location of all floodplains, wetlands, ditches, and ephemerals and that they understand the need to implement best management practices in these areas to keep the Applicant in compliance with the General and Regional Conditions. The contractor shall have a copy of the Waters of the U.S. delineation maps on site during construction.			✓	✓	✓				

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
7. The boundaries of all Waters of the U.S. shall be clearly marked in the field, as well as the boundaries of the permitted right-of-way through these areas. It is imperative that no impacts take place outside of the permit limits (the right-of-way).			✓	✓	✓				
8. Silt fence shall be properly installed in all areas adjacent to Waters of the U.S. where project disturbance areas may erode into the Waters during a precipitation event.			✓	✓	✓	✓			
9. Sediment control measures will be in conformance with the project's Storm Water Pollution Prevention Plan.	✓		✓	✓	✓	✓			
10. The width of the construction right-of-way shall be made as narrow as possible through the wetland and floodplain areas.			✓			✓			
11. When excavating in wetlands, the soil shall be removed from the wetland area and stockpiled separately from the adjacent upland soils. The area will be recontoured to grade, topsoil will be spread across the site, and the entire site will be re-seeded.			✓	✓		✓		✓	
12. The finished right-of-way shall be restored to the existing wetland elevation immediately following construction.			✓				✓	✓	
13. Weed control measures will be implemented throughout the project area.	✓	✓	✓	✓	✓	✓			
14. Construction activities will not occur during active flooding events.			✓	✓	✓				
15. No construction equipment will operate in or cross the actively flowing channel of the Green River or White River.			✓		✓				
16. All temporary laydown areas will be located outside of the 100-year floodplains and in previously disturbed sites.			✓	✓	✓	✓			

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
17. The contractor will remove all construction material from the floodplains at the end of the project.			✓	✓	✓	✓			
18. Materials should not be stockpiled in the floodplain or wetlands.			✓	✓	✓	✓			
19. Construction activities will be timed to reduce impacts to seasonal fish movements, spawning activity, and rearing activity by avoiding construction in the 100-year floodplain of the White and Green Rivers from April 1 through August 31.			✓	✓	✓	✓			
20. BMPs should be used to minimize sedimentation, temporary erosion of stream banks, and needless damage or alteration to the streambed. BMPs should also ensure construction related byproducts do not enter the riverine ecosystem that will cause negative impacts to aquatic organisms.			✓	✓	✓	✓		✓	
21. Construction activities will avoid, to the extent feasible, fish habitat, such as backwaters and side channels.			✓	✓	✓	✓	✓		
22. To minimize the potential for impacts to listed fish no construction equipment or work will occur within the channel (i.e., areas that are below the terrace and within the floodplain or adjacent to the actively flowing channel).			✓	✓	✓	✓			
23. No permanent structures will be located within the 100-year floodplain.			✓	✓	✓				
24. An analysis of channel degradation and scour must be conducted to determine the appropriate depth to bury the pipeline beneath the streambed. This will ensure the pipeline is not exposed and broken during extreme flooding events.			✓	✓	✓	✓			

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1] – Proposed Action	Applicant Design Feature[1] – No Action Alternative	Bureau of Land Management Mitigation Measure[2] – Proposed Action	Bureau of Land Management Mitigation Measure[2] – No Action Alternative	Mitigation Strategy – Avoid	Mitigation Strategy – Minimize	Mitigation Strategy – Rectify	Mitigation Strategy – Reduce/Eliminate Overtime	Mitigation Strategy – Compensate
25. During construction, the trench should be blocked with a clay plug on each side of the stream to eliminate surface water from draining into the creek from the new pipeline trench.			✓	✓	✓	✓			
Vegetation and Weeds									
1. The Applicant would be responsible for monitoring reclamation success along the right-of-way. Monitoring would also be conducted to ensure that erosion control, weed management, and revegetation efforts continue to meet the objectives of stabilization and productivity along the right-of-way. The Applicant would adhere to the Green River District Reclamation Guidelines (BLM 2009) to ensure slope stability and topsoil integrity; provide 75 percent basal cover; restore drainage patterns; minimize visual disturbance; control noxious weeds; manage waste; and conduct monitoring.	✓						✓	✓	
2. A general seed mixture has been developed for the right-of-way, as shown in Table 2-4. Additional, site specific seed mixes could be developed for restoration of riparian and/or floodplain areas, depending on the selected crossing methods at these locations. The seed mix listed in Table 2-4 would be checked for availability prior to preparation of the seeding schedule, and any revisions would be made in consultation with the BLM. All disturbed areas would be reseeded in accordance with the specifications outlined in Table 2-4. The right-of-way would be reseeded at the end of construction or at the next prescribed seeding season, whichever would afford the highest likelihood of reclamation success. Any seed mix modifications would consider erosion control, forage availability, production rate, elevation and aspect, soil, vegetation community composition, and precipitation.	✓						✓	✓	

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
3. Drill seeding would plant seed at a depth of approximately 0.25 to 0.50 inch. Where broadcast seeding would be employed, a cyclone-type or similar seeder would distribute seed. In areas where vegetation would only be scalped during construction (i.e., cut at the surface but not further removed or disturbed), the area would be broadcast seeded so as not to further disturb the soil surface. Seed generally would be applied between August 1 and December 15, pending weather and the construction schedule.	✓						✓		
4. All project vehicles, including personal vehicles and equipment, would be required to arrive at the work site clean and weed-free. Prior to being allowed access to the right-of-way or any other work area, the environmental inspection team would ensure vehicles and equipment are free of soils and debris capable of transporting weed seeds, roots, or rhizomes. The Applicant would require the construction contractor thoroughly clean the equipment to remove seeds, roots, and rhizomes prior to transport off any weed infested work area.[3]	✓				✓				
5. To reduce spread and proliferation of noxious weeds, weed populations in a growth stage responsive to effective herbicide control would be identified and appropriate herbicides would be applied to them prior to construction. Noxious weed control during and following construction would be in accordance with the Noxious Weed Control Plan (Appendix C). Any use of pesticides would comply with applicable federal and state laws and would only be used in accordance with their registered uses. Any restricted-use pesticides would be applied by State of Utah-certified applicators, and any application on BLM administered land would be under prior authorization of that agency. Post-construction control measures may also include	✓				✓				

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
mechanical methods and/or herbicide application.									
6. The minimum area needed for the right-of-way would be cleared whenever possible, and using a brush hog or vegetation mowing would be preferable to the proposed blading of the entire width of the right-of-way.			✓		✓	✓			
7. Noxious weed-free certification would be required for all straw or hay bales used for erosion control, mulch, or reclamation. Certification standards are set by the State of Utah (where the straw/hay is used) and not by the state from which the material originates. To reduce to spread and proliferation of noxious weeds, weed populations in a growth stage responsive to effective herbicide control would be identified and appropriate herbicides would be applied to them prior to construction. Noxious weed control during and following construction would be in accordance with the Noxious Weed Control Plan (refer to Appendix E of the Vernal Field Office RMP). Any use of pesticides would comply with applicable federal and state laws and would only be used in accordance with their registered uses. Any restricted-use pesticides would be applied by State of Utah-certified applicators, and any application on BLM land would be under prior authorization of that agency. Post-construction control measures may also include mechanical methods and/or herbicide application. Mechanical methods rely on equipment to disc weed populations, and disked areas would be subsequently reseeded with the approved project seed mix in order to stabilize soils and slow potential reinvasion of weeds.	✓		✓	✓	✓	✓		✓	
8. Equipment should be cleaned to remove noxious weeds/seed and petroleum products prior to moving on site.			✓	✓	✓				

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
9. Fill materials should be free of fines, waste, pollutants, and noxious weeds/seeds.			✓	✓	✓				
10. Native grasses, forbs, shrubs, and certified weed-free native seed will be used to reseed disturbed soils as appropriate.			✓	✓	✓			✓	
11. All disturbed areas will be reclaimed with plant species native to Utah, or seed mixtures approved by the BLM and our office.			✓	✓	✓			✓	
Special Status Plant Species									
1. The Applicant intends to comply with the conservation agreement during implementation of both the Project and the South Project including in non-conservation areas as directed by the agreement. Both species remain on the BLM Vernal Field Office special status species list, requiring preconstruction surveys, protection from impacts, and mitigation for unavoidable impacts.	✓					✓		✓	
2. Herbicides would not be applied in a manner that could lead to inadvertent adverse impacts on special status plants. All herbicide application would be coordinated with the BLM (and FWS when threatened and endangered plants are involved) to ensure that special status plants were not impacted. These measures would be determined on a site-specific basis, but would include: (1) applying herbicides only when wind speed is below 7 mph to avoid drift; (2) following buffer distances for each specific herbicide as listed in the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic EIS* (2005c), Volume I, pages 4-54 and 61, and specifying application methods. Appendix C, the Noxious Weed Control Plan of the POD and contained in			✓			✓		✓	

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
this EIS would apply.									
3. Conservation measures described in the Conservation Agreement and Strategy for Graham's beardtongue and White River beardtongue for federally listed plants would be applied to sensitive plant species.	✓		✓	✓	✓	✓		✓	
4. Population density surveys would be conducted within suitable habitat to facilitate avoidance of important population centers and identify prime suitable habitat for recovery.			✓	✓	✓				
5. A pre-project weed inventory for areas to be disturbed would be conducted before ground disturbing activities.	✓		✓	✓		✓		✓	
6. Suitable habitat for the Graham's and White River beardtongue that fall within 500 feet of any area to be disturbed would be inventoried for weeds, and a treatment plan would be developed and initiated as the discretion of the BLM or FWS but will follow measures outlined in the conservation Agreement and Strategy for Graham's beardtongue (*P. grahamii*) and White River beardtongue (*P. scriosus* var. *albifluvis*) associated Mitigation Plan and Weed Management Plan. The treatment would be designed to treat existing weed infestations and avoid their further spread due to project-related surface disturbance.			✓	✓	✓	✓		✓	
7. Ground disturbing activities would be located at a minimum distance of 300 feet from individual *Sclerocactus* plants and/or populations and must occur outside of the flowering period, April 1 – May 30.			✓	✓	✓				
8. Access roads, buried pipelines, well pads, and other facilities requiring removal of vegetation (e.g., compressor stations) will be located a minimum distance of 300 feet from individual *Sclerocactus* plants and/or populations.			✓	✓	✓				

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
9. Only water (no chemicals, reclaimed production water or oil field brine) will be used for dust abatement measures within Sclerocactus habitat.			✓	✓	✓				
10. Dust abatement will be employed in suitable Sclerocactus habitat over the life of the project during the time of the year when Sclerocactus species are most vulnerable to dust- related impacts (March through August).			✓	✓	✓				
11. Noxious weeds within *Sclerocactus* habitat may be controlled with herbicides, in accordance with the BLM Herbicide Preliminary ElS (http://www.blm.gov/wo/st/en/prog/more/veg_eis.html). Guidelines and the BLM's Standard Operating Procedures for Threatened and Endangered Plant Species (Table 1).			✓	✓	✓				
12. Application for a Pesticide Use Permit will include provisions for mechanical removal, as opposed to chemical removal, for Utah Class A, B, and C noxious weeds within 50 feet of individual/populations of *Sclerocactus*.			✓	✓	✓				
13. Erosion control measures (e.g., silt fencing) will be implemented to minimize sedimentation to *Sclerocactus* plants and populations located down slope of proposed surface disturbance activities, and should only be implemented within the area proposed for disturbance.			✓	✓	✓				
14. Where access roads, buried pipelines, well pads, or other facilities requiring removal of vegetation (e.g., compressor stations) will be constructed, design project to minimize impacts by: a. Locating project a minimum distance of 300 feet from individual *Sclerocactus* plants and/or populations (except for surface pipelines, which is 50 feet).			✓	✓	✓				

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
15. The following components are recommended methods for ecological restoration of *Sclerocactus* habitat (FWS 2014a): a. Treatment of non-native and invasive plants for 2 years in Core areas; b. Grading and plowing of disturbed site (e.g., recontouring); c. Soil amendments including cobble, topsoil, char, wood chips, biological soil crust inoculant or other nutrients; d. Collection of seed from a diversity of native plants; e. Planting seed should include habitat specific native plants; f. Propagation of *Sclerocactus* plants; g. Reseeding or planting of native plants (two times); and h. Success monitoring of restoration areas. Calculation acres to be mitigated: a. Mitigation costs are based on the amount of habitat impacted and the quality of that habitat as determined by the U.S. Fish and Wildlife Service and delineated into 3 strata: Level 1 core conservation areas (CCAs), Level 2 CCAs, and suitable habitat outside of the CCAs. Mitigation is applied only where impacts cannot be avoided. Mitigation will occur for any impacts occurring within Level CCAs for any surface disturbances. Mitigation will occur in Level 2 CCAs where surface disturbance exceeds 5 percent. Mitigation will occur in suitable habitat where impacts are within 300 feet of listed *Sclerocactus* plants. This habitat mitigation approach does not apply to direct impacts to listed plants. Mitigation for direct impacts are addressed through another mitigation calculation as discussed below.									✓

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
The amount of habitat impacted will be calculated as follows: a. For Level 1 CCAs, all disturbed acres inside designated Level 1 CCAs will be mitigated. b. To meet our objective of no disturbance in Level 1 CCAs, we anticipate the only additional disturbance will come from well expansions, not new roads or well pads. c. For Level 2 CCAs, the number of acres currently disturbed that are not reclaimed and exceed the 5 percent disturbance cap will be mitigated. d. For impacts outside of Level 1 and 2 CCAs and within 300 feet of *Sclerocactus*: • The total acreage of the well pad that is within 300 feet of *Sclerocactus* will be mitigated. • The distance of the right-of-way where the edge is within 300 feet of *Sclerocactus* for buried and cross country pipelines and 50 feet for hand-laid surface pipelines adjacent to roads multiplied times the width for the stretch of right-of-way (for a pipeline or road) will be mitigated.									
Wildlife									
1. The Applicant's primary mitigation method would be to follow the spatial and/or seasonal avoidance windows provided by BLMs RMP/ROD's (2008): Appendix A (Best Management Practices for Raptors and Their Associated Habitats in Utah, August 2006). These BMP's allow for special and seasonal buffers for various raptors.	✓				✓	✓			

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]: Proposed Action	Applicant Design Feature[1]: No Action Alternative	Bureau of Land Management Mitigation Measure[2]: Proposed Action	Bureau of Land Management Mitigation Measure[2]: No Action Alternative	Mitigation Strategy: Avoid	Mitigation Strategy: Minimize	Mitigation Strategy: Rectify	Mitigation Strategy: Reduce/Eliminate Overtime	Mitigation Strategy: Compensate
2. The Applicant will install raptor deterrents and measures according to MLEA Avian Protection Plan, previously submitted to BLM. Applicant power lines are designed with adequate clearances for raptor protection.	✓				✓	✓		✓	
3. Implement the following measures for migratory birds: a. Any ground-disturbing activities or vegetation treatments will be performed before migratory birds begin nesting or after all young have fledged to avoid take (between September 1 and March 31). b. If activities must be scheduled to start during the migratory bird season, appropriate steps to prevent migratory birds from establishing nests in the potential impact will be taken. These steps could include covering equipment and structures and use of various excluders (e.g., noise). c. If activities must be scheduled during the migratory bird breeding season, a site-specific survey for nesting birds will be performed no more than 7-10 days before groundbreaking activities or vegetation treatments. Established nests with eggs or young cannot be moved, and the birds cannot be harassed (refer to b. above), until all young have fledged and are capable of leaving the nest site. d. If nesting birds are found during the survey, appropriate spatial buffers will be established around nests. Project-related activities within the buffer areas will be postponed until the birds have left the nest. Confirmation that all young have fledged will be made by a qualified biologist. A 100-foot buffer will be employed around the active nests of passerine species. e. To avoid disturbance of nesting raptors (including burrowing owls),			✓	✓	✓	✓			

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]: Proposed Action	Applicant Design Feature[1]: No Action Alternative	Bureau of Land Management Mitigation Measure[2]: Proposed Action	Bureau of Land Management Mitigation Measure[2]: No Action Alternative	Mitigation Strategy: Avoid	Mitigation Strategy: Minimize	Mitigation Strategy: Rectify	Mitigation Strategy: Reduce/Eliminate Overtime	Mitigation Strategy: Compensate
adhere to the recommendations provided in the BLM Vernal Field Office RMP – Appendix A. f. Proposed construction activities will be limited to times prior to and after (March 1 to August 31) as burrowing owls nest within existing prairie dog colonies.									
4. Implement mitigation measures for big game species: a. Avoid activity during Mule deer fawning (May 15 – June 30). b. Construction activities will avoid critical winter habitat for mule deer from December 1 to April 30 to reduce unnecessary disturbance to elk and mule deer needing to conserve energy for the winter.			✓	✓	✓	✓			
5. No construction within the active floodplain of rivers during spawning months from April 1- June 15.			✓	✓	✓				
6. Conduct pre-disturbance surveys for raptor nesting in all areas proposed for development following accepted protocols and in consultation with the BLM, FWS, and state natural resource agencies. If raptor nests are found, an appropriate course of action would be formulated to mitigate impacts, as appropriate. For example, impacts could be reduced if project design avoided locating transmission lines in landscape features known to attract raptors. The lessee would also, at a minimum, develop a site-specific avian plan to assist the engineering design, and will utilize standards from the APLIC and Moon Lake Avian Protection Plan.			✓	✓	✓	✓			
7. Design facilities to discourage use as perching or nesting sites by birds and minimize avian electrocutions.			✓	✓	✓	✓			

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
8. Any surface water body created for the Utility Project corridor or South Project may be utilized to the benefit of wildlife when practicable; however, netting and fencing or floating ball covers may be required when water chemistry demonstrates a need to prevent use by wildlife.			✓	✓	✓				
9. Mitigate wildlife mortality from vehicle collisions. To achieve this objective, employees would be instructed to obey state- and county-posted speed limits. Carpooling, busing, or other means to limit traffic (and vehicle collisions with wildlife) would be emphasized.			✓	✓	✓	✓		✓	
10. Employ dust abatement practices such as mulching, water application, road paving, and plantings.			✓	✓		✓		✓	
11. Avoid (to the extent practicable) human interactions with wildlife. To achieve this objective, the following measures could be implemented: (1) instruct all personnel to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons; (2) make personnel aware of the potential for wildlife interactions around facility structures; (3) ensure that food refuse and other garbage are not available to scavengers (e.g., by use of covered dumpsters); and (4) restrict pets from project sites.			✓	✓	✓	✓		✓	
12. Operators would ensure that all construction equipment was adequately muffled and maintained to minimize disturbance to wildlife.			✓	✓		✓		✓	
13. All pesticides would be applied consistent with their label requirements and in accordance with guidance provided in the Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (BLM 2007).			✓	✓	✓	✓			

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
14. Construct fencing (as practicable) to exclude livestock, wild horses, or wildlife from all project facilities, including all water sites built for the development of facilities and roadways. Fence designs will be approved for big game use and will be built in accordance to UDWR and BLM fence standards.			✓	✓					
15. Protect and restore cottonwood bottoms for bald eagle winter habitat along the White River as well as any new roost sites discovered in the future.			✓	✓	✓		✓		
Special Status Wildlife Species									
1. Implement the mitigation measure numbers 1-16 identified for general wildlife.			✓						
2. Implement mitigation measures for black-footed ferret and prairie dogs as follows: a. To avoid disturbance to black-footed ferrets, construction activities in the black-footed ferret PMZ should be conducted outside the period between breeding and emergence of young (March 1 to July 15). If ferrets are discovered in the Project area, additional stipulation detailed in Appendix K of the BLM Vernal Field Office RMP would apply. b. Avoid surface-disturbing activities within 660 feet of prairie dog colonies identified within prairie dog habitat. No permanent above ground facilities are allowed within the 660 foot buffer. Burrowing owl timing restrictions will still apply and additional surveys may be required. See Appendix K of the BLM Vernal Field Office RMP for exceptions, modifications, and waivers to this stipulation that may be granted by the BLM field manager.			✓	✓		✓			

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
3. Conduct predisturbance surveys in all areas proposed for development following accepted protocols and in consultation with the FWS and/or state agencies. If the two phases of the utility corridor construction occur in separate years, a pre-disturbance survey will be needed each year.			✓		✓	✓			
4. After considering the management outlined in the Utah Greater Sage Grouse EIS, the BLM has determined the following mitigation measures may be applicable to the Proposed Action to achieve net conservation gain for the species: a. No construction will be allowed within occupied greater sage grouse habitats during the corresponding seasonal use periods: • In breeding and nesting habitat from February 15 to June 15 • In brood rearing habitat from April 15 to July 15 • In winter habitat from November 15 to March 15 b. Exceptions to the seasonal restrictions could be granted by the Authorized Officer under the following conditions: • If the project plan and NEPA document demonstrate the project would not impair the function of seasonal habitat, life-history, or behavioral needs of greater sage-grouse; • If the potential short-term impacts from the action are off-set by long-term improvement to the quantity or quality of habitat (e.g., seedlings, juniper reduction). c. Additionally, the Authorized Officer may modify this seasonal restriction under the following conditions:	✓		✓		✓	✓			✓

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]: Proposed Action	Applicant Design Feature[1]: No Action Alternative	Bureau of Land Management Mitigation Measure[2]: Proposed Action	Bureau of Land Management Mitigation Measure[2]: No Action Alternative	Mitigation Strategy: Avoid	Mitigation Strategy: Minimize	Mitigation Strategy: Rectify	Mitigation Strategy: Reduce/Eliminate Overtime	Mitigation Strategy: Compensate
• If portions of the area do not include habitat (lacking the principle habitat components of greater sage-grouse habitat) or are outside the current defined area, as determined by the BLM in discussion with the State of Utah , and the indirect impacts would be mitigated; • If documented local variations (e.g., higher/lower elevations) or annual climactic fluctuations (e.g., early/late spring, long and/or heavy winter) reflect a need to change the given dates in order to better protect when greater sage-grouse use a given area, and the proposed activity will not take place beyond the season being excepted. As compensatory mitigation, the proponent would contribute a monetary amount to be determined in coordination between the proponent, the BLM, and the UDWR for disturbance to GHMA habitat. The provided funds would be useable only for mitigation projects to benefit greater sage-grouse. The mitigation projects would be carried out by UDWR who would account for use of the funds.									
5. Suitable habitat will be identified according to the Utah Field Office "Guidelines for the identification of suitable habitat for Western Yellow-billed cuckoo in Utah" (June 2015) and provided in a GIS shape file to the FWS Utah Field Office. Mitigation Measures include: a. Prior to construction, protocol level surveys will be conducted within suitable habitat in the project area and within 0.5 mile of the project area. b. Project activities will not occur within suitable habitat between June 1			✓			✓	✓	✓	

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]: Proposed Action	Applicant Design Feature[1]: No Action Alternative	Bureau of Land Management Mitigation Measure[2]: Proposed Action	Bureau of Land Management Mitigation Measure[2]: No Action Alternative	Mitigation Strategy: Avoid	Mitigation Strategy: Minimize	Mitigation Strategy: Rectify	Mitigation Strategy: Reduce/Eliminate Overtime	Mitigation Strategy: Compensate
and August 31. c. Noise levels will not increase by more than 10 dBa within occupied habitat, during the breeding and nesting season (June 1 – August 31). d. Acreage of vegetation removal or alteration within suitable and occupied habitat will be quantified; compensatory mitigation for changes to vegetation within suitable and occupied habitat will be provided at a 2:1 ratio for temporary losses and a 3:1 ratio for permanent losses. For every 2 acres of temporary disturbance or 3 acres of permanent disturbance within suitable habitat, 1 acre will be restored. A restoration plan will be produced in consultation with the BLM and FWS. e. Appropriate technology, such as trench plugs, shall be used at appropriate intervals in pipeline trenches to prevent wetland drainage.									
Special Status Fish Resources									
1. Mitigation measures pertaining to spill prevention include: a. Imported and site source materials will be stored in the staging area. The contractor or responsible representative shall provide watertight tanks or barrels for the storage and disposal of chemical pollutants, including those that are produced as byproducts of the construction activities, such as drained lubricating or transmission fluids, grease, or soaps. Upon completion of construction work, these containers will be removed from the action area and their contents disposed of at a designated disposal location. b. Machinery will be fueled offsite or in a confined, designated area to	✓		✓		✓	✓			

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
prevent spillage into any surface water. Refueling will not occur within the 100 year floodplain. c. In case of emergency, a hazardous materials spill kit that is appropriate for the solvents involved in operation and maintenance of vehicles and machinery used during the proposed action will be kept on site during construction. d. Any petroleum product that is spilled would be promptly cleaned up and properly disposed. Any petroleum product spill greater than 25 gallons would be reported to the Utah Division of Environmental Quality and FWS Field Office Hazmat Coordinator. e. Contaminant control measures will be installed to prevent contaminants' release into the river channel. f. Shut-off valves will be installed on both sides of river and stream crossings.									
2. The Applicant and its contractors would locate, handle, and store hazardous substances in locations that would prevent accidental spill or delivery to the White River or its tributaries. Transferring of liquids and refueling shall only occur in pre-designated locations at least 100 feet from all waterbodies and 200 feet from any water well.	✓		✓		✓	✓			
3. Pipelines crossing mapped 100-year floodplain, mapped riparian, or wetland areas would be routinely pigged and would have emergency shutoff valves.			✓					✓	
4. Natural gas pipelines that cross perennial, intermittent, and ephemeral stream channels would be buried below the predicted scour depth for an equivalent flood event. The construction requirements for each type of			✓		✓	✓		✓	

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]: Proposed Action	Applicant Design Feature[1]: No Action Alternative	Bureau of Land Management Mitigation Measure[2]: Proposed Action	Bureau of Land Management Mitigation Measure[2]: No Action Alternative	Mitigation Strategy: Avoid	Mitigation Strategy: Minimize	Mitigation Strategy: Rectify	Mitigation Strategy: Reduce/Eliminate Overtime	Mitigation Strategy: Compensate
crossing would be determined on a site-specific basis and would consider the technical guidance of the document entitled, “Hydraulic Considerations for Pipeline Crossings of Stream Crossings,” which is found in Appendix B of the Vernal RMP (BLM 2008f).									
5. Natural gas pipelines that cross perennial, intermittent, and ephemeral stream channels would be buried at least 5 feet below the channel bottom.			✓		✓	✓		✓	
6. Implement the Spill Prevention, Control, Countermeasures and Reporting Plan (POD-Appendix F).	✓								
7. The Applicant will work with the Colorado River Recovery Program if additional water depletions beyond the limits of the existing Water Right (15 acre-feet) would occur and will pay the water depletion fee if necessary.			✓	✓	✓	✓			
8. Construction activities in designated critical habitat Colorado pikeminnow and razorback sucker will not occur during active flooding events (when the water level rises more than 6 inches above the normal wetted channel). If construction materials are displaced by high flow the applicant will contact the FWS, Utah Field Office as soon as possible to coordinate the least intrusive retrieval methods.			✓	✓	✓				
9. Temporary and permanent construction-related impacts to Colorado pikeminnow and razorback sucker critical habitat will be addressed by revegetation of construction affected areas. Vegetation restoration details are found in below.			✓	✓	✓				

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
10. If additional water depletion occurs (beyond the allotted 15 cfs per year), Enefit will pay a water depletion fee and work with the Colorado River Recovery Program to determine other measures necessary to offset the negative effects of to the river system.			✓			✓		✓	✓
Cultural Resources									
1. Two sites have been identified in the Project area that have been recommended eligible for listing to the NRHP (Lechert et al. 2013). It is anticipated that the utility corridor(s) could be micro-sited during final engineering (i.e., minor adjustments made to the final alignment of the utility lines) to fully avoid impacts to one of these sites. Based upon current Project design, unavoidable impacts are anticipated at the NRHP eligible White River Stage Station site. Pursuant to Section 106 of the NHPA, the Applicant would work in consultation with the BLM Vernal Field Office to determine appropriate mitigation activities to document these sites prior to construction and monitor the area during construction.	✓				✓	✓			
2. The Applicant would educate their contractors and employees about the relevant federal regulations intended to protect cultural resources. All vehicular traffic, personnel movement, construction, and restoration activities would be confined to areas cleared by the site inventory and to existing roads. In the event unanticipated discovery of cultural or paleontological resources occurs, operations in the immediate area would be suspended until written authorization to proceed is issued by the appropriate surface management agency Authorized Officer. An evaluation of the unanticipated discovery would be made by the Authorized Officer to determine appropriate actions in order to prevent the loss of significant	✓				✓	✓			

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1] – Proposed Action	Applicant Design Feature[1] – No Action Alternative	Bureau of Land Management Mitigation Measure[2] – Proposed Action	Bureau of Land Management Mitigation Measure[2] – No Action Alternative	Mitigation Strategy – Avoid	Mitigation Strategy – Minimize	Mitigation Strategy – Rectify	Mitigation Strategy – Reduce/Eliminate Overtime	Mitigation Strategy – Compensate
cultural or paleontological resource values. Appropriate mitigation measures would be otherwise determined by the Applicant in consultation with the BLM.									
3. Within the White River Stage Station cultural resource area, the Applicant would employ a 25-foot-wide permanent and construction right-of-way. This right-of-way width is specific to this cultural resource site and would serve to minimize the surface disturbance within the resource area. This 25-foot-wide right-of-way would be utilized for approximately 1,700 linear feet in crossing the resource area from west to east, and the right-of-way would be located on the south side of, and immediately adjacent to, the existing Mapco natural gas liquids pipeline right-of-way. Mapco owns two existing 10-inch-diameter natural gas liquid pipelines at this location, which also cross the White River Stage Station cultural area. The Applicant evaluated the alternative of locating the proposed utility corridor right-of-way closer to the toe of the slope to the south (i.e. not immediately adjacent to the Mapco right-of-way); however, this would result in the right-of-way coursing close to a rock art feature, as well as being exposed to high-energy stormwater runoff from several drainages. By locating adjacent to the Mapco right-of-way, the Project right-of-way would avoid new disturbance of mature woody vegetation in the floodplain (several large trees occur near to the toe of the slope), and stormwater runoff would be allowed to dissipate energy across the alluvial fan prior to reaching the Project right-of-way, thus reducing the potential for sediment loading to the White River. The standard construction and permanent right-of-way widths would be deployed outside of this 25-foot wide cultural resource protection right-of-way. Figure 2-5 depicts a	✓				✓				

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
cross-section of the mitigation proposed.									
4. All vehicular traffic, personnel movement, construction, and restoration activities would be confined to areas approved for disturbance by the Authorized Officer.			✓		✓				
Paleontological Resources									
1. SWCA (2013h) identified several significant and non-significant fossil localities on BLM-administered land. As a result, the Applicant has identified selected areas in the proposed utility corridor(s) where paleontological monitoring (including cultural monitoring of the above-referenced locations) would be conducted during excavation activities. During excavation, the trench and spoils pile, and the excavation material from tower structures, would be spot-checked by a qualified paleontologist for significant vertebrate fossils and plant fossils. Spot checking would only occur in areas designated in paleontological surveys as having known fossils or a high likelihood of fossils. The results of spot-checking would be summarized in a written report by the inspecting paleontologist and submitted to the BLM. A more complete description of spot-checking procedures is provided in BLM Handbook 8270 (BLM 1998).	✓				✓	✓	✓		
2. The Applicant would educate their contractors and employees about the relevant federal regulations intended to protect paleontological resources. All vehicular traffic, personnel movement, construction, and restoration activities would be confined to areas cleared by the site inventory and to existing roads. In the event unanticipated discovery of cultural or paleontological resources occurs, operations in the immediate area would be	✓				✓				

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
suspended until written authorization to proceed is issued by the appropriate surface management agency Authorized Officer. An evaluation of the unanticipated discovery would be made by the Authorized Officer to determine appropriate actions in order to prevent the loss of significant cultural or paleontological resource values. Appropriate mitigation measures would be otherwise determined by the Applicant in consultation with the BLM.									
3. All vehicular traffic, personnel movement, construction, and restoration activities would be confined to areas approved for disturbance by the Authorized Officer.			✓		✓				
Visual Resources									
1. All above ground facilities including power boxes, buildings, roofs, and any visible equipment will be painted a color selected from the latest national color charts that best allows the facility to blend into the background.			✓			✓			
2. Minimize structure contrast by using self-weathering steel transmission structures (not galvanized). Non-specular conductors should also be used.			✓			✓			
Land and Access									
1. Avoid well pads – Coordinate with well owners prior to construction.			✓		✓	✓			
2. Implement cathodic protection of pipelines – Coordinate with right-of-way owners prior to construction.			✓		✓	✓			
3. Adjust right-of-way as needed if a dam is determined to be necessary.			✓		✓	✓			

Table 4-1
Applicant Committed Environmental Protection Measures (Design Features) and BLM Mitigation Measures

Design Feature or Mitigation Measure	Applicant Design Feature[1]		Bureau of Land Management Mitigation Measure[2]		Mitigation Strategy				
	Proposed Action	No Action Alternative	Proposed Action	No Action Alternative	Avoid	Minimize	Rectify	Reduce/Eliminate Overtime	Compensate
Travel Management									
1. The Traffic and Transportation Management Plan was developed as part of the POD to ensure necessary coordination occurs with roadway agencies to limit any conflict between roadway users and the Project.	✓					✓		✓	
2. Operators should not flat-blade roads. Drainage must be maintained, where appropriate, to avoid erosion or the creation of a muddy, braided road. These roads and routes must be used and maintained in a safe and environmentally responsible manner and are not intended for use as all-weather access roads. Resource damage must be repaired as soon as possible and the operator must consult with the BLM to determine if all or a portion of the road needs to be upgraded to an all-weather access road. When used and maintained appropriately, non-constructed roads and routes have the advantage of reducing construction, maintenance, and reclamation costs and reducing resource impacts.			✓		✓	✓		✓	
3. The construction right-of-way, access roads, and other disturbed areas would be routinely sprayed with water to reduce fugitive dust generated by traffic and construction related activities (e.g., clearing and grading, trenching, etc.). Water would not be treated before use and would not require post-use treatment as the water would either infiltrate or evaporate from the ground surface.	✓					✓		✓	
4. Vehicle speeds on unpaved roadways would be reduced as appropriate.			✓	✓		✓			

Table 4-1
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5. Additional treatment of Dragon Road, such as using mag-water, or graveling, will occur as directed by the Authorized Officer, to maximize durability of the road and to minimize fugitive dust.			✓	✓		✓		✓	
Public Health and Safety									
1. Implement the Spill Prevention, Control, Countermeasures and Reporting Plan (POD-Appendix F)	✓				✓	✓			

NOTES:
[1]As identified in Enefit Plan of Development (2014a)
[2]As identified by the BLM.
[3]Although this mitigation measure, if implemented would reduce impacts resulting from the South Project, implementation and enforcement of this measure on the South Project area is outside the authority of the BLM. The South Project, which contains private minerals and private surface, is subject to permitting through the State of Utah and other Federal Agencies. BLM has no jurisdiction over the South Project, so it is unknown if any of those agencies will incorporate this measure into their permit as a condition of approval.

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4.2 Resources Analyzed

4.2.1 Greenhouse Gases

4.2.1.1 Direct and Indirect Effects

4.2.1.1.1 Proposed Action – Utility Project

4.2.1.1.1.1 Project Greenhouse Gas Effects

The inventory of construction phase GHG emissions for the Utility Project was based on estimated tailpipe emissions of CO_2 and other GHGs due to on-site vehicles and equipment during the two construction mobilizations comprising this phase of the Utility Project. Use of construction equipment that meets current standards for emissions and energy-efficiency performance would maintain GHG emissions at the lowest practical level. The generation and release of GHGs during construction would be of a relatively short duration, identical to the timeframe for emissions of conventional criteria pollutants.

In disclosing the potential GHG impacts of the corridor construction, it is also appropriate to consider whether and to what extent the impacts may be exacerbated by expected climate change in the region, although this is not readily quantified. The overall mobilization and construction period of the Utility Project is less than 3 years. Over this short time span, it is reasonable to expect there will be negligible climate change effects that may alter the environmental consequences of the Utility Project.

Another factor to be considered in the overall GHG emission profile of the Utility Project is the possible long-term loss of carbon sequestration in the plant matter resulting from removal and disposal of native vegetation during construction. First, the locale of the Utility Project is typical of high-elevation, arid desert so the vegetation density and associated carbon sequestration capacity is relatively low. Second, the construction plan provided by the Applicant includes reclamation of areas disturbed during construction, and reseeding with compatible species on reclaimed areas. This would allow native vegetation to establish itself in the Utility Project corridor after construction to restore the prior carbon sequestration capacity. In this manner, the possible contribution to direct or indirect effects of the corridor construction phase of the Utility Project due to vegetation removal during construction would be negligible.

Speculation on the location suitable for CO_2 sequestration in a geologic formation is beyond the scope of this EIS and is not analyzed in detail.

4.2.1.1.1.2 Greenhouse Gas Emission Inventory

Utility Project construction GHG emissions inventory included the direct tailpipe emissions from construction equipment and vehicles. To date, there is neither a federal or tribal goal, nor a requirement for specific reductions in direct emissions of GHG in the action area. Possible future GHG reduction goals or requirements are not considered in this analysis. The combustion of diesel and fuels for non-road vehicles and equipment would result in formation and release of CO_2, CH_4, and nitrous oxide (N_2O). EPA emissions factors have been published by several sources for these species from internal combustion, non-road engines and vehicles, and these factors were used for the inventory calculations. These factors were used to calculate the hourly and Utility Project estimates of mass emission rates for each GHG constituent, and terms of metric tons of CO_2eq for each mobilization (MT CO_2eq /Mobilization). Table 4-2 lists the GHG emissions for the total duration of each mobilization and for the overall construction phase of the Utility Project along the planned utility corridors.

Table 4-2
Summary of Greenhouse Gas Emissions for the Utility Project Construction

Project Activity	CO_2 (metric tons)	CH_4		N_2O		Total CO_{2eq} (metric tons)
		Kilograms as CH_4	Metric Tons as CO_{2eq}[2]	Kilograms as N_2O	Metric Tons as CO_{2eq}[3]	
Utility Project Construction – Construction Equipment and Vehicles[1]	**Individual Mobilization Emissions (metric tons/mobilization period)**					
Initial Mobilization – 12 Months	2,617	148	3.7	66.8	19.9	2,641
Second Mobilization – 18 Months	4,496	252	6.3	114.0	34.1	4,536
Utility Project Construction – Commuter and Delivery[1]						
Initial Mobilization – 12 Months	515	28.9	0.7	13.1	3.9	520
Second Mobilization – 18 Months	1,714	37.2	2.4	17.0	13.0	1,730
Total Project Corridor Construction GHG Emissions (metric tons)	9,342	–	13.1	–	70.9	9,427

SOURCE: Emission factors for different categories of construction equipment and vehicles from SCAQMD 1993, 2008, for commuter vehicle and delivery truck categories emission factors from the CARB EMFAC 2011 Model (CARB 2013).
NOTES:
[1]Roster of construction equipment and vehicles as described by the Applicant for the two construction mobilizations. This roster is detailed in the Appendix E calculations.
[2]Ch$_4$ emissions are converted to CO_2eq by multiplying the estimated CH_4 emissions by the GWP of 25 for that species.
[3]Nitrous oxide emissions are converted to CO_2eq by multiplying the estimated N_2O emissions by the GWP of 298 for that species.

The GHGs other than CO_2 have a higher Global Warming Potential (GWP) due to their molecular structure. This factor is accounted for when converting the individual emission rates of the gases to metric tons of CO_{2e} per mobilization. For combustion-related species CH_4 and N_2O the GWPs are 25 and 298, respectively, relative to CO_2 (EPA 2014c).

The GHG emission factors used in the Utility Project emission inventory were based on an assumed 2016 vehicle population (South Coast Air Quality Management District [SCAQMD] 1993, 2008) and include operation of construction equipment and on-site vehicles. The Applicant provided estimates of expected corridor construction phase commuter vehicles and delivery truck emission factors (California Air and Resource Board [CARB] 2013). These factors were used to compile the overall emissions estimates in Table 4-2 for two construction phase mobilizations comprising this aspect of the Utility Project. It should be noted that the total CO_2eq emissions resulting from the both mobilizations comprising the Utility Project are well below the 25,000 MT/yr reference point that may warrant quantitative analysis. Further, the total construction project estimated CO_2eq emissions of 9,400 metric tons approximately equate to two-thirds of amount emitted by a typical coal-fired power plant in single day (http://www.epa.gov/cleanenergy/energy-resources/calculator.html). Appendix E provides the supporting GHG emission calculations based on the Applicant-prepared roster of construction equipment and vehicles.

4.2.1.1.2 Non-federal Connected Action South Project

4.2.1.1.2.1 Greenhouse Gas Effects

Emissions data for the construction and operation of the South Project are not available at the time of this study; 40 CFR 1502.22 provides guidance for disclosing unknown information. It is not known what quantity of GHG emissions would result from the South Project because it has not yet been fully designed and engineered. This information is unknown, and cannot be obtained, due to the fact that design and engineering of the South Project will change based on whether or not the BLM allows the Applicant to build one or more of the proposed utilities. The BLM believes this unknown information is not essential to a reasoned choice between alternatives because the South Project will proceed to full buildout regardless of the BLM's decision, and the BLM qualitatively knows that emissions under the No Action alternative from the South Project are generally going to be higher than under the Proposed Action alternative due to the need for the Applicant to generate their own electricity and utilize trucks to deliver water and product to and from the South Project. In addition, obtaining the unknown emissions quantifications from the South Project would be cost prohibitive because it would require the Applicant to design and engineer the entire South Project twice - once for the No Action and once for the Proposed Action alternatives. The relevance of the unknown emissions data is to disclose the full emissions impacts to air quality from the South Project. However, the BLM anticipates that this information will be generated by the Applicant and disclosed to the public by EPA after the South Project is fully designed and engineered because the South Project will be subject to the EPA's new source permitting process, which is required by the Clean Air Act and is functionally equivalent to NEPA. In lieu of this data, in the following sections the BLM has qualitatively discussed the anticipated impacts from the South Project and summarized existing scientific evidence and studies from which we formed and upon which we based our assumptions. Please note that BLM has quantified increased GHG emission impacts from the South Project whenever we could make reasonable assumptions for the increased truck traffic under the No Action Alternative.

During the planned operational life of approximately 30 years, the South Project would have substantial GHG emissions that may be higher than the 25,000 MT CO_2eq per year reference point identified in federal guidance for quantitative analysis (CEQ 2014), and would similarly rise above the threshold for annual reporting under the Mandatory Greenhouse Gas Reporting rule. Engineering information for these sources has not been developed to allow credible estimates for South Project GHG emissions. The availability of the corridor utilities to the Site will influence certain mining and mineral processing design considerations for the South Project, and this would affect the GHG emissions resulting from the South Project. The GHG emissions at the South Project may be reduced by implementation of mitigation measures. For example, since the South Project will conduct underground mining to extract some or all of the oil shale resource. Over the life of the Project, such mining methods are expected to have lower GHG emission levels per unit of production, because there is less use of vehicles compared to surface mining and subsequent surface reclamation. While it is appropriate to identify the nature of the future GHG sources, there is insufficient engineering data for the South Project at this time to quantify the GHG emissions. Also, as a connected action on private land, the South Project is not subject to BLM licensing and specific review under the NEPA process. As described below, the South Project is expected to be subject to an air permitting process in which GHG gas emissions will be quantified and reviewed.

It should be noted that the anticipated PSD/new source review permitting process for the South Project will be required to provide a comprehensive discussion and quantification of Project GHG emission sources. These calculations are now prescribed requirements for air permitting of a project that may exceed CO_2eq emissions thresholds for new major sources. The new source review analysis would ensure that projected GHG emissions and control measures are subjected to public review, and are examined in the context of then-current federal and state regulations. Without facility design information and corresponding emissions estimates it is not known with certainty that the major source/PSD permitting process will apply to South Project emissions of GHGs or other regulated air pollutants. Therefore, it cannot be guaranteed at this time that BACT will be required.

South Project Complex Greenhouse Gas Emissions Sources

Based on the Applicant's information provided describing the South Project, fuel combustion and oil shale mining operations would constitute the primary GHG emissions sources. Based on typical oil and gas mining and refining operations conducted in Wyoming and Utah, the general nature of the anticipated air emissions sources that might result from the oil shale development planned for the South Project can be further described (*Proposed Land Use Plan Amendments for Allocation of Oil Shale and Tar Sands Resources on Land Administered by the Bureau of Land Management in Colorado, Utah and Wyoming and Final Environmental Impact Statement* (BLM 2012g). Emissions of GHG constituents in the form of oil shale mine CH_4, tailpipe emissions of mining equipment, and upgrading operations such as those listed below would likely account for approximately 80 percent of those CO_2-equivalent emissions.

- **Surface Mining.** To the extent surface mining operations are conducted, GHG emissions would result from overburden removal, stockpiling of topsoil, use of explosives for removal of overburden and oil shale, and delivery of raw oil shale to the crusher units using loaders and haul dump trucks. As part of exposing and recovering the oil shale resource, CH_4 can be released from the active mine surface. Operation of engine-driven mining equipment would result in tailpipe emissions of GHG constituents. The South Project is also expected to conduct underground mining for a portion of the shale resource, and this method may reduce overall GHG emissions for the Project.
- **Shale Crushing and Retorts**. In typical operations, the raw shale is stockpiled and conveyed to primary and secondary crushers that are adjacent to the retorts. The shale retorts would preferably combust natural gas fuel to support operation at elevated temperatures (650 deg. F or higher), and would operate continuously. GHG emissions are constituents of the combustion products from fuel-burning equipment.
- **Shale Gas and Hydrogen Plants.** Flammable gases (e.g., CH_4, hydrogen) are a byproduct of shale retorting, and the general practice is to capture and treat these gases that are consumed on-site as supplemental fuel. The shale gas treatment and steam CH_4 reformer hydrogen plants are usually small GHG emissions sources themselves, and serve to mitigate GHG overall by recycling CH_4 recovered from oil shale upgrading.
- **Raw Shale Oil Upgrading**. The shale oil production plant at the South Project is expected to consist of: dewatering and filtering, conversion of sulfur-bearing compounds to hydrogen sulfide (H_2S) possibly followed by a Claus process or equivalent to produce salable elemental sulfur by-product, possible conversion of recovered nitrogen-bearing gases to salable ammonia gas, and hydrotreating of shale naphtha and distillates to produce the final oil product. Fuel combustion (preferably natural gas) and sulfur plant tail gas represent the GHG emissions sources for the shale oil upgrading facility.
- **Shale Oil Product Storage Tanks**. To support production of up to 50,000 barrels per day of shale oil product, the South Project will include a number of petroleum liquid storage tanks. These tanks are negligible GHG sources.
- **On-Site Power Generation**.–South Project and No Action Alternative South Project is expected to include some level of on-site power generation. Electrical generation equipment (yet to be selected for the South Project) comprising either steam boilers and/or combustion turbines, would have GHG emissions due to fuel combustion during construction and start-up. Once the industrial facility is in operation, the Applicant would have the cogeneration capability to produce enough

electric power to cover part of the facility's entire load (depending on the stage of development) with the facility planned to be a net exporter of electricity at full build-out.

During operation of the South Project fuel combustion for the shale retort operation and other fuel-burning equipment also would result in formation and release of GHGs, specifically CO_2, CH_4, and N_2O. In addition, the di-electric insulating gas used in the electrical switchyard equipment is sulfur hexafluoride (SF_6) is also a GHG constituent. Engineering information for these sources has not been developed to allow credible estimates for South Project GHG emissions. The availability of utilities to the site will influence certain mining and mineral processing design considerations for the South Project, and this would affect the GHG emissions resulting from the South Project.

South Project Complex Greenhouse Gas Effects

Connection of project-specific GHG emissions to GHG emission effects at the state, regional, or global level would have no context and is a relatively meaningless exercise. Although reasonable estimates for GHG emissions may be derived for a specific activity after engineering design, there is uncertainty in evaluating longer-term emissions levels and the relationship between GHG sources and sinks over a lengthy and uncertain timeframe. Since climate change effects resulting from GHG emissions are global in scale, there is no reliable way to quantify whether or to what extent local GHG emissions can contribute to the larger phenomenon. There has been no characterization of air quality related values that pertain to existing GHG conditions or climate change indirect effects that is specific to the region.

One available tool sometimes used to analyze effects relative to proposed projects is a life-cycle analysis (LCA). Briefly, this approach identifies the broad range of resource inputs and outputs that are related to a project and assigns a relative value or carbon cost to each component. The boundaries of the LCA can extend far from the project activities. To illustrate, if a project is to utilize a fleet of new trucks, then the carbon-related inputs to create those trucks can be considered in an LCA. In this manner, the airborne GHG emissions are but one component of an LCA. The LCA methodology attempts to connect in a more global sense the overall possible extent to which an action can have a cumulative GHG or carbon footprint effect. A complete analysis of this kind is beyond the scope of this study.

4.2.1.1.3 No Action Alternative – No Utility Project

Under the No Action Alternative, the planned utility corridors would not be constructed. This would avoid the GHG emissions described in Section 4.2.1.1, and the related potential direct and indirect effects.

4.2.1.1.3.1 No Action Alternative – Non-federal Connected Action South Project

The construction and operation of the South Project would be constructed under the No Action Alternative. Absent the approval to construct the Utility Project, alternative means would be necessary to supply fuel (and possibly water) to the South Project, and to ship products to market. These means, utilizing on-road truck transport of product, and liquid fuel (and possibly water) to the complex, would result in substantial additional GHG emissions on a continual basis through the life of the South Project.

Utilization of over-the-road tanker trucks under the No Action Alternative would result in quantifiable tailpipe GHG emissions. The tanker truck and truck driver commuting traffic GHG emissions under the No Action Alternative can be estimated based on preliminary information from the Applicant and several assumptions. However, the transport truck emissions are not the only additional long-term air emission sources under this alternative. The altered air emission sources under the No Action Alternative are described below:

- Product Delivery via Truck Transport:
  - Shipping the full build-out capacity of 50,000 barrels per day would be accomplished by a fleet of tanker trucks having either 172 barrel or 249 barrel capacity;
  - Trip frequency is approximately 8 trucks per hour, or up to 201 trucks per day (assuming 24 hour operation);
  - Assuming the ability to transfer the product load at the closest transport corridor location in Vernal, Utah (50 road-miles distant), the total truck vehicle miles traveled (VMT) is 20,100 miles per day;
  - Truck driver commuter travel VMT is approximately 40,200 miles per day, assuming 2 shifts per day and drivers' travel each day from Vernal, Utah.
- On-Site Electricity Generation Issues:
  - The overall power balance of the South Project is altered if the proposed 138 kV transmission line is not available.
  - As proposed, the South Project would be net power exporter (50 to 100 MW per hour). Absent the transmission line, the South Project would need to have higher base loads to consume the excess power, or may need to flare excess oil shale gases.
  - During construction, a number of diesel-fuel fired generators would need to be deployed for the full construction schedule of the South Project.
  - Use of diesel fuel has greater GHG emissions per unit of power produced.
- Bulk Fuel Delivery
  - On-road tanker trucks would deliver supplemental diesel fuel to operate equipment not fueled by recovered oil shale gases, in order to offset the fuel requirements that would have been met by pipeline natural gas under the Utility Project.
  - Under an optimistic scenario, bulk diesel fuel may be transported to the site in some of the product liquid tanker trucks, avoiding additional delivery truck VMT, but this measure cannot be committed until the logistics are developed.
  - Use of diesel fuel to offset natural gas results in higher GHG emissions per unit of energy delivered.

This projected increase in vehicle use will cause a related increase in local fuel supply requirements, increase in vehicle and roadway maintenance, and larger demand for workforce at the South Project. The added “carbon cost” of these additional inputs represents a potential adverse effect, even though the actual magnitude of the effect is not quantifiable.

Estimates of the added long-term additional GHG emissions related to on-road tanker truck traffic are summarized in Table 4-3. These were estimated for a combination of 179 and 249 barrel capacity tanker trucks, amounting to over 200 round trips per 24 hour period, corresponding to loading and off-loading of about 8 trucks per hour, year-round. The annual estimates of GHG emissions related to the increased tanker truck traffic are over five-times the total GHG emissions for utility corridor construction as shown in Table 4-2; and these annual emissions would occur for the life of the South Project.

Table 4-3
Additional Greenhouse Gas Emissions Related to Product Shipment Under the No Action Alternative

Project Activity	CO_2 (metric tons)	CH_4		N_2O	
		Kilograms as CH_4	Metric Tons as CO_{2eq}[2]	Kilograms as N_2O	Metric Tons as CO_{2eq}[2]
Product Shipment by On-Road Tanker Truck[1]	**Annual Emissions at Full Build-Out**				
Product Delivery Tanker Truck – Exhaust Emissions	34,490	1,163	29.1	878	261
Delivery Truck Driver Commute Vehicles - Exhaust Emissions	18,130	920	23.0	462	138
Added No Action Air Emissions Due to Product Shipment by Truck (metric tons CO_2eq/year)	52,620	–	52.1	–	399

NOTES:
[1]Roster of tanker trucks and commuter vehicles as estimated by the Applicant for daily operation of the South Project. This roster is detailed in the Appendix E calculations.
[2]CH_4 emissions are converted to CO_2eq by multiplying the estimated CH_4 emissions by the GWP of 25 for that species (EPA 2014c).
[3]Nitrous oxide emissions are converted to CO_2eq by multiplying the estimated N_2O emissions by the GWP of 298 for that species (EPA 2014c).
SOURCE: Emission factors for heavy-duty trucks and on-road vehicles from SCAQMD 2007.

For heavy-duty tanker trucks, tailpipe emissions were characterized using emissions factors for CO_2 and CH_4 published by the SCAQMD (2007). Similar factors are also available from this reference to characterize the representative population of passenger vehicles. These widely used factors were derived by SCAQMD for representative populations of vehicles in service for a specified future year. In this case, factors for the year 2016 population were used, which is conservative since the value decrease in future years as older vehicles are replaced by better-performing new vehicles.

4.2.1.2 Unavoidable Adverse Impacts

Applicant-committed measures, design features, and mitigation measures for the Utility Project that would reduce adverse impacts to this resource are included in Table 4-1. For the Utility Project and South Project construction, there would be short term and localized emissions of GHG that are unavoidable during the two mobilization periods. During the two construction mobilization periods for these corridors, of 12 and 18 months, respectively, these temporary emissions would be relatively small compared to total regional GHG emissions in the Uinta Basin (refer to Table 4-3).

In contrast, the No Action Alternative – Non-federal Connected Action South Project would have longer-term unavoidable and much larger GHG emissions due to the daily operation of bulk liquid fuel delivery and product shipment tanker trucks on regional roads. These increases have been listed in Table 4-3. Although it is possible to estimate a portion of the increased GHG emissions likely under the No Action Alternative, there is no reliable way to quantify whether or to what extent local GHG emissions can contribute to the larger-scale climate change phenomenon. Consequently, the global or regional-scale modeling of climate change effects cannot directly attribute the cause of such effects to a specific project, or to oil and gas sector activities in general.

4.2.1.3 Irreversible Commitments of Resources

There are no irreversible commitments of air quality resources for the Utility Project construction, primarily because GHG emissions are limited in magnitude and duration. The POD includes reclamation and revegetation of disturbed surface areas as the final activity during underground utility and transmission line construction. This measure would restore longer-term capacity for sequestration of carbon in vegetative matter.

The operation of the South Project facilities under the Proposed Action or No Action Alternative would result in increased GHG emissions throughout the operating life of the facility (projected to be 30 years). However, these emissions would cease when the oil shale resource is depleted. Further, the ongoing reclamation and re-vegetation of the closed mining areas would restore the carbon sequestration capability of the disturbed areas after mining activities have ceased, and this would avoid long-term irreversible effects on the regional GHG sources and sinks.

4.2.1.4 Relationship of Short-term Uses to Long-term Productivity

The short-term GHG emissions expected to occur as a result of construction of the Utility Project are not expected to result in adverse impacts on the long-term productivity of public land resources in the area. Further, the Project POD includes reclamation and revegetation of disturbed surface areas along the corridors that would restore the long-term carbon sequestration capability of the disturbed areas after construction.

The operation of the South Project under both the Proposed Action and No Action Alternative would result in longer-duration GHG emissions throughout the operating life of the South Project. However, these impacts would cease when the oil shale resource is depleted. Ongoing reclamation and re-vegetation of the closed mining areas as described in the POD for the South Project would restore the carbon sequestration productivity of the disturbed areas after mining activities have ceased.

4.2.2 Air Quality

4.2.2.1 Direct and Indirect Effects

Construction activities for the development or improvement of access roads comprise the primary source of air emissions for both the Utility Project and South Project. There are several types of emission sources: fugitive dust from earthmoving and site preparation, tailpipe exhaust from construction equipment and vehicles, and emissions from the commuter vehicles and delivery trucks traveling to and from the site. These air emissions sources can be quantified from available information regarding Utility Project construction.

The South Project oil shale mining and production complex would comprise another set of air emissions sources. While the necessary design information to quantify air emissions is not yet available, this analysis evaluates qualitatively the nature of anticipated emissions, as well as their effects.

4.2.2.1.1 Proposed Action – Utility Project

4.2.2.1.1.1 Project Construction Air Emission Sources

Dust emissions during the construction of the Utility Project would result from a variety of activities, including land clearing and excavation, road surface construction, and cut and fill operations (i.e., earth moving). Dust emissions can vary substantially from day-to-day depending on the level of activity, the specific operations, and the prevailing meteorological conditions. In addition, construction vehicle exhaust emissions would result from construction equipment and related vehicle traffic within the disturbed construction areas. Worker commute vehicles and delivery vehicle traffic would also contribute tailpipe emissions that may affect local air quality.

For purposes of the quantifying the air pollutant emission inventory for utility corridor construction, the following construction components were considered within two mobilizations:

- Initial mobilization (12 months projected duration):
  - Construction of water supply pipeline and pumping station, approximately 116 acres disturbed;
  - 138kV transmission line construction (Transmission Line No. 1, and portion of co-located Transmission Line No. 2) to the South Project site, approximately 320 acres disturbed; and,
  - Dragon Road improvements and paving, approximately 42 acres disturbed.
- Second mobilization (18 months projected duration):
  - Completion of 138kV transmission line and switchyard construction (Transmission Line No. 2) to South Project site, approximately 176 acres disturbed;
  - Construction of natural gas supply pipeline, approximately 53 acres disturbed; and
  - Construction of product delivery pipeline, approximately 68 acres disturbed.

To provide a conservative analysis, it was assumed that the entire roster of construction equipment in each category could be in service during a peak hour, and this is the basis for 1-hour maximum emissions presented in the construction mobilization inventories. In reality, only a portion of the equipment on-site would operate during a given hour or over the course of a day or longer periods. This is accounted for in the estimate of total dust emissions during the two mobilization activities.

4.2.2.1.1.2 Project Construction Fugitive Dust Sources

To quantify dust emissions from facility construction, an "emission factor" method is generally accepted by regulatory agencies. Emissions from normal earthmoving and materials handling sources are calculated by multiplying a suitable emission factor and the estimated total acres of land under active construction at a given time. An emission factor of 0.19 ton PM_{10}/acre-month was used to derive corridor construction emissions estimates for general construction activities, based on recent recommendations for construction in western states (WRAP 2006). This emission factor generally applies to "uncontrolled" conditions as it does not assume a particular set of mitigation measures, other than the typical range of soil moisture and silt content in western soils. The best management practices to be applied during the construction phase, comprising application of water and control of vehicle speeds, would act to reduce this emission level. The site preparation and earthmoving emission estimates are based on a control efficiency of 50 percent compared to the uncontrolled emission factor.

Emission estimates of particulate matter (PM) emissions for corridor construction activities associated with first and second mobilizations are presented in Table 4-4. Dust emissions from earthmoving consist primarily of PM_{10} and larger particle sizes. As described in the POD, the Applicant's practice would be for the active areas to be watered several times per work-day. In addition, the corridor construction mobilizations would implement reasonable control of vehicle speeds over unpaved roadways and within the corridor footprint to reduce creation of fugitive dust emissions.

Table 4-4
Summary of Criteria Pollutant Emissions for the Utility Project Construction

Project Activity	$PM_{2.5}$	PM_{10}	NO_X	CO	VOC	SO_2
Utility Corridor Construction – Initial Mobilization[1]	**Maximum Hourly Emissions (lbs/hr)[2]**					
Fugitive Dust from Construction Activity (e.g., earthmoving)[3]	79.0	380.0	–	–	–	–
Construction Equipment and Vehicles[4]	1.91	1.75	39.9	27.5	5.6	0.066
	Total Mobilization Emissions (Tons/mobilization period)[5]					
Fugitive Dust from Construction Activity (e.g., earthmoving)[4]	26.1	125.4				
Construction Equipment and Vehicles[4]	0.67	0.61	19.2	13.6	2.7	0.032

Table 4-4 Summary of Criteria Pollutant Emissions for the Utility Project Construction						
Project Activity	**$PM_{2.5}$**	**PM_{10}**	**NO_X**	**CO**	**VOC**	**SO_2**
Utility Corridor Construction – Second Mobilization[1]	**Maximum Hourly Emissions (lbs/hr)[2]**					
Fugitive Dust from Construction Activity (e.g., earthmoving)[3]	54.1	260.0	–	–	–	–
Construction Equipment and Vehicles[4]	1.36	1.25	28.3	20.0	4.2	0.047
Total Mobilization Emissions (Tons/mobilization period)[5]						
Fugitive Dust from Construction Activity (e.g., earthmoving)[3]	17.8	85.8	–	–	–	–
Construction Equipment and Vehicles[4]	1.11	1.21	34.2	28.4	5.2	0.055
Total Utility Project Air Emissions (Tons)	45.7	213.0	53.4	42.0	7.9	0.087

NOTES:
[1]Roster of construction equipment and vehicles as described by the Applicant for the two construction mobilizations. This roster is detailed in the Appendix E calculations.
[2]Hourly maximum emissions assume that the peak equipment roster could be in operation for the maximum case.
[3]Emission factor for construction activity from WRAP 2006.
[4]Equipment exhaust emission factors reflect a composite of equipment power ratings except as noted. Factors obtained from SCAQMD CEQA (California Environmental Quality Act) handbook (1993 [2008]), for 2016 fleet.
[5]Total mobilization emissions are based on the total unit-days estimated by the Applicant and up to a 10-hour work day.

A relatively small portion of the emitted particulate from earthmoving operations is within the smaller-diameter fraction referred to as $PM_{2.5}$, (aerodynamic diameter less than 2.5 micrometers), which is a regulated criteria air pollutant. Recent guidance from the EPA indicates that emissions of $PM_{2.5}$ are to be quantified as a fraction of the total PM_{10} emissions. The ratio of $PM_{2.5}$ to PM_{10} emissions for construction dust emissions was taken as 0.208, based on documentation in EPA Document AP-42 and in other publications (EPA 1995, WRAP 2006).

4.2.2.1.1.3 Construction Equipment Gaseous Exhaust Emissions

Operation of diesel-fueled construction equipment and on-site vehicles generates emissions of gaseous pollutants including NO_X, CO, and VOCs. The SCAQMD has compiled a set of emissions factors for diesel-engine powered construction equipment published as part of the SCAQMD CEQA Handbook (SCAQMD 1993, 2008) found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/off-road-mobile-source-emission-factors. While the Proposed Action would occur in Utah, not California, and, therefore, no compliance with CEQA is required or implied, the SCAQMD reference provides a readily available means of considering these emissions.

For this analysis, these factors were obtained for the 2016 operating year to assemble the inventory of emission rates for equipment exhaust sources. For current equipment, the SCAQMD factors assume Tier II engine performance and use of ultra-low sulfur diesel fuels. These are reasonable assumptions for the Utility Project fleet of vehicles and likely sources of purchased diesel fuel. The SCAQMD factors are expressed as a pound per hour emission rate per pollutant, for representative profiles of different categories of equipment during the operating year scenario.

To conservatively estimate the potential emissions of gaseous pollutants, these emissions factors were applied to the highest estimated number of vehicles and equipment expected to be present during each corridor construction mobilization. In a practical sense, only a portion of the entire roster would operate during any given hour of the full 10-hour daily construction period. The estimates presented here assume conservatively that all equipment in each category could operate for the peak hourly emissions estimates. For the full mobilization period, it is assumed that up to 70 percent of available equipment may be in operation on a longer-term average basis. Resulting emissions estimates of gaseous pollutants for each mobilization are presented in Table 4-4. Due to the highly conservative assumptions involved, the actual construction phase emissions are expected to be significantly below these levels.

4.2.2.1.1.4 Summary of Utility Project Construction Air Emissions

Corridor construction emission estimates, for peak hours and totals for the two mobilizations, are provided in Table 4-4 and Table 4-5. These emission rates for regulated air pollutants represent the Project construction for the utility corridors considering on-site construction equipment and vehicles, and on-road commuter vehicles and delivery trucks. Even with conservative emissions assumptions, the Project utility corridor emissions are well below both PSD and Title V major source thresholds.

Table 4-5
Summary of Criteria Pollutant Emissions for the Utility Project Construction On-Road Vehicles

Project Activity	PM_{10}	NO_X	CO	VOC	SO_2
Utility Corridor Construction – Initial Mobilization[1]	**Estimated Total Emissions (Tons/Mobilization)[2]**				
Commuter Vehicles[3]	0.23	1.5	0.2	0.04	0.003
Delivery Trucks[3]	0.02	0.32	0.06	0.009	0.0009
Utility Corridor Construction – Second Mobilization[1]	**Estimated Total Emissions (Tons/Mobilization)[2]**				
Commuter Vehicles[3]	0.75	5.03	0.68	0.15	0.01
Delivery Trucks[3]	0.04	1.11	0.20	0.032	0.003
Total Proposed Corridor Construction On-Road Vehicles (Tons)	1.04	7.96	1.14	0.23	0.017

NOTES:
[1]Roster of construction equipment and vehicles as described by the Applicant for the two construction mobilizations. This roster is detailed in the Appendix E calculations.
[2]Total mobilization emissions are based on the total commuter or delivery truck trips per day for each category as estimated by the Applicant, and up to a 40-mile one way trip.
[3]Emission factors for on-road vehicles include paved road dust emissions from AP-42, Section 13.2.1. Equipment exhaust emission factors reflect composite heavy or light duty trucks from CARB EMFAC Model 2011.

4.2.2.1.2 On Road Vehicle Travel Emissions

Emissions resulting from delivery vehicles and construction worker commute travel have been quantified for the Project corridor construction. Emissions factors for these mobile sources were obtained from EPA Document AP-42, Section 13.2.1, for paved road dust emissions (EPA 1995), and the California Air Resource Board (CARB) EMFAC model (CARB 2013) for medium and heavy-duty delivery trucks. The EMFAC model factors are expressed as a pound per hour emission rate per pollutant, for representative profiles of different categories of vehicles during the operating year scenario. The Applicant estimates that between 35 – 50 construction commuters for each mobilization, and up to 7 delivery trucks per day for each construction activity per day. The resulting emissions for on-road vehicles during Project corridor construction are summarized in Table 4-5.

4.2.2.1.3 Utility Project Direct and Indirect Air Quality Effects

The Utility Project construction activities would result in localized and temporary direct effects due to emissions of fugitive dust (PM_{10} and $PM_{2.5}$), and combustion products that are contained in equipment tailpipe emissions. These effects are roughly proportional to the acreage involved in active construction at a given time and location. The extent of the air quality direct effects tends to move because the active construction zones are relocated as the corridor sections are completed. Note that in Table 4-4 that the maximum hourly and mobilization total air emissions are roughly comparable for the two mobilizations of construction. This also would have the effect of spreading the Utility Project emissions through time and across different locations along the Utility Project corridor.

In comparison to the scope of the oil and gas extraction industry emissions in Uintah County, and overall air pollutant emissions county-wide, the Utility Project represents a small percentage. Based on data compiled by the UDEQ for calendar year 2011 (the most recent year reported), oil and gas industry and county-wide air emission totals are listed in Table 4-6. Existing development of natural gas and petroleum oil fields in Uintah County, and surrounding areas is comprised of well-head facilities with supporting electric-generators, produced water separators, heaters, dehydrators, and pipelines.

Comparing the magnitude of total emissions for the Project corridor construction to current emission inventory data, it is apparent that the proposed corridor construction activity (spread over 2½ years) constitutes a very small portion of regional totals. Of the key ozone precursors, NO_X and VOC, the corridor construction would contribute are less than one-tenth of one percent of the existing county-wide totals for 2011. On this basis, both the direct and indirect effects of construction of the Utility Project could be judged to be insignificant.

Table 4-6
Comparison of Project Emissions to County Oil and Gas Sector and Total Emissions

Pollutant	Existing Uintah County Emissions (Tons/yr)			Utility Project Total Emissions (Tons)[4]	Utility Project Emissions as Percentages[5]	
	Oil and Gas Sector[1]	Bonanza Power Plant[2]	Total Uintah County[3]		Oil and Gas Emissions (percent)	Total Uinta County Emissions (percent)
$PM_{2.5}$	572	433	1,108	45.7	8.0	4.1
PM_{10}	3,450	No data reported	4,260	214.0	6.2	5.0
NO_X	10,033	6,590	18,351	61.4	0.5	0.032
CO	2,072	No data reported	14,322	43.1	2.0	0.029
VOC	76,502	46	78,469	8.1	0.010	0.010
SO_2	209	1,178	1,387	0.104	0.042	0.0063

NOTES:
[1]UDAQ 2011 Statewide Emission Inventory for CO, PM $_{2.5}$ and PM_{10}, UBWOS 2013, Chapter 9, Table 9-2, for other pollutants.
[2]UBWOS 2013 Chap 9, Table 9-2 for 2011.
[3]UDAQ 2011 Statewide Emission Inventory for CO, PM2.5 and PM10; other pollutants from UBWOS 2013 Chapter 9, Table 9-2, excluding biogenic sources.
[4]Total utility corridor construction equipment emissions for the Utility Project, from Table 4-4 plus on-road vehicle emissions from Table 4-5.
[5]The Project corridor construction emissions converted to a percentage of either the 2011 oil and gas sector emissions, or total reported Uintah County emissions for 2011.

4.2.2.1.3.1 Non-federal Connected Action South Project

Emissions data for the construction and operation of the South Project are not available at the time of this study; 40 CFR 1502.22 provides guidance for disclosing unknown information. For this project, it is unknown what the quantity of criteria pollutant emissions would result from the South Project because it has not yet been fully designed and engineered. This information is unknown, and cannot be obtained, due to the fact that design and engineering of the South Project will change based on whether or not the BLM allows the Applicant to build one or more of the proposed utilities. The BLM believes this unknown information is not essential to a reasoned choice between alternatives because the South Project will proceed to full buildout regardless of the BLM's decision, and the BLM qualitatively knows that emissions under the No Action Alternative from the South Project are generally going to be higher than under the Proposed Action alternative due to the need for the Applicant to generate their own electricity and utilize trucks to deliver water and product to and from the South Project. In addition, obtaining the unknown emissions quantifications from the South Project would be cost prohibitive because it would require the Applicant to design and engineer the entire South Project twice - once for the No Action and once for the Proposed Action alternatives. The relevance of the unknown emissions data is to disclose the full emissions impacts to air quality from the South Project. However, the BLM anticipates that this information will be generated by the Applicant and disclosed to the public by EPA after the South Project is fully designed and engineered and before it is permitted by UDOGM because the South Project will be subject to the EPA's new source permitting process, which is required by the Clean Air Act and is functionally equivalent to NEPA. In lieu of this data, in the following sections the BLM has qualitatively discussed the anticipated impacts from the South Project and summarized existing scientific evidence and studies from which we formed and upon which we based our assumptions. Please note that where possible, the BLM has quantified increased criteria pollutant emission impacts from the South Project using reasonable assumptions for the increased truck traffic under the No Action Alternative.

A sufficient level of engineering design to support an emissions inventory is not anticipated to be completed until after the utility corridor NEPA analysis, because the availability or absence of utilities as described in the Utility Project will influence certain mining and mineral processing design considerations. A general description of the types of emissions sources that are expected to be present at the South Project is provided in the next sub-section.

Although air pollutant emissions cannot be quantified at this point for the South Project, this facility is expected to constitute a major source of air emissions as defined by federal regulations. Consequently, the facility will apply for a CAA PSD permit from EPA Region 8. This permit will establish the applicable regulatory requirements that will limit emissions, mandate specific operating standards and work practices, and provide for record keeping and periodic reporting. Further, the air emissions of the South Project facilities will be subject to BACT assessments as part of the new source review permitting process. These BACT assessments will allow EPA to include in the South Project permit various emission limits for stationary sources using control options corresponding to best-demonstrated technologies, with consideration of economic, environmental, and energy consumption factors.

The new source review process must also include a comprehensive air dispersion modeling analysis to demonstrate that operation of the South Project will not result in an exceedance of a NAAQS or a Class I/Class II PSD Increment (refer to Table 3-2). The increment analysis must include the existing background conditions for air quality, and will therefore evaluate whether the South Project can be accommodated without creating adverse air quality impacts. Another aspect of the modeling analysis will be an assessment of the potential for the project to cause visibility impacts in pristine Class I areas in the region. These detailed modeling assessments are prescribed requirements for a new project and will ensure that adequate air emission controls are adopted in the design of the South Project facilities.

4.2.2.1.3.2 South Project Complex Air Emissions Sources

Fuel combustion and oil shale mining operations constitute the primary air emissions sources related to the South Project. Based on typical oil and gas mining and refining operations conducted in Wyoming and Utah, the general nature of the anticipated air emissions sources that might result from the development of oil shale resources planned for the South Project can be identified (BLM 2012b):

- Surface Mining – operations causing air emissions would include overburden removal, stockpiling of topsoil, use of explosives for removal of overburden and oil shale, and delivery of raw oil shale to the crusher units using loaders and haul dump trucks. The air pollutants emitted would comprise fugitive dust, equipment tailpipe emissions, and VOCs emitted from surface shale mining. Fugitive emissions of some HAP species (e.g., benzene, formaldehyde, toluene, xylene, and n-hexane) are associated with oil and gas development, and may be released in smaller quantities during the mining of oil shale. The South Project is also expected to include underground mining for a portion of the shale resource, and this substantially reduces dust emissions during extraction of the raw oil shale.

- Shale Crushing and Retorts – In typical operations, the raw shale is stockpiled and conveyed to primary and secondary crushers that are adjacent to the retorts. The shale retorts will preferably combust natural gas fuel to support operation at elevated temperatures (650 deg. F or higher), and would operate continuously. As a result of retorting the raw oil shale, there can be limited emissions of VOC and some HAP species (e.g., benzene, formaldehyde, toluene, xylene, and n-hexane). Diesel fuel is an alternative for retort operation, and this fuel may be considered as part of the No Action Alternative. Emissions are combustion products from fuel-burning equipment and fugitive VOC from the material handling and retort processes.
- Shale Gas and Hydrogen Plants - Flammable gases (e.g., CH_4, hydrogen) are a byproduct of shale retorting, and the general practice is to capture and treat these gases that are consumed on-site as supplemental fuel. The shale gas treatment and steam CH_4 reformer hydrogen plants are usually small air emissions sources.
- Raw Shale Oil Upgrading – The shale oil production plant at the South Project is expected to consist of: dewatering and filtering, conversion of sulfur-bearing compounds to hydrogen sulfide (H_2S) followed by a Claus process or equivalent to produce salable elemental sulfur by-product, conversion of nitrogen-bearing compounds to salable ammonia gas, and hydrotreating of shale naphtha and distillates to produce the final oil product. Fuel combustion (preferably natural gas) and sulfur plant tail gas represent the primary air emissions sources for the shale oil production plant. To the extent practical, the use of external fuel inputs will be offset by the combustion of recovered shale gases.
- Shale Oil Product Storage Tanks – To support production of up to 50,000 barrels per day of shale oil product, the South Project will include a number of petroleum liquid storage tanks. The operation of these tanks and emissions of VOCs will be similar to, and regulated in the same manner as, petroleum liquid storage tanks at conventional refineries.
- On-Site Power Generation – The South Project is expected to include some level of on-site power generation. Electrical generation equipment (yet to be selected for the South Project) comprising either steam boilers and/or combustion turbines, will have air emissions due to fuel combustion. In addition to the conventional combustion product pollutants, NO_X, CO, VOC, SO_2 and PM, there will be relative trace emissions of HAP that represent incomplete combustion (e.g., formaldehyde, n-hexane, and ethylbenzene). The South Project will be a net exporter of electricity, as the produced oil shale gases will support more generation capacity than can be used by the equipment at the complex. For generation equipment, the implementation of BACT and federal new source performance standards as part of new source review PSD permitting will impose limits on air emissions.

4.2.2.1.3.3 South Project Complex Air Quality Effects

The surface mining activities at the South Project would result in localized effects due to emissions of fugitive dust (PM_{10} and $PM_{2.5}$), and combustion products that are contained in equipment tailpipe emissions. These effects are generally transient, and roughly proportional to the acreage involved in active mining at a given time and location. The extent of air quality impacts will also tend to move as the active mining area is relocated during the life of the project.

More widespread and dispersed impacts could potentially occur due to oil shale handling, processing, and upgrading. These impacts would be the result of South Project emissions of NO_X, CO, VOC, PM_{10}\$PM_{2.5}$, and SO_2 from the combustion of fuel, sulfur plant tail gas treatment, and other lesser sources. Air quality effects would include increases in the local and regional ambient air concentrations of these pollutants. Other effects would be the contribution of these project emissions to regional visibility impacts (caused by formation of secondary aerosols) and to sulfur and nitrogen deposition. Each of these potential effects would be quantitatively assessed during the new source review permitting process for the South Project. Part of a PSD permitting evaluation for a new major source is a comprehensive dispersion modeling analysis, which must conform to accepted procedures developed by the EPA. As a prerequisite to obtaining the PSD construction permit, the modeling analysis must demonstrate that the air emission controls included in the South Project facilities are sufficient to avoid adverse air quality impacts.

A recognized indirect air quality effect of oil shale and tar sands development in the region is the potential for airborne dusts to deposit on snow-covered ground. By reducing the reflection of sunlight, dust deposition tends to increase snow melt which can decrease snow cover and contributes to earlier spring snow melt.

Recently, research efforts have focused on the trends in ground-level ozone in the Uinta Basin. It is postulated that the observed increase in ozone formation during the winter months may be an indirect effect of expanding gas and oil extraction in the larger region. This potential effect is discussed in more detail in the following section.

4.2.2.1.3.4 Indirect Regional Air Quality Effects – Ozone

Ground level ozone (O_3) is considered a criteria pollutant under federal and state regulations, with a specific NAAQS to define attainment and non-attainment areas nationwide. The construction and the operation of the South Project represent emission sources of ozone precursors. In particular, the oil shale retorting, the refining/upgrading operations, and on-site power generation will result in emissions of ozone precursors over the project operating life.

Typically, ozone pollution is most prevalent in the summer months in urban and suburban areas. It forms during daily, diurnal patterns when sunlight-triggered chemical reactions create O_3 from nitrogen oxides (NOx) and VOCs. The 2008 federal health-based NAAQS set a threshold level of 75 parts per billion (ppb) averaged over 8 hours to define those areas that are in non-attainment of the standard. The EPA has more recently proposed tightening that limit to 70 or 65 ppb.

The Uinta Basin experiences a counter-intuitive phenomenon, with monitored winter ozone levels reaching as high as 160 ppb, as measured in 2013. By comparison, during the relatively warmer winter of 2012, ozone levels were far lower. Researchers have identified the combination of conditions that apparently cause high-ozone episodes during the winter. First, in low-lying geographic basins such as the Uinta Basin, there is a strong tendency for low-level atmospheric inversions. Such conditions trap cold air and the ozone precursor pollutants released from oil and gas operations near the Earth's surface. Second, the ozone episodes coincide with a high degree of snow coverage on the basin floor. As sunlight reflects off bright snow back into the low-level, stable atmosphere, the effectiveness of even the reduced winter sunlight is increased in promoting ozone production. In addition, the snow cover also prevents the ozone from being destroyed by the deposition and absorption into the ground, keeping local levels elevated.

Longer-term projections of this phenomenon are the objective of modeling conducted as part of the Utah Air Resource Management Strategy (ARMS) (AECOM 2014). This study employs atmospheric photo-chemical modeling of baseline ozone conditions and projected future conditions in the Uinta Basin. In this manner, ARMS modeling attempts to account for the effects on annual ozone concentration cycles as a result of future growth in ozone precursor emissions from regional sources. The South Project facilities will be sources of ozone precursors, due to the operation of fuel-burning stationary equipment and vehicles. To some extent, added precursor emissions may contribute incrementally to the winter ozone concentrations, and may be considered an indirect effect of the South Project.

While the South Project emissions have not been specifically incorporated into the ARMS future emission inventories, the ARMS assessment does consider a projected emissions inventory for the year 2021. Based on assumed trends in development, Uinta Basin annual emissions of NO_X were projected to increase by 58 percent, accompanied by a 26 percent increase in VOC emissions, compared to the 2010 base year inventory (AECOM 2014, Section 2.5). These increased future emissions in the ARMS assessment were considered to account for the contributions from new oil and gas development, such as the South Project. Results from the ARMS assessment compare predicted winter and non-winter ozone concentrations for the 2010 base year and 2021 future scenarios (AECOM 2014, Sections 3.3 to 3.5), The modeled impacts for the 2021 scenario on future winter ozone concentrations were found to be relatively small, with projected Uinta Basin and regional Class I area 8-hour average concentrations either unchanged or slightly reduced.

As a new source of NO_X and VOC emissions, the operation of the South Project may have some contributory effect on the current winter ozone episodes. While specific emissions data associated with the South Project cannot be developed at this time, the general nature of the project's contribution to the winter ozone phenomenon can be described in the context of other precursor emissions in the region. Table 4-6 presents the most recent reported (calendar year 2011) emissions inventory of the existing sources in Uintah County. Overall the South Project contributes 50,000 barrels of SVO per day in a region that now produces over 20 million barrels of conventionally extracted oil per year (UBWOS 2014).

4.2.2.1.4 No Action Alternative – No Utility Project

Under the No Action Alternative the planned utility corridors would not be constructed. This would avoid the air pollutant emissions described in Section 4.3.3.1, and the related direct and indirect effects.

4.2.2.1.5 No Action Alternative – Non-federal Connected Action South Project

The construction and operation of the South Project would take place under the No Action Alternative. Absent the transmission line and pipelines in the Utility Project, several means would be necessary to supply fuel (and possibly water) to the South Project, and to ship products to market. These measures, utilizing on-road truck transport of product, and liquid fuel (and possibly water) to the complex, would have substantial air quality direct and indirect impacts on a continual basis through the life of the project.

Utilization of over-the-road tanker trucks under the No Action Alternative would result in tailpipe emissions and fugitive dust from roadway travel. The long-term air emissions due to increased tanker traffic increase associated with the development and operation of the South Project would likely contribute, to a greater degree, to the trend in the Uintah Basin for increased wintertime ozone concentrations. The additional emissions due to tanker truck and truck driver commuting traffic can be estimated, using several assumptions. However, the transport truck emissions are not the only additional long-term air emission sources under the No Action Alternative. The altered air emission sources under this alternative are described below:

- Product Delivery via Truck Transport:
    - Shipping the full build-out capacity of 50,000 barrels per day would be accomplished by a fleet of trucks having either 172 barrel or 249 barrel capacity;
    - Trip frequency is approximately 8 trucks per hour, or up to 201 trucks per day (assuming 24 hour operation);

- Assuming the ability to transfer the product load at the closest transport corridor location in Vernal, Utah (50 miles distant), the total truck VMT is 20,100 miles per day;
- Truck driver commuter travel VMT is approximately 40,200 miles per day, assuming 2 shifts per day and drivers travel each day from Vernal, Utah.

▪ On-Site Electricity Generation Issues:

- The overall power balance of the South Project is altered if the proposed 138kV transmission line is not available.
- As proposed, the South Project would be net power exporter (50 to 100 MW per hour); absent the transmission line the project would need to have higher parasitic loads to consume the excess, or may need to flare excess oil shale gases.
- During construction, a number of diesel-fuel fired generators would need to be deployed for the full construction schedule of the South Project.

▪ Bulk Fuel Delivery

- On-road tanker trucks would deliver sufficient diesel fuel to operate equipment not fueled by recovered oil shale gases, to meet the fuel requirements that would have been met by pipeline natural gas under the Utility Project.
- Under the most optimistic scenario, bulk diesel fuel may be transported in some of the product liquid tanker trucks, avoiding additional delivery truck VMT, but this measure cannot be committed until the logistics are developed.
- Estimates of the added long-term additional emissions related to on-road tanker truck traffic are summarized in Table 4-7. These were estimated for a combination of 179 and 249 barrel capacity tanker trucks, amounting to over 200 round trips per 24 hour period, corresponding to loading and off-loading of about 8 trucks per hour, year-round.
- The emissions factors used to estimate the vehicle emissions were obtained from EPA Document AP-42 (Section 13.2.1) for fugitive dust emissions from paved road vehicles (assuming the unimproved Dragon Road can be described as a paved road over the project life). For heavy-duty tanker trucks, tailpipe emissions including brake and tire wear were characterized using emissions factors published by the SCAQMD (2007). Similar factors are also available that characterize the representative population of passenger vehicles. These widely used factors were derived by SCAQMD for representative populations of vehicles in service for a specified future year. In this case, factors for the year 2016 population were used, which is conservative since the value decrease in future years as older vehicles are replaced by better-performing new vehicles.
- The direct and indirect effects of the large volume of vehicle traffic may be significant. As listed in Table 4-7, the annual emissions of particulate matter (PM10/PM2.5) and for ozone precursors (NO_X and VOC) are substantial for the additional product shipment traffic. Modeling to quantify the potential ground level concentration effects or contribution to ozone formation is not available at this time. However, these emissions and nature of the impacts would be of similar nature to those for operation of the South Project equipment. As mobile sources, the impacts are somewhat dispersed because the emissions occur over at least 50 miles of roadway between the South Project and the nearest product transloading facility.

Table 4-7
Summary of Product Shipment Pollutant Emissions for the No Action Alternative

Project Activity	$PM_{2.5}$	PM_{10}	NO_X	CO	VOC	SO_2
Product Shipment by On-Road Tanker Truck[1]	**Annual Emissions at Full Build-Out (tons/yr)**					
Fugitive Road Dust from On-Road Trucks and Commute Vehicles[2]	17.5	71.3				
Product Delivery Tanker Truck – Exhaust Emissions[3]	6.7	5.9	69.2	25.9	5.9	0.14
Delivery Truck Driver Commute Vehicles - Exhaust Emissions[3]	0.69	0.45	4.08	42.3	4.6	0.08
Added No Action Alternative Air Emissions Due to Product Shipment by Truck (Tons/yr)	24.9	77.6	73.3	68.2	10.5	0.22

NOTES:
[1]Number of on-road product shipment tanker trucks based on Applicant estimates for total vehicle miles necessary to convey 50,000 BBD capacity of the South Project, and for truck driver commute travel. This calculation is detailed in the Appendix E.
[2]Fugitive road dust emissions estimated for paved road travel of tanker trucks and commuter vehicles, based on EPA Document AP-42, Section 13.2.1 (EPA 1995).
[3]Emission factors on-road vehicle exhaust pollutants reflect composite heavy or light duty trucks from SCAQMD 2007.

4.2.2.2 Unavoidable Adverse Impacts

For the Utility Project construction, there will be short term and localized air quality effects that are unavoidable during the two mobilization periods. During the two construction mobilization periods for these corridors, of 12 and 18 months, respectively, there will be temporary increases in local emissions of PM due to earthmoving and similar operations. There will also be temporary emissions of tailpipe exhaust pollutants from operation of corridor construction equipment and vehicles. These emissions have been summarized in Table 4-4. To the extent that unavoidable impacts could be attributed to this level of construction emissions, the duration of such impacts will cease after the second mobilization activities are complete.

The operation of the South Project facilities under either the Proposed Action or No Action Alternative would result in increased pollutant emissions throughout the operating life of the facility. However, these emissions would cease when the oil shale resource is depleted. Potential air quality effects would be quantitatively assessed during the new source review permitting process for the South Project. Part of a PSD permitting evaluation for a new major source is a comprehensive dispersion modeling analysis, which must conform to accepted procedures developed by the EPA. As a prerequisite to obtaining the PSD construction permit, the modeling analysis must demonstrate that the air emission controls included in the South Project facilities are sufficient to avoid adverse air quality impacts.

The occurrence of elevated ambient ozone concentrations has been observed in the Uinta Basin, as discussed in Section 4.2.2.1.3.3. Longer-term projections of this phenomenon are the objective of modeling conducted as part of the Utah ARMS (BLM 2014). This study employs atmospheric photo-chemical modeling of baseline ozone conditions and projected future conditions in the Uinta Basin. In this manner, ARMS modeling attempts to account for the effects on annual ozone concentration cycles as a result of future growth in ozone precursor emissions from regional sources. The South Project facilities will be sources of ozone precursors, due to the operation of fuel-burning stationary equipment and vehicles. The future South Project emissions have not been incorporated into ARMS, as there is no quantitative information on these emissions. However, it would be suitable to add the South Project emissions to the ARMS platform when credible quantitative data is available.

No Action Alternative – Non-federal Connected Action South Project would have additional, longer-term unavoidable air quality impacts due to the daily operation of delivery and product shipment vehicles on regional roads. As mobile sources, the additional traffic would not typically be subject to public review during the new source review air permitting process. Table 4-6 lists the additional criteria pollutant emissions resulting from the level of tanker truck and workforce travel necessary to accommodate the South Project operation, absent the utility corridors that are proposed in the Utility Project. The additional truck traffic may also affect the future surface condition of Dragon Road. In Table 4-7, fugitive dust emissions are estimated for truck traffic on a road in good condition. These may be underestimated if the surface of Dragon Road deteriorates, increasing the potential for dust generation.

4.2.2.3 Irreversible Commitments of Resources

There are no irreversible commitments of air quality resources for the Utility Project construction, generally because air pollutant emissions are limited in extent and duration. The POD includes a decrease in activities to maintenance level and reclamation and revegetation of disturbed surface areas as the final activity during underground utility and transmission line construction.

Operation of the South Project, considered as a non-federal connected action, under both the Proposed Action and No Action Alternative would result in irretrievable air pollutant emissions throughout the operating life of the facility. However, these emissions would cease when the oil shale resource is depleted or no longer economic to produce.

4.2.2.4 Relationship of Short-term Uses to Long-term Productivity

The short-term air quality impacts expected to occur as a result of construction of the Utility Project are not expected to result in adverse impacts on the long-term productivity of public land resources in the area. The Utility Project provides an economic benefit that offsets the short-term and localized air pollutant emissions due to construction. Further, the POD includes a decrease in activities to maintenance level and reclamation and revegetation of disturbed surface areas that would reduce the fugitive emissions after construction. The development of the Utility Project does not affect the long-term productivity of the area with respect to air quality resources.

Operation of the South Project, considered as a non-federal connected action, under both the Proposed Action and No Action Alternative would result in longer-duration air emissions throughout the operating life of the facility. However, these impacts would cease when the oil shale resource is depleted or no longer economic to produce, and thus the operation of the entire project cannot affect longer-term air quality in the region. Ongoing reclamation and revegetation of the closed mining areas will tend to restore the environmental conditions at the site, and mitigate effects on the long-term productivity of the area.

4.2.3 Soil Resources

4.2.3.1 Direct and Indirect Effects

4.2.3.1.1 Proposed Action – Utility Project

A total of 14 soil types could be subject to direct impacts associated with construction of the Utility Project (Table 4-8). The potential disturbance for each soil type varies between less than 0.1 acres to 312 acres. Potential direct impacts on these soil types in the Utility Project rights-of-way and access roads would be direct and permanent associated with ground-disturbing activities during construction of the tower locations, pipelines, associated ancillary facilities, and access roads. These impacts would include: vegetation clearing, grading, and contouring that can affect vegetation and soil structure; accelerated erosion in areas where the land surface has been altered; compaction by vehicles or heavy equipment, reduced infiltration, increased surface runoff, and decrease soil productivity; and loss of soils in previously undisturbed areas converted to temporary access roads. During excavation of the trench along the entire pipeline, the subsoil would be removed and stockpiled separate from the topsoil and replaced in the proper order, refer to Table 4-1.

Table 4-8 Soil Resources and Erosion Factors for the Utility Project			
Soil Type	**Water Erosion**	**Wind Erosion**	**Acreage**
Badland-Rock outcrop complex, 1 to 100 percent slopes	Moderate	Moderate	0.8
Badland-Tipperary Association, 1 to 8 percent slopes	Low	Moderate	29.1
Badland-Walknolls-Rock Outcrop Complex, 50 to 90 percent slopes	Moderate	Moderate	0.8
Cadrina Association, 2 to 25 percent slopes	Low	Low	57.3
Gilston-Muff-Cadrina, cool complex, 1 to 25 percent slopes	High	Moderate	63.78
Green River-Fluvaquents complex, 0 to 2 percent slopes	Low	Moderate	2.3
Jenrid-Eghelm complex, 0 to 3 percent slopes	Low	Moderate	4.7
Pherson-Hickerson complex, 1 to 8 percent slopes	Low	Low	9.0
Shotnick-Ioka complex, 4 to 25 percent slopes	Moderate	High	0.1
Solirec-Abracon-Begay complex, 2 to 25 percent slopes	Low	Moderate	0.3
Turzo complex, 2 to 4 percent slopes	Low	Moderate	18.3
Walknolls-Bullpen association, 20 25 percent slopes	Low	Low	143.8
Walknolls-Gilston association, 2 to 25 percent slopes	Low	Low	311.6
Walknolls very channery loam, 25 to 50 percent slopes	Moderate	Low	142.8

4.2.3.1.1.1 Soil Contamination

Sources of potential soil contamination include leaks, breakage, or spills of natural gas condensate liquids pipeline and oil product pipeline, along with construction related equipment gas or oil spills and leaks. To reduce the potential for hydrocarbon contamination of soils, the gas line and oil product pipeline would be designed to minimize the potential for leaks and spills. Implementation of the project SPCC plan (Appendix F of the POD) would minimize the risk of spills by providing safeguards against spills and detailing reporting and cleanup measures to be taken in the event of a spill. The potential for impacts to soils from spills is considered to be minor.

4.2.3.1.1.2 Destruction of Biological Soil Crusts

Mapping of Biological Soil Crusts (BSCs) has not been performed in the Utility Project study area. However, based upon the physical and biological characteristics of the existing soils, BSCs could occur. BSCs are commonly associated with pinyon-juniper woodlands and sagebrush communities, both of which would be disturbed under the Utility Project. BSCs are vulnerable to vehicle traffic and pedestrian traffic. The fibers that compose the tensile strength of BSCs are weak in comparison to the compressional strength placed on the crusts by machinery, human footprints, big game, and livestock. The impact of a given surface disturbance on BSCs depends upon its severity, frequency, timing, and type, as well as the weather conditions during and after the disturbance (Belnap et al. 2001). BSCs occurring in the project area have been largely disturbed by previous oil and gas development as well as livestock grazing. Surface disturbances associated with the Utility Project could add to these disturbances by breaking, overturning, and burying soil crusts to various degrees (Belnap et al. 2001).

Indirect impacts on soil types would be increased soil erosion as a result of ground disturbance; increased turbidity in surface water; and loss of soil productivity resulting from increased soil erosion. Drainage along roads may contribute to additional soil erosion as surface runoff is channeled into existing drainages.

4.2.3.1.2 Non-federal Connected Action South Project

A total of 8 soil types would be subject to the same indirect impacts associated with construction of the South Project (Table 4-9). The potential disturbance of each soil type varies between 3.8 acres to 1,914 acres.

Table 4-9
Soil Resources and Erosion Factors for the South Project

Soil Type	Water Erosion	Wind Erosion	Acreage
Badland-Rock outcrop complex, 1 to 100 percent slopes	Moderate	Moderate	3.8
Badland-Walknolls-Rock outcrop complex, 50 to 90 percent slopes	Moderate	Moderate	1,115.4
Bullpen parachannery loam, 2 to 25 percent slopes	Low	Low	5.2
Pherson-Hickerson complex, 1 to 8 percent slopes	Low	Low	142.7
Walknolls-Badland Rock outcrop complex, 25 to 50 percent slopes	Moderate	Low	45.3
Walknolls-Bullpen association, 2 to 25 percent slopes	Low	Low	3,123.2
Walknolls extremely channery sandy loam, 4 to 25 percent slopes	Low	Low	235.6
Walknolls very channery loam, 25 to 50 percent slopes	Moderate	Low	1,914.4

Oil shale operations are likely to pose an impact on soil resources. A significant concern is increased soil erosion resulting from ground disturbance. The surface mining approach requires removing and stockpiling the overburden, source rock, and waste rock, thereby creating a potentially large source of sediment and salinity in site runoff, and a source of wind erosion. Specific activities that could create soil erosion and possibility increase turbidity in surface water includes removal and stockpiling of overburden for surface mining (and to a lesser extent for subsurface mining); traffic on unpaved roads; vegetation clearing, grading and contouring that can affect vegetation, soil structure and biological crust; and erosional gullies formed on land regarded for work areas, support facilities, roads, and so forth. The drainage along roads may contribute to additional soil erosion as surface runoff is channeled into the drainages. Compaction by vehicles or heavy equipment may reduce infiltration, promote surface runoff, and decrease soil productivity (BLM 2012e).

Stockpiled soils are more susceptible to wind and water erosion and can result in a loss of nutrients as well as an accumulation of ammonium and anaerobic conditions. Traffic on unpaved roads can loosen soil particles, which can then be carried away by wind and water. Vegetation clearing can result in increased erosion by increasing velocity of surface flow, increased sediment transportation, and decreasing infiltration due to removal of roots.

Crust disruption often destabilizes underlying soils leaving adjacent crusts vulnerable to burial by wind and water. Crust cover loss increases water erosion especially continuous tracks because of increased water and flow volume, and velocity. When crusts are crushed or absent, soil particle movement is initiated at lower wind speeds (Belnap et al 2001).

Mitigation measures identified for the Utility Project in Table 4-1 will reduce the impact of oil shale activities on soil resources during construction, operations, and reclamation and are outlined as possible approaches in the *Proposed Land Use Plan Amendments for Allocation of Oil Shale and Tar Sands Resources on Land Administered by the Bureau of Land Management in Colorado, Utah and Wyoming and Final Environmental Impact Statement* (BLM, 2012e). The effects on water quality may therefore be reduced. Specific guidance and recommendations related to management practices are described in detail in the BLM Solid Minerals Reclamation Handbook (1992), the BLM Goldbook (2007), and in BLM Vernal Field Office RMP. Table 4-1 includes mitigations measures designed to minimize the amount of disturbed land; stockpiling topsoil prior to construction or regarding; mulching and seeding in disturbed areas; covering loose materials with geotextiles; using silt fences to reduce sediment loading to surface water; using check dams to minimize the erosive power of drainages. (BLM, 2012e)

4.2.3.1.3 No Action Alternative – No Utility Project

Under the No Action Alternative there would be no impacts on soil resources and ground disturbing activities would not occur.

4.2.3.1.4 No Action Alternative – Non-federal Connected Action South Project

The South Project area would still be developed to full build-out on private lands owned by the Applicant, even under the No Action Alternative. Indirect impacts to soil resources in the boundaries of the South Project area are anticipated as described previously for the Proposed Action – Non-federal Connected Action South Project.

In addition, should the Utility Project not be authorized and developed, impacts to soil on and adjacent to Dragon Road would be increased because the roadway would remain unpaved. The large trucks associated with construction of the South Project and ongoing operations and trucking of product would increase wear on the unpaved road which would increase erosion and fugitive dust and alter run-off patterns which could affect the viability of vegetation along this roadway. No other impacts are anticipated from the alternative means of developing the South Project (as listed in Section 2.3.1.1).

4.2.3.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures for the Utility Project that would reduce adverse impacts to this resource are included in Table 4-1. Unavoidable adverse impacts from the Utility Project include short- and long-term soil exposure and compaction; loss of soil productivity and topsoil due to erosion and disturbance of BSCs; increased susceptibility of soil to both wind and water erosion because of a loss of stabilizing vegetative cover; and increased sediment yield due to proposed rights-of-way and access roads.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.3.3 Irretrievable and Irreversible Commitments of Resources

Approval of the Proposed Action would result in short- and long-term changes to soil productivity due to surface disturbance and loss of vegetation. This loss of soil productivity would be irretrievable until restoration is complete. In some areas, soils restrict rehabilitation success. It is possible that soil in these areas would experience some irreversible impacts due to the difficulty in restoring vegetation. Soil conditions such as wind erosion potential, water erosion potential, salinity, sodium adsorption ration, alkalinity, rooting depth, and drought can limit rehabilitation success.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.3.4 Relationship of Short-term Uses to Long-term Productivity

Construction of pipelines, transmission lines, road upgrading, and associated facilities would result in long-term loss of soil productivity in localized areas impacted by development activities. This would be true both for areas affected by the Proposed Action, if approved, and the South Project. Long-term impacts to soil productivity would be primarily the result of vegetation removal or prevention of revegetation that would allow continued erosion of soil. Impacts would persist until surface disturbance and vegetation loss are reclaimed.

4.2.4 Mineral Resources

4.2.4.1 Direct and Indirect Effects

4.2.4.1.1 Proposed Action – Utility Project

Areas leased for fluids development and areas classified as mineral materials could be subject to direct impacts associated with construction of the Utility Project. There are approximately 231 acres of open mineral materials, 481 acres available for fluids lease with timing and controlled use, standard stipulations, or closed, and 19 acres of split estate leases. The Proposed Action would cross pipelines proposed for use with the White River Mine RD&D site.

The Utility Project, as proposed, would cross existing oil and gas leaseholds. Avoidance of land-use conflicts (e.g., mining operations and oil and gas production areas) where possible, was a criterion in the Applicant's engineering study to identify locations where pipelines and transmission lines could be sited and constructed. It is the BLM's expectation that the Applicant would obtain permissions and resolve conflicts with regard to facilities and infrastructure along the selected route prior to construction. For example, it is the responsibility of the right-of-way grantee to conduct proper due diligence to ensure that valid oil and gas leaseholds are respected and agreements are made with lease owners. In general, the BLM expects that the likelihood and potential for such conflicts is low and the effect small. With the use of current technology, the Utility Project would not inhibit future mining and oil and gas recovery could occur in proximity to pipelines and transmission lines.

Although the proposed rights-of-way could lead to potential conflicts with future Gilsonite mining within the project study area, the probability of such conflict is expected to be low due to the colocation of the proposed rights-of-ways with other existing utility alignments.

Where mining operations or mineral resources cannot be avoided, construction and maintenance of the Project could have the following direct effects on mineral resources:

- Loss of mineral material resources caused by construction activities
- Limitations on or prevention of present or future development and extraction of leasable resources resulting from the presence of permanent facilities (e.g., ability to erect a workover rig on a well in proximity to the power lines)

There would be no indirect effects on mineral resources as a result of implementation of the Project.

4.2.4.1.2 Non-federal Connected Action South Project

Areas leased for mineral development and areas classified as mineral materials could be subject to impacts associated with construction of the South Project. There is approximately 0.40 acre of mineral materials present within the South Project area. In addition, there are oil and gas leaseholds present under private and State lands that could be impacted by the mining and retorting operations.

4.2.4.1.3 No Action Alternative – No Utility Project

Under the No Action Alternative, there would be no impacts on mineral resources from the Utility Project.

4.2.4.1.4 No Action Alternative – Non-federal Connected Action South Project

The South Project area would still be developed to full build-out on private lands owned by the Applicant under the No Action Alternative. The South Project would directly and indirectly impact mineral resources in the boundaries of the South Project area as described for the Proposed Action Non-federal Connected Action South Project.

4.2.4.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures for the Utility Project that would reduce adverse impacts to this resource are included in Table 4-1. Unavoidable adverse impacts to mineral resources could impact oil and gas wells, Gilsonite, and oil shale through interference from construction and maintenance of the proposed rights-of-way, as well as surface disturbance in the area open to saleable or leasable mineral development. This would occur under each alternative to varying degrees. The Gilsonite mine crossings are discussed in the Alternatives evaluation section (Section 2.4.2).

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.4.3 Irretrievable and Irreversible Commitments of Resources

Irretrievable impacts to oil and gas wells, Gilsonite and oil shale include potential interference by the Utility Project with the development of those minerals (surface disturbance conflicts, facility encroachment, etc.). There also would be irretrievable and irreversible impacts to salable minerals because of surface disturbance in areas open to saleable mineral development.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.4.4 Relationship of Short-term Uses to Long-term Productivity

Because of surface impacts to mineral resources, the Utility Project would have an adverse impact on long-term productivity for oil and gas wells, Gilsonite, and oil shale in the immediate location of the proposed rights-of-way. Surface disturbance would primarily affect long-term productivity for surface resources, such as salable minerals. However, because of the ability to modify the alignment of the rights-of-way to avoid or minimize impacts, overall long-term impacts to the productivity of mineral resources would be minor.

4.2.5 Water Resources

This section addresses potential impacts on surface water, groundwater, wetlands, and riparian areas, and floodplains from the development of the Utility Project. Impacts on these resources from development of the South Project are also considered, as well as impacts should the No Action Alternative be selected.

4.2.5.1 Direct and Indirect Effects

Direct and indirect effects on water resources would vary for each alternative considered and may include:

- Withdrawal of water from the Green River for Utility Project construction that reduces its flow and degrades the water quality of the stream down gradient from the point of the withdrawal;
- Accidental chemical spills or product spills and/or leakage that could potentially contaminate surface water and/or groundwater;
- Degradation of surface water quality caused by increased sediment load or contaminated runoff from disturbance areas;
- Surface disturbance that may alter natural drainages by both diverting and concentrating natural runoff; and
- Surface disturbance that becomes a non-point source of sediment and dissolved salt to surface water bodies.

The effect of construction and operation of the South Project on water resources may include similar effects as listed for the Utility Project in addition to the following:

- If groundwater wells were developed, lowering water levels in the ground water aquifers (Birds-nest or White River alluvium) and reduction of groundwater discharge to surface water bodies or to the springs or seeps that are hydrologically connected to the groundwater;
- Withdrawal of water from the Green River that reduces its flow and degrades the water quality of the stream down gradient from the point of the withdrawal;
- Reducing flow rates in the Green River, White River, or tributary streams if additional water is needed for mining operations;
- Construction of reservoirs that might alter natural streamflow patterns, temporarily increase salt loading, cause changes in stream profiles downstream, reduce natural sediment transport mechanisms, and increase evapotranspiration losses;
- Discharged water from a project site that could have a lower water quality than the intake water that is brought to a site; and
- Spent shale piles and mine tailings that might be sources of salt, metal, and hydrocarbon contamination for both surface and groundwater.

Under the No Action Alternative, whereby the BLM would not grant a right-of-way for the Utility Project, the Applicant would continue to full build-out and has indicated they could request another route or corridor for the water pipeline across BLM lands. The water pipeline would not be co-located with other utilities and would be subject to a separate BLM right-of-way.

4.2.5.1.1 Proposed Action – Utility Project

4.2.5.1.1.1 Surface Water

The use of the Applicant's existing water right for the South Project, as transported via the Utility Project, is not anticipated to significantly reduce flows in the Green River or impact other water right holders in the basin. The average flow rate on the Green River near Ouray, Utah is 3,897 cfs (USGS 2015). The existing well field and pipeline system delivers water to the DGT BPP and has spare capacity to transport the Applicant's 15 cfs water right. However, these existing wells are not adequate to deliver the necessary water for the South Project. The Applicant would expand the existing RCW field with the addition of two to three new RCWs on adjacent private land owned by Applicant. The final number of RCWs is dependent upon future test well pump yields. The new RCWs and associated filtration and pumping would be located in existing private fallow/disturbed upland areas and would interconnect with DGT's existing pipeline system that feeds the BPP. From the DGT BPP, the Applicant's portion of the water would be transported through the new proposed water supply pipeline across public land to the South Project.

There are 26 points of diversion associated with the Applicant's water right. The Applicant anticipates using 5 of these points of diversion. The points of diversion to be used under the water right are those located on non-federal land adjacent to Applicant's privately owned land (same location as the RCW field) near Jensen, Utah. The final points of diversion will be filed with the UDWaR. See Table 4-10 below for detail regarding estimated maximum annual water use.

Table 4-10 Estimated Maximum Annual Utility Project Water Use Water Conversion to Acre per Feet		
Activity Type	**Water Use (cubic feet per second)**	**Water Use (acre per feet)**
Water Supply Pipeline	15	10,866.72

Construction Activities

To control fugitive dust, water would be applied to disturbance areas as needed. The preliminary right-of-way disturbance areas is estimated at approximately 640 acres during the first mobilization (installation of the water line, first transmission line, Dragon Road improvement, and temporary laydown areas), and approximately 460 acres during the second mobilization (natural gas line, product line, second transmission line, and reuse of temporary laydown areas). At a water application rate of 600 gallons per acre (achieving a moistening depth of 0.0221 inches per pass), this would total 765,468 gallons of water during the first mobilization and 548,688 gallons of water during the second mobilization. It should be noted that not all construction days will require watering for dust control, nor will all surface area necessarily be fully disturbed (particularly within the transmission line corridor); therefore, this is a conservative estimating approach.

In addition to fugitive dust control, hydrostatic testing is the other significant water use for construction of the Utility Project. A hydrostatic test plan, addressing water discharge location and methods, will be developed by the Applicant in consultation with the BLM. At a minimum, the following estimates can be made about the volume of water required for hydrostatic testing.

- Water pipeline diameter of 30 inches and a 19.0-mile (100,478 feet) run length, or a total volume of 493,222 cubic feet;
- Natural pipeline diameter of 8 inches and 8.9-mile (46,886 feet) run length, or a total volume of 16,366 cubic feet; and
- Product pipeline diameter of 16 inches and 11.2-mile (59,136 feet) run length, or a total volume of 82,569 cubic feet.

It is reasonable to assume that any one entire pipeline would not be filled with water during hydrostatic testing. Rather, approximately one-third of the total volume would be filled at any one time, and that volume of water would be “pushed” from one hydrostatic testing section to the next. Using a conversion factor of 7.480519 gallons of water per cubic foot, the water supply pipeline would then require 164,407 cubic feet, or approximately 1.23 million gallons of water for hydrostatic testing during the first mobilization. During the second mobilization, assuming both natural gas and product pipelines were tested simultaneously under the same three-section assumption, this would require an additional 32,979 cubic feet, or approximately 246,697 gallons of water.

The pipes used for hydrostatic testing would be new. Typically, hydrostatic test water will pick up some iron oxide (rust) from new pipeline, depending on the total duration the water remains in the pipeline. The quantity of rust is generally negligible compared to the volume of water. The water may also pick up some sand or dirt left over from the pipeline installation. Water would be discharged at a rate commensurate with agency consultations and discharge permit requirements and would be in a manner that precludes erosion. The discharge would occur into a temporary sediment basin or structure consisting of both hay bales and/or silt fence for sediment control. The discharge location would be at least 0.5 mile from any perennial stream with a flow greater than 1 cubic foot per second, and would avoid ephemeral drainages. Any potential contaminants in the discharge water would likely be below the required minimums; however, to ensure this condition, water would be collected and tested at a certified water testing laboratory prior to full release. The discharge location would be nearly level or gently rolling, vegetated upland areas to prevent erosion issues.

Water used for fugitive dust control and hydrostatic testing of pipelines would not need to be treated before use. Water used for fugitive dust control would require no post-use treatment, as that water would either infiltrate or evaporate from the ground surface and return to the environment. Water used for hydrostatic testing would not require post-use treatment; however, because of high discharge rates from the pressure-tested pipeline, hydrostatic test water would be discharged to an energy dissipation device to prevent erosion and offsite sediment transport and prevent water from entering perennial or ephemeral waterways.

The total estimated amount of water needed for the Utility Project during construction activities is described below in Table 4-11. No groundwater is anticipated to be used for the Utility Project. Therefore, the Utility Project would not result in groundwater depletion.

Table 4-11
Estimated Utility Project Construction Activities Water Use
Water Conversion to Acre/Feet

Activity Type	Water Use (gallons)	Water Use (acre per feet)
Hydro Testing 1st Mobilization	1,230,000	3.77
Hydro Testing 2nd Mobilization	246,697.	0.76
Dust Control 1st Mobilization	765,468	2.35
Dust Control 2nd Mobilization	548,688	1.68
Total		**8.56**

Erosion and sedimentation may occur in areas of disturbance. The magnitude of erosion and sediment impacts on surface water resources would depend on several factors, including the proximity of the disturbed area to surface waters, slope aspect and gradient, the erosion potential of the affected soil types, the duration and timing of construction activities, and the success or failure of reclamation and mitigation measures.

Construction and development activities could result in increased sedimentation and runoff, which in turn could increase sediment loading during runoff-producing storm events. Sediment or contaminants contained in or absorbed onto sediments can be transported into the surface waters and impact water quality. It is difficult to quantify potential increases in salinity or level of contaminant concentrations in surface waters in and adjacent to the project area because these constituents would largely be derived from runoff from project area soils, and soil concentrations of these constituents vary widely across the landscape.

The Utah and EPA stormwater permitting processes, UPDES and NPDES respectively, for construction activities will ensure consistency with the approved TMDL for Evacuation Creek and compliance with Utah Water Quality Standards (UDEQ 2008). The Utah Division of Water Quality regulates all other storm water in the project area through the UPDES permitting process. However, a TMDL program has not yet been developed for Evacuation Creek; therefore, it cannot yet be determined if the Utility Project construction activities would cause exceedance of loading capacity. The implementation of design features and mitigation measures for the Utility Project identified in Table 4-1 would eliminate or greatly reduce potential for pollutants entering Evacuation Creek.

The potential for impacts would be greatest shortly after the start of construction activities and would decrease in time due to stabilization, reclamation, and revegetation efforts. Non-structural and structural control methods would minimize erosion and sedimentation impacts on water resources. Non-structural controls include proper clearing, grading, and construction practices, including surface roughening and crowning and ditching of roadways. Structural controls would be used in disturbance areas to minimize the amount of sediment that reaches a watercourse. Structural controls, including, but not limited to, straw bales, berms, and other barriers, would be identified and implemented based on specific site conditions.

These measures will be described in the Stormwater Pollution Prevention Plan to be developed for the Utility Project.

Site-specific best management practices and mitigation applicable to surface water resources are listed in Table 4-1. The BLM may recommend additional mitigation measures to avoid, reduce or mitigate impacts on water resources once final engineering is complete.

Pipeline Leaks and Spills

Accidental chemical spills or product spills and/or leakage during construction of the Utility Project could potentially contaminate nearby surface water and/or groundwater. Depending on the depth of groundwater in the area of the spill, large spills may reach the groundwater table. The proposed corridor for the buried pipelines crosses the White River at a single location, and crosses Evacuation Creek and several unnamed washes at numerous locations.

Accidental spillage of potentially toxic substances due to loss of containment of natural gas or petroleum products could potentially occur under the Proposed Action. An accidental spill of such substances could potentially have a negative impact on receiving waters. Contamination could occur from two mechanisms: direct spills of materials into a creek, and indirect contamination of surface water due to migration of petroleum from areas of soil contamination adjacent to surface water bodies. Sources of potential direct surface water contamination include pipeline leaks and construction equipment spills at stream crossings. Sources of potential indirect surface water contamination include leaks from pipelines. The magnitude of these impacts would be largely dependent on the proximity of the spill to surface water features, the volume of material spilled, the permeability of the soils in the area, the ground slope between the spill site and the surface water feature, and the timing and intensity of rainfall or snowmelt. Spills of petroleum products, fuels, and lubricants would have the highest potential to contaminate surface waters, especially if the spills were to occur when flow was present in the ephemeral drainages or the spill occurred directly into a stream.

The U.S. Department of Transportation PHMSA tracks information related to pipeline spills and incidents nationwide. The PHMSA indicates that during a ten year period from 2014-2004 there was an average of 96 incidents nationwide, across 1,326,282 miles of natural gas distribution and refined petroleum product pipelines (PHSMA 2015). These incidents included conditions such as:

- Fatality or injury requiring in-patient hospitalization
- $50,000 or more in total costs
- Highly volatile liquid releases of 5 barrels or more or other liquid released of 50 barrels or more
- Liquid releases resulting in an unintentional fire or explosion.

Table 4-12 and Table 4-13 indicate the pipeline incidents nationwide over a 10-year period as reported by PHMSA.

Table 4-12
Summary of Pipeline Incidents 2004-2014 for Natural Gas Distribution Pipelines Nationwide

Calendar Year	Number of Incidents	Fatalities/ Injuries	Property Damage Current Year Dollars
2004	101	18/37	$36,319,588
2005	78	14/37	$581,680,805
2006	60	16/28	$19,561,367
2007	73	10/29	$19,736,918
2008	67	6/47	$19,942,451
2009	80	9/47	$25,964,805
2010	55	8/39	$19,569,162
2011	58	11/48	$23,106,356

Table 4-12 Summary of Pipeline Incidents 2004-2014 for Natural Gas Distribution Pipelines Nationwide			
Calendar Year	**Number of Incidents**	**Fatalities/ Injuries**	**Property Damage Current Year Dollars**
2012	52	7/43	$23,907,191
2013	61	8/37	$15,788,430
2014	64	18/93	$71,784,956
SOURCE: PHMSA 2015			

In Utah, the average for this time period is about 68 natural gas pipeline incidents that occurred involving zero fatalities and injuries and $109,852 in property damage.

Table 4-13 Summary of Pipeline Incidents 2014-2004 for Petroleum Product Pipelines Nationwide					
Calendar Year	**Number of Incidents**	**Fatalities/ Injuries**	**Property Damage Current Year Dollars**	**Barrels Spilled**	**Net Barrels Lost**
2004	48	5/3	$64,584,174	19,049	12,341
2005	45	0/1	$51,801,505	22,945	15,044
2006	27	0/0	$37,840,890	12,569	7,932
2007	34	0/1	$30,927,695	17,899	7,706
2008	54	2/1	$109,630,415	22,306	12,754
2009	38	0/0	$21,001,063	9,005	2,722
2010	35	0/2	$31,017,207	7,228	2,197
2011	44	0/0	$82,669,716	23,089	10,644
2012	46	0/0	$94,884,652	9,138	3,430
2013	46	0/0	$54,323,747	12,329	5,927
2014	46	0/0	$38,739,494	16,045	8,176
SOURCE: PHMSA 2015					

In Utah, the average for this time period was 44 incidents, involving zero fatalities and zero injuries, and $2,275,690 in property damage.

As a point of reference, there are 719 miles of petroleum product pipeline within Utah and 61,642 miles throughout the U.S. There are 17,234 miles of natural gas distribution pipeline within Utah and 1,264,640 miles throughout the U.S. (PHMSA, 2015).

Pipeline leaks can vary in size, and can be very small resulting from a leak or spill during maintenance activities on the pipeline and its facilities. Larger leaks could result from a major failure of fuel storage tanks or corrosion of a pipe. Natural gas or petroleum product released from a pipeline during operations or during construction or operations into the environment may affect natural resources, protected areas, surface water intake, and aesthetics to varying degrees, depending on the cause, size, type, volume, location, season, environmental conditions, and depending on the timing and degree of response actions. The severity of impacts varies depending on the following factors:

- Amount and duration of oil release, and location with respect to topography
- Potential for spill reaching an environmental receptor
- Chemical composition and physical characteristics of the oil and
- Toxicity and other adverse effects of the oil to receptors.

The characteristics of the receiving environment, such as the type of land cover, soil porosity, land surface topography and gradient, type of freshwater body, presence of ice and/or snow cover on water or land, and flowing water current velocity, would affect how the spill behaves.

The closest municipal drinking water supply in Uintah basin is located in Jensen, Utah located 30 miles upstream from the Utility Project study area. There are no other known municipal water suppliers or private drinking water wells located within 33 miles downgradient of the White River watershed drainage area.

The toxicity of an accidental natural gas condensate or petroleum product spill to a particular stream or river would depend on the amount spilled, the level of attenuation before reaching the water, and the flow volume (and dilution) of the stream or river. Natural gas condensate is highly volatile and likely to evaporate within approximately 8 hours of spilling (BLM 2005a). Thus, spills occurring in proximity to streams would potentially result in lethal levels of toxic substances affecting Colorado River Fish and other aquatic organisms.

Regarding the SCO product, all petroleum-based products are highly complex chemical mixtures. Although almost exclusively composed of hydrocarbons, the composition varies with the crude oil source. Their toxicity for man is generally low but there are exceptions. Although irritancy and sensitization to specific ingredients may be demonstrated in animals, animal experiments are not a reliable indicator of sensitization potential in man. Both product complexity and commercial considerations can make acceptable and meaningful compositional disclosures difficult (Henry 1998). The chemical composition of the SCO product is not known by the BLM at this time.

The potential volume of oil that could be released before shutoff occurs is not known, since this depends heavily upon the location of the leak, the type/cause of rupture, the timing of the failure (i.e. during active batch pumping vs. during latent periods), etc. With regard to sensitive resources such as the White River and Evacuation Creek, some reasonable assumptions could be made to estimate a potential volume. Assuming active pumping is occurring and the pipeline is full and fully pressurized, at the White River crossing location between the shutoff valves, there would be an approximate volume of 447-791 barrels of oil (800 linear feet at 12-16 inches diameter; 42 gallons per barrel). Under these same conditions and assumptions, at the Evacuation Creek crossing, there would be 1,119-1,977 barrels between the shutoff valves. It is unlikely that the full amount of oil would leak out of the pipeline, especially if the pipeline were not pressurized due to shutoff or if the breach were “higher” in the pipeline elevation profile (such as adjacent to one of the shutoff valves on the Evacuation Creek crossing).

Specific actions under the Proposed Action **-** Utility Project could reduce or minimize impacts to surface waters related to accidental spills or leaks. Specifically, actions identified in the required SPCC Plan would be implemented to minimize the chance that petroleum products and other chemicals would leave the construction work site and contaminate surface waters. If any spills were to occur, the contractor would immediately contact the BLM and any other regulatory agencies, as required by law or regulation. Strict cleanup efforts would be initiated within 24 hours.

4.2.5.1.1.2 Groundwater

The movement (recharge and/or discharge) of water between the Green and White rivers and the alluvial aquifer is dependent upon stream stage and the change in gradient between the water in the river and groundwater in the alluvium. The withdrawal of 15 cfs from the Green River is not anticipated to change the average stream stage. Since the movement of water between the river and the alluvial aquifer is dependent on the gradient due to the stream stage, no significant change in flow between the river and the alluvium is likely to occur.

There is no direct withdrawal of water proposed from the White River. There is also no impact to water levels in the Birds Nest Aquifer since there are no proposed ground water withdrawals as part of the Utility Project.

Site-specific best management practices and mitigation applicable to groundwater resources are listed in Table 4-1. The BLM may recommend additional mitigation measures to avoid, reduce or mitigate impacts on water resources once final engineering is complete.

4.2.5.1.1.3 Wetlands and Riparian Areas

The USACE determined that within the Project area (includes both the Utility Corridor and South Project areas), there are 29 ephemeral channels that have an ordinary high water mark (OHWM) and that have a significant nexus with the Green River, a Traditional Navigable Waterway via connection to the White River (a Regional Perennial Waterway). These areas may be indirectly impacted by project activities when disturbance in upland areas results in runoff that contributes sediment and debris to these areas. Site-specific best management practices and mitigation applicable to wetland and riparian resources are listed in Table 4-1. The BLM may recommend additional mitigation measures to avoid, reduce or mitigate impacts on water resources once final engineering is complete.

4.2.5.1.1.4 Floodplains

The Utility Project is currently planned to cross the White River, approximately four miles southeast of Bonanza, Utah. The right-of-way for the utility corridor is planned to vary from 25 feet where a single pipeline would be located, to over 350 feet where the water, gas, and product lines would be located adjacent to the dual overhead power lines. In some locations of the corridor, including at the White River crossing, the pipeline right-of-way and power line right-of-way are separated by a distance of as much as much as 900 feet.

The proposed method of crossing the White River for the pipelines is a trenchless construction method called micro-tunneling, and an overhead, aerial span crossing for the 138kV transmission lines (refer to Section 2.2.8.11.6). Two separate crossings are anticipated for the buried pipelines. The smaller lines, including natural gas and product pipelines, would be combined into a single cased crossing to save time and reduce risk. The larger 30-inch water line would require a separate cased crossing. The overhead 138kV transmission lines would utilize standard construction methods to install towers on either side of the canyon adjacent to the existing power line alignment. The 138kV lines would easily span the required distance across the White River canyon. Transmission line tower placement would be such that towers would be set back a minimum of 50 feet from the edge of the drainage, and transmission lines would span the drainage to preclude any disturbance.

The proposed method of crossing Evacuation Creek for the pipelines is a standard dry-ditch pipeline crossing. If water is present in the creek, then the FERC method of dam-and-pump would be used to maintain flow and not disturb regional hydrology. An overhead, aerial span crossing would be used for the 138kV transmission lines. Two separate crossings are anticipated for the buried pipelines. The smaller lines, including natural gas and product pipelines, would be combined into a single cased crossing to save time and reduce risk. The larger 30-inch water line would require a separate crossing. The overhead 138kV transmission lines would utilize standard construction methods to install towers on either side of the canyon adjacent to the existing power line alignment. The 138kV lines would easily span the required distance across the Evacuation Creek. Transmission line tower placement would be such that towers would be set back a minimum of 50 feet from the edge of the drainage, and transmission lines would span the drainage to preclude any disturbance.

The Utility Project also would cross several ephemeral drainages. It is expected flowing water would not be encountered in ephemeral drainages during construction as these drainages only convey water during precipitation events. All drainages would be restored to their preconstruction condition or better at all crossing points. Site-specific best management practices and mitigation applicable to floodplain and water resources are listed in Table 4-1.

4.2.5.1.2 Non-federal Connected Action South Project

In general, the impacts on water resources from oil shale development can be attributed to the interdependent factors of ground surface disturbance, water withdrawal and use, wastewater disposal, alteration of hydrologic flow systems for both surface water and groundwater, and the interaction between groundwater and surface water. Common impacts could include the following (BLM 2013a):

- Degradation of surface water quality caused by increased sediment load or contaminated runoff from project sites;
- Surface disturbance that may alter natural drainages by both diverting and concentrating natural runoff;
- Surface disturbance that becomes a source of sediment and dissolved salt to surface water bodies;
- Withdrawal of water from a surface water body that reduces its flow and degrades the water quality of the stream downgradient from the point of the withdrawal, potentially affecting downstream NPDES permitting;
- Withdrawals of groundwater from a shallow aquifer that produce a cone of depression and reduce groundwater discharge to surface water bodies or to the springs or seeps that are hydrologically connected to the groundwater;
- Accidental chemical spills or product spills and/or leakages could potentially contaminate surface water and/or groundwater;
- Construction of reservoirs that might alter natural streamflow patterns, alter local fisheries, increase salt loading, cause changes in stream profiles downstream, reduce natural sediment transport mechanisms, and increase evapotranspiration losses;
- Discharged water from a project site that could have a lower water quality than the intake water that is brought to a site;
- Spent shale piles and mine tailings that might be sources of contamination for salts, metals, and hydrocarbons for both surface and groundwater;
- Degradation of groundwater quality resulting from injection of lower quality water; from contributions of residual hydrocarbons or chemicals from retorted zones after recovery operations have ceased; and from spent shales replaced in either surface or underground mines;
- Reduction or loss of flow in agricultural (livestock) or domestic water wells from dewatering operations or from production of water for industrial uses;
- Cross-connection between aquifers of varying water quality resulting from various mining and drilling activities; and
- Dewatering operations of a mine, or dewatering through wells that penetrate multiple aquifers, that could reduce groundwater discharge to seeps, springs, or surface water bodies if the surface water and the groundwater are connected.

4.2.5.1.2.1 Water Use

The Applicant's resource holdings, including all private land and state/federal leases, cover more than 30,000 acres and are transected from south to north by Evacuation Creek, a perennial stream that flows into the White River located north of the South Project area. The Applicant is still in the planning and preliminary engineering design process for the South Project; therefore, water supply amounts for various construction and operation processes are only available as preliminary estimates at this time. The Applicant provided the following water requirement estimates.

- First Phase (first four years of operation)
  - Mining – 2.48 cfs (including 1.46 cfs treated water reuse and 0.87 cfs raw water)
  - Retorting and Upgrading – 0.74 cfs
  - Utility and Power Generation – 0.88 cfs
  - Other Uses – 0.09 cfs
- Full Build-Out (30 years of operation)
  - Mining – 4.33 cfs (including 3.04 cfs treated water reuse and 1.29 cfs raw water)
  - Retorting and Upgrading – 1.78 cfs
  - Utility and Power Generation – 1.63 cfs
  - Other Uses – 0.09 cfs

Estimates of how much water is needed to extract oil from shale vary widely depending on the process used. Industry estimates for oil shale development range from 2.6 to 4.0 barrels of water for each barrel of shale oil produced for a surface mine with surface retort and an underground mine with surface retort projects, and from 1 to 3 barrels of water for each barrel produced for in situ projects (BLM 2013a). A surface mine or underground mine with surface retort plants with capacities of 9 to 11 million barrels per year (or 25,000 to 30,000 barrels per day) could consume 3,050 to 5,640 acre-feet of water per year.

The Applicant indicates they intend to use the 15 cfs water right from the Green River. The use of the Applicant's existing water right will not impact other water right holders in the basin.

The total amount of estimated water needed for the South Project is described in Table 4-14.

Table 4-14
Estimated South Project Water Use Conversion to Acre/Feet

Activity Type	Annual Water Use (cfs or gal.)	Annual Water Use (in acre/feet)
South Project - First Phase		
Mining	2.48 cfs	1,796.63
Retorting and Upgrading	0.74 cfs	536.09
Utility and Power Generation	0.88 cfs	637.51
Other Uses	0.09 cfs	65.20
Total	**4.19 cfs**	**2,970.23**
South Project - Full Build-Out		
Mining	4.33 cfs	3,136.86
Retorting and Upgrading	1.78 cfs	1,289.52
Utility and Power Generation	1.63 cfs	1,180.85
Other Uses	0.09 cfs	65.20
Total	**7.83**	**5,607.23**

If the Applicant requires an alternate or additional groundwater source (or associated water pipeline), they would need to submit a new SF-299 to the BLM for the rights-of-way. Additional studies would be required to analyze the impacts on the human, natural, and cultural environment.

4.2.5.1.2.2 Surface Water

The use of the Applicant's existing water right for the South Project is not anticipated to significantly reduce flows in the Green River or impact other water right holders in the basin. The average flow rate on the Green River near Ouray, Utah is 3,897 cfs (USGS 2015).

The Utah and EPA stormwater permitting processes, UPDES and NPDES respectively, for construction activities will ensure consistency with the approved TMDL for Evacuation Creek and compliance with

Utah Water Quality Standards (UDEQ 2008). The Utah Division of Water Quality regulates all other storm water in the project area through the UPDES permitting process. However, a TMDL program has not yet been developed for Evacuation Creek; therefore, it cannot yet be determined if the South Project would cause exceedance of loading capacity. The South Project will be subject to permitting through NPDES and subject to compliance the CWA and any requirements identified through the TMDL Program developed for Evacuation Creek. The implementation of design features and mitigation measures identified for the Utility Project in Table 4-1, and discussed below, would eliminate or greatly reduce potential for pollutants entering Evacuation Creek.

Water would be used for the following activities associated with construction and operation of the South Project: earth compaction and dust suppression during initial construction and sanitary use, mining activities, product upgrading, and spent shale/ash handling during operations.

If not properly mitigated, exposed soils from construction activities and mining operations could be affected by intensified surface runoff caused by precipitation as well as to wind erosion leading to increases in sediment and salt contributions downstream. Depending on the placement of the mining operations, disruption of natural drainage patterns through diversion and concentration of flow may also occur. Such alteration and diversion could change the streamflow downstream of a project site. Because of the uncertainty of the size of the blocks of land that would be disturbed at any one time to support the South Project, and the unknown length of time between disturbance and reclamation of production areas, the effect of the South Project on surface drainage is not yet known.

It is anticipated that the impact from surface disturbance would be larger during the construction and reclamation phases than during the operational phase of project, when some sort of process to stabilize sites can be expected to be employed. The level of impact would decrease with time as the disturbed areas are reclaimed and stabilized with protective vegetation or other measures. The intensity of the impact would decrease with increasing distance between the disturbed areas and surface water bodies.

Ground surface disturbance would tend to degrade surface water quality and increase streamflow in areas downstream of development sites. Disturbance caused by a wide array of activities (e.g., access roads, building construction, spoil disposal piles, mining or other recovery operations, power line construction) would expose fresh soil to intensified surface runoff caused by precipitation as well as to wind erosion leading to increases in sediment and salt contributions to streams. The flow of streams downstream of disturbed areas would increase before the areas are stabilized. Surface mines associated with production of oil shale would have the potential to alter natural drainages by both diverting and concentrating natural runoff. Downstream areas would be altered as a result of these actions. Depending on the construction of the mine and the ability to return spent shale from retort operations back into the excavation, additional surface disturbance associated with spent shale disposal would also occur and have the potential for downstream impacts. Although underground mines have a much smaller amount of surface disturbance associated with actual mining operations, they would have a relatively larger amount of surface disturbance associated with the disposal of spent shale. Until successfully revegetated, these spent shale areas could contribute to increased runoff; could be a source of contamination for salts, metals, and hydrocarbons; and would be exposed to wind erosion. Depending on the placement of the disposal areas, disruption of natural drainage patterns through diversion and concentration of flow may also occur. Such alteration and diversion could change the streamflow downstream of a project site. Because of the uncertainty of the size of the blocks of land that would be disturbed at any one time to support in situ production, and the unknown length of time between disturbance and reclamation of production areas, the effect of this technology on surface drainage is not yet known. Of the various types of in situ technologies, it is not yet known whether there will be any difference in surface disturbance or effects on surface drainage between the various in situ technologies (BLM 2013a).

Disturbed areas can become sources of sediment and dissolved salt to surface water bodies. Airborne dust is expected to increase as a result of surface disturbance, processing and mining operations, and vehicle traffic. Because high salt content in soils is common in arid and semiarid environments, salt could be transported by wind and surface runoff from disturbed areas, even with the use of mitigation during site preparation. The impact would be larger during the construction and reclamation phases than during the operational phase of projects, when stabilization of sites can be expected. The level of impact would decrease with time as the disturbed areas are reclaimed and stabilized with protective vegetation or other measures. The intensity of the impact would decrease with increasing distance between the disturbed areas and surface water bodies. (BLM 2013a)

Controlled discharge of water from a mine or plant site to a surface water body constitutes a point-source discharge. The discharged water may be from process wastewater, cooling, collected leachate from overburden rocks or spent shale, sewage, tailing ponds, utilities, and dewatering wells. Discharged waters generally have lower water quality than the water in the receiving water body and could potentially degrade the surface water quality. In addition, contaminants released by nonpoint sources associated with the project (access roads, air emissions, and groundwater discharge) could further degrade the surface water quality. Discharge of surface runoff at a mining site is exempted from NPDES permits provided that the runoff is not contaminated by contact with any overburden, raw materials, intermediate product, finished product, by-product, or waste product located on the site of the operation. Surface runoff not intercepted at these sites could create a nonpoint source of contaminants and degrade the water quality of downgradient surface water bodies. It should be noted that the states of Colorado, Utah, and Wyoming administer their own NPDES programs. The states' NPDES programs must be at least as stringent as the federal program. For in situ processes, groundwater extracted to dewater the oil shale zone is likely to be used on-site for general purposes with or without treatment, such as for dust control or as process water, or it may be discharged to surface streams. The degree of water treatment required before discharge or reuse of the water would need to be determined on a site-specific basis to protect the receiving streams. The discharged water from an oil shale project site would generally have a lower water quality than the intake water.

Site-specific best management practices and mitigation applicable to surface water resources are listed in Table 4-1. Development and enforcement of mitigation measures is outside of the purview of BLM for the South Project. The exact nature and magnitude of the impacts would depend on the detailed mine plan of development which would be submitted to UDOGM for approvals

4.2.5.1.2.3 Groundwater

Potential spills during construction and operation of the South Project may affect adjacent waterways. Depending on the depth of groundwater in the area of the spill, large spills may reach the groundwater table. The Birds Nest Aquifer varies in depth across the South Project mine site area.

The proposed locations for surface disturbance and specific oil shale processing activities at the South Project are unknown at this time. Ineffective site management including placement of waste materials could result in an impact to groundwater resources. The potential for groundwater contamination is site specific and, although outside the jurisdiction of the BLM, can be avoided through a thorough site selection process including preliminary surveys to determine depth of groundwater, identification of natural pathways in the geological strata, proper site design and setbacks, and implementation of industry-standard BMPs. If wastewater pits are to be used, Utah requires wastewater impoundments use a two liner system with leak detection between the liners. The primary liners must have a minimum thickness of 60 mils and the secondary liner must have a minimum thickness of 40 mils (Utah Rule R649-9-4-7.1; Utah Rule R649- 9-7.2).

Another source of potential water contaminants is the air, such as air emissions from retort facilities and power plants, and dust from access roads, overburden, and spent shale piles. Winds common in semiarid and arid environments could allow particulates to be dispersed and deposited on surface water bodies. In general, the dust from spent shale piles and other disturbances is reduced after areas are reclaimed and stabilized or as a consequence of specific dust abatement practices. If not properly designed, retention ponds for process water, leachate from spent shale, and fly ash could be sources of contamination for shallow groundwater. Overburden rock commonly is disposed of near a project site without underlying liners. Because the overburden rock generally has a high content of soluble salts, leachate from the rock piles may contain high salt content and become a contaminant source for groundwater as well as for surface water. Spills of chemicals and oil shale products on-site are possible. They are also potential sources of contaminants for nearby surface water bodies and shallow aquifers. Another potential source of water contamination is from pesticides and herbicides, which are commonly used to control vegetation growth along pipelines and transmission lines. These chemicals may adhere to soil particles and be carried by wind and surface runoff into nearby surface water bodies, creating nonpoint sources of contaminants for those waters.

At both surface and underground mining sites, the spent shale piles and mine tailings could be sources of contamination for salts, metals, and hydrocarbons. If surface retorting is used to upgrade oil shale, fly ash and boiler bottom ash would also be produced by the retorts as wastes. Leachates containing associated contaminants may enter nearby surface water bodies or groundwater and continue to degrade the water quality well after site reclamation, if the wastes are not properly managed.

Oil shale development would likely eventually result in population growth in local communities near project sites and on-site. With population growth, the loading in local wastewater treatment plants or on-site treatment plants would increase. The effluent from the plants is likely to be an additional source of nutrients, such as phosphorus and nitrogen- containing compounds, and other potential pollutants to nearby waters. Such impacts are closely related to where people would settle and the streamflow of the receiving water. Such water quality impacts would be expected in areas with increased population growth and relatively low streamflow in the receiving water.

Because a large volume of rock is disturbed in surface mining operations, the permeability of the geologic material in the mine and in overburden disposal areas is permanently increased. The porosity and permeability of spent shale backfill are also relatively high. Precipitation could infiltrate these materials and produce leachate with relatively high dissolved solids and organics, potentially causing long-term contaminant sources for groundwater. The discharge of this groundwater through springs or seeps feeding water bodies located downgradient of the mine could negatively affect surface water quality. In addition, the filled mine could become a vertical conduit for groundwater, resulting in a discharge area for the shallow aquifer and a recharge area for the deeper aquifer. Alternatively, in the case of an upward vertical gradient, flow from the deeper aquifer could travel up a conduit and into a shallow aquifer. The dewatering operations of a mine or dewatering through wells that penetrate multiple aquifers can reduce groundwater discharge to seeps, springs, or surface water bodies if the surface water and the groundwater are connected. The consequence could be diminished flows of seeps, springs, or water courses even at areas remote from the mine. Depending on pumping rates and site-specific hydrogeological factors, significant groundwater withdrawals for dewatering the overburden, or for meeting operational needs, may reduce surface water base flow, spring discharges, and water levels in nearby wells.

Streamflow could be affected by both water withdrawal and wastewater discharge (after water treatment). The streamflow would be reduced in areas downstream of water intakes and increased in areas downstream from discharge outfalls. The change of the streamflow can trigger the deposition or erosion of sediments along a stream channel. Because of the large openings created in underground mining operations, the hydrologic properties of the geologic material in the mine are permanently altered.

Abandoned mine shafts, as well as partially refilled (by spent shale) mines, will enhance vertical and lateral groundwater movement in the mined area after dewatering ceases. Groundwater levels and the groundwater flow field may not return to baseline conditions, and, therefore, water rights may be affected well into the future. Enhanced leaching of formation rocks fractured during mining operations and spent shale backfill could result in poor-quality groundwater. The discharge of this groundwater through springs or seeps feeding water bodies located downgradient of the mine could negatively impact surface water quality. At sites with a dewatered surface mine or in situ operations, groundwater levels would begin to recover after dewatering activities cease. As groundwater regains its original water level, surface water previously depleted by the dewatering would be replenished by seeps and springs, and the streamflow would eventually return to predevelopment patterns.

In the case of natural drainage channels that are rerouted or modified for the construction of roads or facilities, the surface runoff would be altered, affecting existing downstream flow. Erosion of streambeds may occur in this case and affect downstream water quality. Access roads are likely to be added or modified with oil shale development. The construction activities on access roads involve clearing vegetation, grading, and building drainages. These activities would increase salt loading of streams near the roads. Sediment load could also be increased by the fallout of airborne dust and surface runoff, although these could be reduced or minimized by BMPs. The improvement of the drainage tends to increase surface runoff drainage efficiency and, thus, the erosion power of the runoff. The receiving stream downgradient would be affected by additional loading of dissolved salt and sediment (BLM 2013a).

The BLM may recommend additional mitigation measures to avoid, reduce or mitigate impacts on water resources once final engineering is complete.

Development and enforcement of mitigation measures is outside of the purview of BLM for the South Project. The exact nature and magnitude of the impacts would depend on the detailed mine plan of development which would be submitted to UDOGM for approvals.

4.2.5.1.2.4 Wetlands and Riparian Areas

The USACE determined that within the Project area (including both the Utility Corridor and South Project areas), there are 29 ephemeral channels that have an OHWM and that have a significant nexus with the Green River, a Traditional Navigable Waterway via connection to the White River (a perennial Regional Perennial Waterway). Specific areas to be disturbed within the South Project area are unknown at this time due to the lack of detailed engineering plans or mine plans of operations.

4.2.5.1.2.5 Floodplains

Floodplains associated with Evacuation Creek are present in the South Project area. The construction of structures associated with the South Project is not anticipated to occur in the 100-year floodplain. Potential impacts to floodplains would likely include removal of vegetation, removal of topsoil, alternation of erosion and drainage patterns. However, sufficient engineering data for the South Project facilities is not available at this time to quantify specific impacts on floodplains associated with Evacuation Creek. 40 CFR 1502.22 provides guidance for disclosing unknown information. For this project, it is unknown what quantity of impacts would occur to Evacuation Creek floodplains from the South Project under both the Proposed Action and No Action Alternatives because it has not yet been fully designed and engineered. This information is unknown, and cannot be obtained, due to the fact that design and engineering of the South Project will change based on whether or not BLM allows the Applicant to build one or more of the proposed utilities. BLM believes this unknown information is not essential to a reasoned choice between alternatives because the South Project will proceed to full buildout regardless of BLM's decision. It is understood by the BLM that the footprint of the South Project will be qualitatively similar under both the Proposed Action and No Action alternatives. However, additional facilities may be needed under the No Action Alternative (within the same project area footprint) to accommodate the Applicant's need to generate their own electricity and utilize trucks to deliver water and product to and from the South Project.

Obtaining the unknown footprint data for the South Project would be cost prohibitive because it would require the Applicant to design and engineer the entire South Project twice - once for the No Action and once for the Proposed Action alternatives. The relevance of the unknown footprint data is to quantify the full impacts to floodplains from the South Project. However the BLM anticipates that this information will be generated by the Applicant and subject to the UDOGM permitting process. In lieu of this data, the BLM has qualitatively discussed the anticipated impacts from the South Project and summarized existing scientific evidence and studies from which we formed and upon which we based our assumptions. Further evaluation of impacts including design to avoid or minimize impacts to the 100 –year floodplain is outside the jurisdiction of BLM and will be addressed during final design and permitting with UDOGM.

4.2.5.1.3 No Action Alternative – No Utility Project

Under the No Action Alternative, the planned utility corridors would not be constructed and associated impacts would not occur.

4.2.5.1.4 No Action Alternative – Non-federal Connected Action South Project

Impacts from construction and operation of the South Project would be similar to the Proposed Action – Non Federal Connected Action South Project.

The Applicant could seek alternate water sources if the right-of-way for the Utility Project were not approved. Options may include obtaining a new point of diversion on the White River or the development of a groundwater well field and right-of-way across BLM lands.

If the Applicant sought an alternative water pipeline right-of-way or groundwater development well field on BLM lands, they would need to submit a new right-of-way application (SF-299) to the BLM. Additional studies would be required to analyze the impact on the human, natural, and cultural environment. Depending on the timing and specifics of such new application, the evaluation in this EIS may need to be supplemented or a separate NEPA document would need to be prepared.

The Applicant has considered converting exiting groundwater monitoring wells to supply wells. Groundwater levels in the area range from a few feet below the surface where the aquifer crops out along Evacuation Creek to more than 600 feet below ground surface a few miles to the west. Table 4-15 lists details from drilling logs and well completion data obtained from UDWaR for wells located on or near the Applicant's private property.

Table 4-15
Preliminary Well Yields from Existing Groundwater Monitoring Wells

Well Log No.	Well #	TRS	Water Level (ft)	Yield 1 (gpm)	Yield 2 (gpm)
436781	Skyline 3A	T11S, R25E, S10	128	<1	0.3
436782	Skyline 3DC	T11S, R25E, S10	648	10	8
436783	Skyline 17DC	T11S, R25E, S05	290	25	14
436784	Skyline 17A	T11S, R25E, S05	60	<	0.6
436785	Did not Drill	T10S, R24E, S17	–	–	–
436786	Skyline 2A	T11S, R25E, S09	295	<1	-
436787	Skyline 4A	T11S, R25E, S14	120	<1	0.3
436788	PW-2	T11S, R25E, S25	Dry	-	-
436789	PW-1A	T10S, R24E, S36	4.5	<1	-

Table 4-15 Preliminary Well Yields from Existing Groundwater Monitoring Wells					
Well Log No.	**Well #**	**TRS**	**Water Level (ft)**	**Yield 1 (gpm)**	**Yield 2 (gpm)**
436790	PW-1B	T10S, R24E, S36	Artesian Flow	150	10
436791	Skyline 18A	T10S, R24E, S25	46	<1	3
436792	G-13 (new)	T11S, R25E, S07	Dry	–	–
436793	G-20 (new)	T11S, R25E, S07	8	150	58
SOURCE: UDWaR 2015 NOTE: One gallon per minute equals .00222801 cubic foot per second					

It is unlikely the existing monitoring wells on the Applicant's private property could be converted to supply wells. However, additional studies would be needed to determine if the wells could be fully developed to provide a sufficient quality, quantity, and rate of delivery for the construction, operation, and maintenance of the South Project.

Converting the point of diversion or developing new groundwater wells is administered through the Utah Division of Water Rights and can take up to a year or more. Prior to applying for the conversion, the Applicant would need to conduct testing on the wells to determine long-term availability and yield, and to design the production well field that would extract groundwater. The aquifer testing process would require additional test well drilling to deepen the existing monitoring wells to the target aquifer(s), followed by pump testing to determine yield. This testing process would take approximately six months. Once the point of diversion change application is approved, it would take the Applicant at least six months to drill and complete the wells in the approved aquifer formation to be used for water supply. The number and location of wells on the South Project would depend upon aquifer yield and point of diversion approval from UDWR. Prior to any change in the POD or approval for groundwater development, the UDWR will determine if the action would result in adverse impacts on adjacent groundwater users or surface water uses.

Impacts may include surface or groundwater depletion (depending on the source water); degradation of surface water from potential spills during construction and operations, and degradation of surface water due to sedimentation and turbidity from construction and operation activities. In addition, there is increased risk for spill of hazardous materials due to the increase in truck traffic to accommodate construction, and the ongoing shipment of supplies and project to and from market. Refer to Section 4.2.18 for further detail. No other impacts are anticipated from the alternative means of developing the South Project (as listed in Section 2.3.1.1).

4.2.5.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures that would reduce adverse impacts to this resource from the development of the proposed Utility Project are included in Table 4-1. Unavoidable adverse impacts may include long-term decreases in available surface water resources due to consumptive use, and impacts to water quality including sedimentation and potential spills.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.5.3 Irretrievable and Irreversible Commitments of Resources

Irretrievable and irreversible commitments of water resources from the development of the proposed Utility Project include potential for sedimentation and impacts to water quality from potential spills.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.5.4 Relationship of Short-term Uses to Long-term Productivity

The short-term impacts expected to occur as a result of construction of the Utility Project are not expected to result in adverse impacts to the long-term productivity of public land resources in the area. Construction of the Utility Project would require the short-term use of an existing water right. Following construction of the Utility Project, the existing water right will be used for the construction and long term operation of the South Project. The consumptive use of this water will not be available for other uses over the long-term.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.6 Vegetation

4.2.6.1 Direct and Indirect Effects

4.2.6.1.1 Proposed Action – Utility Project

Construction and operation of the Utility Project would result in direct and indirect impacts on the vegetation communities in the study area (Appendix A, Maps A-5a and A-5b). The direct effects on vegetation (i.e., modification of community structure, species composition, and extent of cover types) would occur from disturbance or removal of vegetation as a result of the construction of the Utility Project. Indirect effects to vegetation may include short- and long-term increased potential for noxious weed invasion, exposure of soils to elevated erosion, soil compaction, and shifts in overall species composition and/or changes in plant density.

Implementation of the Utility Project would result in the direct disturbance of 751.9 acres of vegetation cover (Table 4-16). Maps A-5a and A-5b in Appendix A provide vegetation cover types impacted by the Utility Project. This includes approximately 15 cover types. Following construction, temporary disturbance associated with construction of the Utility Project (Table 4-16) would be reclaimed. This would reduce the long-term disturbance associated with the implementation of the Utility Project.

Table 4-16
Acres of Disturbance of Each Vegetation Community Type in the Utility Project

Community Type	Acres
Colorado Plateau Mixed Bedrock Canyon Tableland	27.5
Colorado Plateau Mixed Low Sagebrush Shrubland	205.9
Colorado Plateau Pinyon-Juniper Shrubland	2.9
Developed, Open Space - Low Intensity	4.5
Inter-Mountain Basins Big Sagebrush Shrubland	255.3
Inter-Mountain Basins Greasewood Flat	72.7
Inter-Mountain Basins Mat Saltbush Shrubland	22.5
Inter-Mountain Basins Mixed Salt Desert Scrub	28.3
Inter-Mountain Basins Shale Badland	30.0
Invasive Annual Grassland	61.0
Invasive Southwest Riparian Woodland and Shrubland	2.0
Open Water	1.6
Rocky Mountain Lower Montane Riparian Woodland & *	0.5
Sparsely Vegetated Sand Dunes	22.6
White Shale Badland	14.0
Total	**751.9**

Indirect effects to vegetation would occur as a result of activities other than direct disturbance or removal of vegetation. Disturbances from construction could increase the potential for the introduction and spread of noxious weed species; increased public access and the potential for trampling/harvesting; fugitive dust from wind erosion; and wildfire.

4.2.6.1.2 Non-federal Connected Action South Project

The construction and operation of the South Project would result in 6,585.7 acres of disturbance to vegetation cover in 8 different cover types (Table 4-17) during the 30 year life of the project. Due to the nature of the planned operations at the South Project, the long-term disturbance of vegetation and amount of open disturbed areas at any point in time, may be reduced through the ongoing reclamation and revegetation of portions of the surface mine during the mine life. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant. The potential establishment of invasive and noxious weeds and the change in vegetation community structure would be a long-term impact.

Table 4-17
Acres of Disturbance of Each Vegetation Community Present in the South Project Area

Community Type	Acres
Colorado Plateau Mixed Low Sagebrush Shrubland	2,174.5
Colorado Plateau Pinyon-Juniper Shrubland	228.9
Colorado Plateau Pinyon-Juniper Woodland	97.9
Inter-Mountain Basins Big Sagebrush Shrubland	250.5
Inter-Mountain Basins Greasewood Flat	391.6
Inter-Mountain Basins Shale Badland	2,073.7
Invasive Annual Grassland	79.7
White Shale Badland	1,288.9
Total[1]	**6,585.7**

NOTE: [1]Estimated disturbance would occur over the life of the Project. Reclamation and revegetation activities would occur concurrently.

4.2.6.1.3 No Action Alternative – No Utility Project

Under the No Action Alternative, there would be no impacts on vegetation resources because the Utility Project would not be built.

4.2.6.1.4 No Action Alternative – Non-federal Connected Action South Project

Under the No Action Alternative, impacts on vegetation resources would be similar to those described for the Proposed Action – Non-federal Connected Action South Project. However, impacts to vegetation adjacent to Dragon Road would be increased because the roadway would remain unpaved. The large trucks associated with construction of the South Project, ongoing operations, and trucking of product would increase wear on the unpaved road which would increase erosion and fugitive dust and alter run-off patterns, which could affect the viability of vegetation along this roadway.

4.2.6.2 Unavoidable Adverse Impacts

Removal of vegetation associated with construction of the Utility Project is unavoidable. Additional unavoidable adverse impacts on vegetation include the increased potential for noxious weed invasion and resultant wildfire, as well as shifts in overall species composition and/or changes in plant density within the Utility Project study area.

The South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant. Without mitigation, potential impacts would likely be greater than those described for the Utility Project.

4.2.6.3 Irretrievable and Irreversible Commitments of Resources

Because of their limited productivity and relatively high potential for establishment of invasive and noxious species, it is assumed that disturbed vegetation communities within the Utility Project study area would lose at least some degree of functional value during the construction, operation, and maintenance of the Utility Project.

Due to the difficulty with eradication of noxious and invasive species from their introduced habitats, the invasion of these species into areas disturbed by project activities would be considered an irretrievable impact until restoration measures are completed and considered successful.

The South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant. Without mitigation, potential impacts would likely be greater than those described for the Utility Project.

4.2.6.4 Relationship of Short-term Uses to Long-term Productivity

Due to slow revegetation rates and relatively low revegetation success in arid climates, impacts to vegetation communities could result in long-term impacts on these vegetation communities in and adjacent to the right-of-way for the Utility Project that would extend beyond construction, operation, and maintenance activities. Long-term impacts associated with the Utility Project that could affect long-term productivity include the disturbance of herbaceous and shrub-dominated vegetation cover types that would require 10 to 15 years or more to recover, and the potential that populations of weedy annual species (e.g., *Halogeton*, cheatgrass) may become established in localized areas for extended periods of time. The decrease in vegetation cover types, either through direct impacts (i.e., removal of vegetation) or indirect impacts (i.e., the spread of noxious and invasive species), could impact ecological function and value.

The South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant. Without mitigation, potential impacts would likely be greater than those described for the Utility Project.

4.2.7 Special Status Plants

4.2.7.1 Direct and Indirect Effects

4.2.7.1.1 Proposed Action – Utility Project

The construction of the Utility Project and improvements to Dragon Road would result in both direct and indirect effects on special status plants. Potentially suitable habitats could be directly impacted as a result of construction implementation. Direct disturbance effects could include the loss of potential habitat due to construction activities. Indirect effects could include the following:

- Establishment of invasive weed species
- Accumulation of fugitive dust and erosion on listed plant species
- Loss of pollinators as a result of loss of individual plants

Adherence to ACEPMs, the Vernal RMP (2008), and conservation measures described in the Penstemon Agreement (2014) mitigation measures applied for the Utility Project would reduce adverse effects on special status plants. Where feasible, access roads that traverse sensitive habitats, habitat occupied by federally listed, threatened, proposed threatened, petitioned plant species, or other sensitive plant species would be blocked by fencing in cooperation with the BLM or land-owners. This would further minimize the potential for adverse effects on special status plants. Maps A-5a and A-5b in Appendix A demonstrate potential direct and indirect impacts on special status plants in the Project area.

4.2.7.1.1.1 Species Listed as Federally Threatened, Endangered, or Proposed

This section describes the potential effects of the Utility Project on federally listed, proposed, and candidate plant species carried forward for evaluation (refer to Table 3-13). Listed wildlife species are discussed in Section 4.2.9 and listed fish species are discussed in Section 4.2.10. In general, the magnitude and nature of effects resulting from the construction and operation of the Utility Project is assessed for the special status plant species relative to current existing conditions in terms of whether the effects are expected to reduce species survival and recovery.

Uinta Basin Hookless Cactus

Implementation of the Utility Project would result disturbance of 1.2 acres within the Level 1 and Level 2 Core Conservation area. Also, 68.4 acres of potential *Sclerocactus* habitat is present within the Utility Project area. According to surveys conducted by SWCA (2013f), no occurrences of *Sclerocactus* were observed in the Utility Project.

Implementation of the Utility Project also would increase the potential for occurrence of indirect and dispersed direct effects to Sclerocactus species, if present. Disturbances from construction activities could increase the potential for the invasion and establishment of noxious weed species. Additional indirect construction-related impacts could include an increased potential for wind erosion of disturbed areas creating airborne dust that could be transported into suitable habitat for these species. Airborne dust generated by vehicles could inhibit photosynthesis and transpiration in these species. Inhibited and reduced rates of photosynthesis could affect the rate of growth, the reproductive capacity of individual plants, and ultimately the ability of these individuals to persist in adjacent areas.

There is potential for both direct and indirect impacts to habitat, pollinators and seed dispersers due to the implementation of the Utility Project. Further, conditions of approval and mitigation measures for *Sclerocactus* will apply to the Utility Project. With best management practices, Applicant committed mitigation, and adherence to the conservation area requirements, impacts would be minor.

4.2.7.1.1.2 BLM Sensitive Species and Utah State Species of Concern

The types of direct and indirect effects associated with disturbance from construction of the Utility Project would be the same as those for listed special status plant species.

Graham's Penstemon (Beardtongue)

Implementation of the Utility Project would directly impact approximately 29.8 acres (0.25 percent) of habitat for the Graham's beardtongue (within the utility area not included in the PCAA).

Habitat protected under the Agreement would be affected by construction of the Utility Project (Table 4-18). Approximately 11,764.9 (58 percent of PCAA acres) acres of habitat occur in Unit 4. Within the Utility Project, improvements to existing roads would disturb 0.12 acre of the SITLA PCAA (Unit 4) and 4.88 acres of the BLM PCAA (Unit 4) to construct the 250 foot transmission line right-of way. The total acres of PCAA to be impacted by the project are about 0.025 percent of the total PCAA acres and 0.04 percent of habitat within Unit 4 PCAA (Table 4-19). Surface disturbance within the PCAA is limited to 5 percent additional disturbance for Graham's beardtongue within the conservation unit. Disturbances within the PCAA will be reviewed and consulted on with the Conservation Team (Agreement 2014). No direct effects to individual plants within the Utility Project would occur, as Graham's beardtongue was not identified in the utility area or within 300 feet of the utility area. No individual plants were discovered in the Utilities Area during baseline surveys conducted in the summer of 2013.

Table 4-18
Penstemon Conservation Agreement Area Acres Protected Under the Agreement

Landowner	Penstemon Conservation Area Acres	Interim Conservation Area Acres
BLM	34,486.5	0
SITLA	2,355.9	3,359.5
UDWR	743.5	0
Private	2,787.4	345.5
SOURCE: SITLA 2014		

Table 4-19
Total Penstemon Conservation Agreement Area Acres Percent of Disturbance in Conservation Unit 4

Conservation Unit	Total PCAA Acres	PCAA Acres within the Utility Project	Percent of PCAA Disturbance Acres within Unit 4
BLM PCAA	19,971.6	4.88	0.024
SITLA PCAA		0.12	0.0006
SOURCE: SITLA 2014			

Impacts associated with land disturbance are associated with an increase in establishment of noxious weed species. An indirect effect of weed species (Section 3.2.6) includes increased competition for essential water and nutrients and even light in dense growth areas. Because weed species out-compete native vegetation and alter habitat structure and composition of species, the habitat suitability could be decreased leading to a decline of Graham's beardtongue. Another indirect effect of invasive weeds could include impacts related to herbicide use.

Indirect impacts could occur from fugitive dust and soil erosion within the utilities area and the 300 foot buffer abutting the PCAAs or individual plants. Fugitive dust from construction activities could adversely affect photosynthesis, growth rate, transpiration and hydration, and other physiological factors in plants.

Implementation of the Utility Project would have temporary, negative effects on bees and other pollinators, which could reduce plant reproduction; although White River beardtongue can self-pollinate (Lewinsohn and Tepedino 2007).

ACEPMs would reduce direct and indirect impacts to Graham's penstemon. The Applicant intends to comply with the conservation agreement during implementation of the Utility Project including the non-conservation areas as directed by the agreement.

White River Penstemon (Beardtongue)

Direct and indirect effects on White River beardtongue are the same as those described for Graham's beardtongue. Table 4-18 details the distribution of the PCAA acres protected under the Agreement. Interim conservation areas are designated areas on SITLA and private lands that are likely to be used for future surface development which are managed as conservation areas until surface-disturbing activities have been permitted. Map C-5a and Map C-5b provide locations of penstemon habitat in relation to the Utility Project.

Habitat for White River beardtongue occurs throughout the Conservation Units, including those not covered under the Agreement. Surface disturbance within the PCAA is limited to 2.5 percent additional disturbance for White River beardtongue within the conservation unit. Disturbances within the PCAA will be reviewed and consulted on with the Conservation Team (Agreement 2014) prior to construction of the Utility Project.

Habitat for the White River beardtongue within the PCAA is the same as that described for Graham's beardtongue (Map C-5a and Map C-5b) that will have both direct and indirect effects as a result of the construction and operation of the Project. Both direct and indirect effects on White River beardtongue by construction of the Utility Project would be the same as those described for Graham's beardtongue. No individual plants were discovered in the Utilities Area during baseline surveys conducted in the summer of 2013.

ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project would reduce direct and indirect impacts to White River beardtongue. The Applicant intends to comply with the Conservation Agreement during implementation of the Utility Project including the non-conservation areas as directed by the agreement.

Implementation of the Utility Project may affect but is not likely to affect the White River beardtongue to the degree that would result in listing of the species.

Barneby's Catseye

Under the Utility Project, approximately 2.8 acres of pinyon-juniper woodland and 422.3 acres of sagebrush vegetation would be impacted, which is potential habitat for Barneby's catseye.

Implementation of the Utility Project could also increase the potential for indirect and dispersed direct effects to this species, if present. Disturbances from construction could increase the potential for the invasion and establishment of noxious weed species. In addition, these disturbances could potentially increase wind erosion of disturbed areas, which creates airborne dust that could be transported into suitable habitat for this species. No individual plants were discovered in the Utilities Area during baseline surveys conducted in the summer of 2013.

Implementation of the Utility Project may impact individual Barneby's catseyes and habitat. Adherence to ACEPMs would reduce impacts on Barneby's catseye.

Sterile Yucca

Implementation of the Utility Project could result in the direct disturbance of potential habitat for sterile yucca, if present within the Project area. Under the Utility Project, approximately 497.2 acres of mixed sagebrush, salt desert scrub, and pinyon-juniper woodland vegetation, which is potential habitat for sterile yucca, would be impacted. No individual plants were discovered in the Utilities Area during baseline surveys conducted in the summer of 2013.

Implementation of the Utility Project could also increase the potential for indirect and dispersed direct effects to this species, if present. Disturbances from construction could increase the potential for the limited invasion and establishment of noxious weed species. Furthermore, these disturbances could potentially increase wind erosion of disturbed areas, which creates airborne dust that could be transported into suitable habitat for this species.

Implementation of the Utility Project may impact individual sterile yuccas (if present). Adherence to ACEPMs would reduce impacts on the sterile yucca.

Strigose Easter-daisy

Implementation of the Utility Project could result in direct disturbance of potential habitat for strigose Easter-daisy in the Utilities Area. This includes 25.8 acres of potential White Shale Badland habitat (refer to Table 3-10). No individual plants were discovered in the Utilities Area during baseline surveys conducted in the summer of 2013.

Implementation of the Utility Project could have indirect and dispersed direct effects on this species. Disturbances from construction could increase the potential for the limited invasion and establishment of noxious weed species. In addition, these disturbances could potentially increase wind erosion of disturbed areas, which creates airborne dust that could be transported into suitable habitat for this species.

Implementation of the Utility Project may impact individual daisies and habitat but is not likely to result in a trend towards federal listing of the species. Adherence to ACEPMs would reduce impacts on the strigose Easter-daisy.

4.2.7.1.2 Non-federal Connected Action South Project

Special status plants would be subject to the same indirect impacts associated with construction of the South Project. The potential disturbance of each habitat type varies. Conservation measures described in the Penstemon Agreement (SITLA 2014) mitigation measures would reduce adverse effects on special status plants. The South Project, a non-federal connected action, would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise required by state or federal regulations or otherwise determined by the Applicant. Without mitigation, potential impacts would likely be greater than those described for the Utility Project.

4.2.7.1.2.1 Species Listed as Federally Threatened, Endangered, or Proposed

This section describes the potential effects of the South Project on federally listed, proposed, and candidate plant species carried forward for evaluation (refer to Table 3-12). Listed wildlife species are discussed in Section 4.2.9 and listed fish species are discussed in Section 4.2.10. In general, the magnitude and nature of effects resulting from the construction and operation of the South Project is assessed for the special status plant species relative to current existing conditions in terms of whether the effects are expected to reduce species survival and recovery. Conclusions regarding the effects of the South Project on the species, as well as a determination of effect, are presented for each species carried forward for analysis.

Uinta Basin Hookless Cactus

Implementation of the South Project would not result in indirect effects to the Uinta Basin hookless cactus. No individual plants were discovered in the South Project area during baseline surveys conducted in the summer of 2013.

Implementation of the South Project is not likely to adversely affect the species.

4.2.7.1.2.2 BLM Sensitive Species and Utah State Species of Concern

Graham's Penstemon (Beardtongue)

Potentially suitable habitats could be indirectly impacted as a result of construction implementation. Direct disturbance effects could include the loss of potential habitat due to construction activities. The impacts associated with construction of the South Project are similar to those discussed for the Utility Project.

Within the South Project there are approximately 1,052.7 acres (6.16 percent) of the 17,078.6 acres of penstemon habitat with Unit 3 that is not within the PCAA and will have indirect effects to habitat as a result of the construction and operation of the South Project (Table 4-20). Approximately 937 acres of private non-conservation area (PCAA Unit 3) would be affected by the construction of the South Project. This would account for 8 percent of penstemon habitat in Unit 3 within the private non-conservation area. There are 363.7 acres of private non-conservation area in Unit 4 that would also have indirect effects from construction of the South Project (Table 4-20). This would account for 3.1 percent of the penstemon habitat within Unit 4 under the South Project. Surveys conducted in 2013 identified 118 individual penstemon in the South Project area outside the proposed disturbance areas. No individual plants were identified in the mine disturbance area or within 300 feet of the mine area.

Table 4-20
Total Penstemon Conservation Agreement Area Acres
Percent of Disturbance in Conservation Units 3 and 4

Conservation Unit	Total PCAA Acres per Unit	Private Non-Conservation Acres within the South Project	Percent of PCAA Disturbance Acres within Unit 4
Private Non-Conservation Area Unit 3	17,078.6	937	8.0
Private Non-Conservation Area Unit 4	11,560.58	363.7	3.1
SOURCE: SITLA 2014			

No direct effects to individual plants would occur since White River beardtongue was not identified in the mine area or within 300 feet of land disturbing activities, although penstemon could occur at some point in the future.

ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. The Applicant intends to comply with the Penstemon Agreement (SITLA 2014) during implementation of the South Project, including the non-conservation areas as directed by the agreement, which would reduce the indirect impacts on Graham's beardtongue.

White River Penstemon

Potentially suitable habitat for the White River beardtongue would be indirectly impacted as a result of construction of the South Project. Impacts associated with construction of the South Project are similar to those discussed for construction of the Utility Project. Surveys conducted in 2013 identified 256 White River beardtongue plants in the South Project areas.

Approximately 1,155.8 acres of White River beardtongue habitat occurs in the South Project. However, this habitat is not within the PCAA. Construction and operation of the South Project would have no effects to individual plants within the South Project since individual White River beardtongue does not occur in the proposed disturbance areas or within 300 feet of land disturbing activities.

It is possible that White River beardtongue could occur at some point. ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. . The Applicant intends to comply with the Penstemon Agreement (SITLA 2014) during implementation of the South Project, including the non-conservation areas as directed by the agreement, which would reduce the indirect impacts on White River beardtongue.

Barneby's Catseye

Implementation of the South Project could increase the potential for indirect and dispersed effects to this species. Disturbances from construction would increase the potential for the invasion and establishment of noxious weed species. In addition, these disturbances could potentially increase wind erosion of disturbed areas, which creates airborne dust that could be transported into suitable habitat for this species. Surveys conducted in 2013 identified 315 Barneby's catseye in the South Project area.

ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. Therefore, it is anticipated that impacts to Barneby's catseye would occur within the South Project area.

Sterile Yucca

Although no individual plants or habitat are known to exist in the South Project area (SWCA 2013f), implementation of the South Project could result in the disturbance of potential habitat for sterile yucca, if present within the Project area. Based on data provided, potential habitat for sterile yucca in the South Project area cannot be determined.

ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. Therefore, it is anticipated that impacts to sterile yucca would occur within the South Project area.

Strigose Easter-daisy

Implementation of the South Project could result in indirect disturbance of potential strigose Easter-daisy habitat in the South Project area. This includes 1,728 acres of potential White Shale Badland Colorado Plateau Mixed Low Sagebrush Shrublands (refer to Table 3-10). Baseline surveys performed by SWCA in 2013 revealed 25 plants in the South Project area.

Implementation of the South Project could have indirect and dispersed effects on this species. Disturbances from construction could increase the potential for the limited invasion and establishment of noxious weed species. In addition, these disturbances could potentially increase wind erosion of disturbed areas, which creates airborne dust that could be transported into suitable habitat for this species.

ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. Therefore, it is anticipated that impacts to strigose Easter-daisy would occur in the South Project area.

4.2.7.1.3 No Action Alternative – No Utility Project

Under the No Action Alternative, there would be no impacts on special status plant resources associated with the Utility Project.

4.2.7.1.4 No Action Alternative – Non-federal Connected Action South Project

Under the No Action Alternative, impacts on special status plants would be similar to those described under the Proposed Action – Non-federal Connected Action South Project.

4.2.7.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures for the Utility Project that would reduce adverse impacts to this resource are included in Table 4-1. Removal of vegetation associated with construction of the Utility Project is unavoidable. This adverse impact on special status plants would occur to varying degrees, and may include the following:

- Long-term losses of potential habitat useful for the survival or recovery of special status plant species.
- Fugitive dust from ongoing operations and traffic could affect reproduction of special status plant species, as well as the ability for pollination.

The South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise required by state or federal policy or otherwise determined by the Applicant.

4.2.7.3 Irretrievable and Irreversible Commitments of Resources

Losses of potential habitat necessary for the survival or recovery of special status plant species would be irretrievable until disturbed areas were actively and adequately restored. The fragmentation of habitat for special status plant species from the Utility Project would be irretrievable until these features were removed and reclaimed following project completion. The increased spread of invasive weeds into the habitat of special status species would be either irretrievable or irreversible, depending on the success of weed eradication efforts. Where the alteration of plant habitat cannot be reclaimed, such as the disturbance of BSCs or other soils required by special status plants, these impacts would be irreversible as well.

The South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise required by state or federal policy or otherwise determined by the Applicant.

4.2.7.4 Relationship of Short-term Uses to Long-term Productivity

Construction of the Proposed Action would provide a short-term use that would result in long-term loss and fragmentation of habitat for special status species. Noxious weed invasion into the habitat of special status plant species would also be a long-term effect of the construction and project-related activities, and could affect the long-term productivity of habitats that are invaded.

The South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise required by state or federal policy or otherwise determined by the Applicant.

4.2.8 Wildlife

This section addresses potential impacts on wildlife from the development of Utility Project and the subsequent development of the South Project or selection of the No Action Alternative.

4.2.8.1 Direct and Indirect Effects

4.2.8.1.1 Proposed Action – Utility Project

Direct and indirect effects of construction and operation activities on wildlife may include:

- Direct and indirect effects on general wildlife habitat;
- Direct and indirect affects to big game including loss and degradation of designated crucial habitat;
- Direct and indirect impacts on migratory birds due to loss and degradation of habitat.

Map C-6a and Map C-6b describe wildlife habitat in relation to the project features and associated areas of impact by the construction and operation of the Utility Project.

4.2.8.1.1.1 General Wildlife and Wildlife Habitat

Construction and operation of the proposed project would result in direct and indirect impacts on wildlife and wildlife habitats. Direct impacts on wildlife likely to be associated with the Utility Project include: (1) the loss of certain wildlife habitats due to construction activities such as ground disturbance in the vicinity of the Utility Project; and (2) habitat fragmentation. The magnitude of impacts on wildlife and wildlife habitats would depend on a number of factors, including the type, timing, and duration of disturbance, the species of wildlife present, time of year, and successful implementation of mitigation measures applied to the Utility Project.

Implementation of the Utility Project would result in the direct disturbance of 607.3 acres of vegetation that serves as suitable wildlife habitat. This includes 28.1 acres of Badlands, 26.4 acres of cliff and canyon, 64 acres of greasewood flats, 2.8 acres of pinyon-juniper forest, 2.6 acres of riparian, 422.3 acres of sagebrush shrubland, 72.1 acres salt desert scrub cover types, and an additional 1.5 acres of open water and 59.6 acres of previously developed/disturbed lands. Direct disturbance to wildlife habitat includes activities such as ground surface grading and excavation, vegetation removal, and/or improvements of roads that could disturb surface and subsurface soils. Each of these activities could effectively remove and degrade existing habitat, reducing its availability to wildlife.

Big Game

Suitable habitat exists within herd unit areas for mule deer, pronghorn, Rocky Mountain elk, Rocky Mountain bighorn sheep, and bison. Mule deer and pronghorn occur throughout the Utility Project study area. No elk, bison, or bighorn sheep were documented by surveys conducted in 2013. In addition to habitat, river corridors such as the White River, as well as riparian habitat, are highly important habitat areas for big-game species. These areas facilitate movement, feeding, watering, and resting areas. In the Uinta Basin, mule deer occur in riparian areas along the White River and Evacuation Creek located in the Utility Project study area and within habitats consisting of spruce/fir, aspen, alpine meadows, and other grassy areas (SWCA 2013j). Winter range habitat primarily consists of shrub-covered, south-facing slopes, which often coincide with areas of concentrated human use and occupation. Winter range is often considered a limiting factor for mule deer in the Intermountain West (UDWR 2013). The size and condition of mule deer herds are usually directly correlated with the quantity and quality of their habitat.

The BLM Vernal Field Office RMP (2008) responds to issues regarding wildlife by providing restrictions to uses in crucial wildlife habitat areas. The BLM uses the UDWR crucial habitat boundaries to apply these restrictions because UDWR is the entity with jurisdiction and expertise over wildlife in Utah. The timing limitation stipulations in the BLM Vernal Field Office RMP (2008) are applied to crucial big game wildlife and raptor habitats identified by the BLM and the Utah Division of Wildlife Resources.

Mule Deer

The Utility Project study area supports a year-round resident population of mule deer, primarily to the south of White River (EPG 2015a). Overall herd populations in Utah are estimated at 332,900 deer (UDWR 2013). Herd population estimates were approximately 8,600 for the Books Cliffs Herd Management Unit 10 (UDWR 2012, EPG 2015b).

Direct impacts on mule deer from the Utility Project would result from direct habitat loss and fragmentation of winter substantial habitat, which includes winter concentration areas. A reduction in the amount of forage availability in these areas could preclude some individuals from accessing habitats specific to their winter migration cycles that could lead to a decrease in overall production or fitness. Displacement is of greatest concern in areas that have been recognized as crucial habitat that are essential for the maintenance of local populations. Total mule deer habitat in Utah is estimated at 29,370,577 acres with 10,189,038 acres of summer habitat, 13,787,762 acres of winter habitat, and 5,393,777 acres of transitional or year-long habitat (UDWR 2013).

Under the Utility Project, approximately 210.8 acres of UDWR-designated year-long crucial mule deer habitat would be impacted. The development of the Utility Project would initially result in the direct short-term loss of approximately 154 acres of crucial winter habitat and 109.5 acres of winter substantial habitat within the Utility Project (Table 4-21).

Table 4-21 Big-Game UDWR-designated Habitat in the Utilities Area			
Big-Game Habitat	**Season**	**Type**	**Acres**
Mule deer	Winter	Crucial	153.9
	Winter	Substantial	109.5
	Year-long	Crucial	210.8
	Total for mule deer		**474.2**
Pronghorn	Year-long	Crucial	422.3
Rocky Mountain elk	None	None	0.00
Rocky Mountain bighorn sheep	Year-long	Crucial	57.8
Bison	Year-long	Crucial	281.4

Other direct impacts of the Utility Project on mule deer include vehicle-related mortalities resulting from an increase in the use by vehicles, both project and non-project related. Increases in traffic would be the same for all big game species and are not repeated (refer to Section 4.2.16 for details on traffic volume). Under the Utility Project, improvements to Dragon Road would include widening, adjustments to the current alignment, and paving. Section 2.2.6 and Section 2.2.7 describe how the Applicant will construct access roads and conduct improvements to Dragon Road. Section 2.2.8.9 describes the Project Cleanup and Final Reclamation and the Green River District Reclamation Guidelines (BLM 2009).

The degree of mule deer displacement and reduction in habitat value, as a result of the Utility Project, would vary depending on the habitat types, vegetative cover, topography, existing herd size, winter snow conditions, animal health, traffic levels, and human presence.

The Applicant is committed to following BLM RMP mitigation and BMPs (BLM 2008f) for the Utility Project. To mitigate these impacts, the BLM employs seasonal timing stipulations for the proposed construction activities in mule deer crucial winter habitat; no surface disturbance is allowed between December 1 and April 30 (BLM 2008f) and mule deer fawning (May 15 – June 30).

Pronghorn Antelope

The greatest direct impact to pronghorn and other big game under the Utility Project would be direct habitat loss and fragmentation and would be similar to other big game species.

Vehicular fatalities as a result of increased traffic on the existing roads in the Project Area would be the same as those described for mule deer. Under the Utility Project no new roads would be constructed, although improvements to Dragon Road will be made by the Applicant.

UDWR-defined pronghorn, year-long, crucial habitat encompasses approximately 422.3 acres in the north portion of the Utility Project area north of the White River crossing, including the Bonanza Power Plant, where pronghorn are likely to occupy areas of the Utility Project on a year round basis (Table 4-21).

No fawning habitat has been identified by the BLM or the UDWR in the utilities area, so there would be no direct impacts to pronghorn fawning activities. No timing stipulations are in place for any pronghorn habitats other than fawning grounds. Impacts related to displacement and loss of habitat value would be the same for pronghorn antelope as for deer and elk. The Applicant is committed to following BLM RMP mitigation and BMPs (BLM 2008f) for the Utility Project.

Rocky Mountain Bighorn Sheep and Bison

Impacts related to displacement and loss of habitat value would be the same for Rocky Mountain bighorn sheep as for mule deer. Year-long, crucial Rocky Mountain bighorn sheep habitat exists within the Utility Project vicinity and crosses the utility area at the White River and Evacuation Creek crossings are located encompassing 57.8 acres (Table 4-21). No individual sheep occur in the utility area according to surveys conducted in 2013.

Impacts related to vehicle collisions, legal and illegal hunting, and harassment and disturbance of individual animals would be the same for Rocky Mountain bighorn sheep as for the other big game species. Given that no bighorn sheep were documented by surveys in 2013, the likelihood of collisions is much lower than for other big game species.

The Applicant is committed to following BLM RMP mitigation and BMPs (BLM 2008f) for the Utility Project.

Bison

Impacts related to displacement and loss of habitat value would be the same for bison as for mule deer. Accordingly, seasonal timing stipulations employed by BLM to minimize these impacts are the same for mule deer and elk.

The Book Cliffs Rattlesnake bison herd population size was estimated at 150 and increasing, and the Book Cliffs Ute Tribe population size was also estimated at 350 and increasing (UDWR 2013). Direct and indirect effects on bison by construction, operation, and maintenance of the Utility Project would be similar to other big game.

Year-long, crucial habitat encompasses about 6,585.7 acres includes all areas south of the White River crossing (Table 4-21). No individual bison were observed in the Project Area by surveys in 2013.

Impacts related to vehicle collisions would be the same for mule deer. Given that no bison were documented by surveys in 2013, the likelihood of collisions is much lower than for other big game species.

The Applicant is committed to following BLM RMP mitigation and BMPs (BLM 2008f) for the Utility Project.

Rocky Mountain Elk

The primary direct impact on elk would be the immediate loss of habitat for forage and cover. Impacts related to displacement and loss of habitat value would be the same for elk as for mule deer. Consequently, seasonal timing stipulations employed by BLM to minimize these impacts are the same for mule deer and elk.

Vehicular fatalities as a result of increased traffic on the existing roads in the Utility Project study area would be the same as those described for mule deer. Under the Utility Project, no new roads would be constructed although improvements to Dragon Road will be made by the Applicant.

The Utility Project study area supports a year-round resident population of about 4,300 elk, primarily north of White River (EPG 2015a). No UDWR-designated elk habitat occurs in the Utility Project and elk were not observed in the utilities area during the 2013 surveys, but were observed during aerial surveys from 1 to 4 miles outside of the Utility Project study area (Table 4-21). Additionally, no UDWR-designated elk habitat was identified in the Project area. The Applicant is committed to following BLM RMP mitigation and BMPs (BLM 2008f) for the Utility Project.

Migratory Birds

For the purposes of impact analyses in this EIS, impacts on migratory birds within the Utility Project (refer to Table 3.19) are discussed together qualitatively; however, estimates of surface disturbance in vegetation communities that provide habitat for migratory birds are summarized in Section 4.2.6. Impacts to migratory birds would be similar for all migratory birds and would vary depending on habitat types and sensitivity to disturbance. All migratory birds within the utilities area are discussed collectively and estimates of surface disturbances are discussed in Section 4.2.6.

Loss, alteration, and fragmentation of migratory bird habitat can adversely affect survival and breeding success, which can cause or contribute to population declines in migratory bird species (Finch 1991). While habitat loss due to permanent development is assumed to affect any bird species that may be present, the effects of habitat alteration and vegetation change on birds can be subtle, and may not always represent a complete loss of habitat for all birds. Many bird species can use highly modified landscapes, including farmland, high-density urban areas, and other developed areas.

The intensity of direct and indirect impacts from the Utility Project on migratory birds that use the Utility Project study area and surrounding region would largely be dependent on seasonal timing of construction and operational activities. If construction of the Utility Project were completed after August 31, many of the migratory bird species would have left the Utility Project study area to migrate to their wintering grounds or at least have fledged and left the nest. Disturbances during this time would be temporary, and Utility Project related impacts would not likely have a significant impact on migratory bird populations collectively or on an individual basis.

In contrast, if activities related to construction of the Utility Project were to take place during the nesting season (i.e., spring and summer), the Utility Project could result in some level of nest abandonment due to increased noise levels and human disturbance, direct mortality due to abandonment, reproductive failure, displacement of birds during activities, and inadvertent destruction of nests. Construction and maintenance activities would avoid areas supporting actively nesting birds during the migratory bird nesting season, when possible, between February 1 and August 31; however, dates may vary depending on species, current environmental conditions, results of preconstruction surveys, and approval by agency biologists or agency-approved environmental inspectors.

Both direct and indirect effects on migratory birds from the Utility Project would be similar for all migratory bird species, but would vary depending on the type of habitat lost (i.e., loss of vegetation communities preferred by different species) and species' sensitivities to disturbance. The direct removal or fragmentation of vegetative communities used by migratory birds would persist in the study area, until successful reclamation is achieved. Successful reclamation, in conjunction with weed control efforts (Appendix C), would restore loss of nesting and foraging habitat for migratory birds over time.

Surface disturbance within the Utility Project would encompass 1,037.2 acres including both temporary and permanent surface disturbance (refer to Table 2-1). Permanent surface disturbance associated with the Utility corridor facilities and Dragon Road improvements include a product delivery pipeline (68.3 acres), 138kV transmission line and associated facilities (501.4 acres), and Dragon Road improvements (41.7 acres). Temporary disturbances include 31.2 acres for a temporary laydown area and 225 acres of the transmission line. Temporary surface disturbance would be reclaimed once construction is completed. Vegetation communities in the Utility Project study area (refer to Table 4-16) consist of 15 types covering 751.9 acres. Table 4-22 provides the possible percent range of disturbance to vegetation communities that provide habitat for migratory birds.

Table 4-22
Percent of Surface Disturbance to Vegetation Community Types in the Utility Project

Community Type	Acres	Disturbance (percent)[1]
Colorado Plateau Mixed Bedrock Canyon Tableland	27.5	3.66
Colorado Plateau Mixed Low Sagebrush Shrubland	205.9	27.38
Colorado Plateau Pinyon-Juniper Shrubland	2.9	0.39

Table 4-22
Percent of Surface Disturbance to Vegetation Community Types in the Utility Project

Community Type	Acres	Disturbance (percent)[1]
Developed, Open Space - Low Intensity	4.5	0.60
Inter-Mountain Basins Big Sagebrush Shrubland	255.3	33.95
Inter-Mountain Basins Greasewood Flat	72.7	9.67
Inter-Mountain Basins Mat Saltbush Shrubland	22.5	2.99
Inter-Mountain Basins Mixed Salt Desert Scrub	28.3	3.76
Inter-Mountain Basins Shale Badland	30.0	3.99
Invasive Annual Grassland	61.0	8.11
Invasive Southwest Riparian Woodland and Shrubland	2.0	0.27
Open Water	1.6	0.21
Rocky Mountain Lower Montane Riparian Woodland and Shrubland	0.5	0.07
Sparsely Vegetated Sand Dunes	22.6	3.01
White Shale Badland	14.0	1.86
Total	**751.9**	**100.0**

NOTE: [1]Includes both permanent and temporary surface disturbance acres.

Another direct effect on migratory birds from the Utility Project includes the construction of transmission line towers that would contribute to collision risk particularly in areas where transmission lines cross bird landing or take-off flight paths and in areas where birds that are at relatively higher risk for collision are known to occur (i.e., White River crossing). The White River crossing would likely have greater potential for collisions by birds and raptors; therefore, a site-specific avian plan will be developed to assist the engineering design, and will utilize standards from the APLIC and Moon Lake Avian Protection Plan.

Locations where the Utility Project would be constructed parallel and adjacent to existing transmission lines would limit the area of disturbance, increase the visibility of obstacles in the corridor, require birds to make only one flight adjustment to avoid obstacles, and potentially lower the overall collision risk (APLIC 2012). However, locations where the Utility Project is parallel to lower-voltage transmission lines may result in the placement of wires at different heights across the corridor, which can cause birds to avoid one obstacle but fail to detect and avoid others (APLIC 2006).

All transmission facilities will be constructed to avian-safe design standards as identified in a site-specific avian plan, the APLIC, and the Moon Lake Avian Protection Plan., These design standards would limit the potential for avian wildlife collision and reduce the potential for avian injury and mortality. Mortality from electrocution is unlikely as the distance between conductors and the distance between energized conductors and grounded equipment is built to APLIC standards for high-voltage transmission lines (500kV and 345kV) and is greater than the wingspan of all avian species likely to occur in the Project area.

Adherence to ACEPMs would help avoid direct impacts, and lessen indirect impacts. Project-related development in areas directly associated with raptor nest and roost areas would be guided by the use of Best Management Practices for Raptors and Their Associated Habitats in Utah (BLM 2006a) and the FWS Utah Raptor Protection Guidelines using seasonal and spatial buffers as well as mitigation to maintain and enhance raptor nesting and foraging habitat, while allowing for other resource uses. Additionally, implementation of conservation measures in the BLM RMP (2008f) and MLEA Avian Protection Plan would be followed.

The BLM's Strategic Plan for Migratory Bird Conservation (2013a) would help avoid direct impacts and lessen indirect impacts on migratory birds. For these reasons, implementation of the Utility Project is not expected to produce any appreciable long-term negative changes to the raptor prey base within the Utility Project study area.

Raptors

The Utility Project would result in direct and indirect impacts on breeding, nesting, and foraging raptors. The level of these impacts would depend on the location of the Utility Project relative to occupied territories, active, unoccupied, or inactive nest sites, wintering areas, and foraging areas. The primary impacts on raptors could include:

- Alteration or temporary loss of forging habitat
- Nest desertion or reproduction failure
- Temporary reductions in prey abundance as a result of Utility Project
- Potential mortality due to collisions and electrocution

In general, direct and indirect effects on raptors are similar to those described for general wildlife and migratory birds. Raptors in the Utility Project (refer to Table 3-19) are generally wide ranging and use a variety of habitat types for breeding, nesting, and foraging. Because of the diversity of habitats used, and raptors' sensitivity to nesting disturbances, impacts on raptors are analyzed according to the amount of potential disturbance to available habitat in the Project area. Surface disturbance within occupied territory nesting, and foraging areas would be directly related to the amount and timing of Utility Project.

A direct effect on raptors from the Utility Project includes the construction of transmission line towers that would contribute to collision risk particularly in areas where transmission lines cross bird landing or take-off flight paths and in areas where birds that are at relatively higher risk for collision are known to occur (i.e., White River crossing). The White River crossing would likely have greater potential for collisions by birds and raptors; therefore, special mitigation measures for the Utility Project at this location will be developed in a site-specific avian plan and will utilize standards from the APLIC and Moon Lake Avian Protection Plan.

Locations where the Project would be constructed parallel and adjacent to existing transmission lines would limit the area of disturbance, increase the cumulative visibility of obstacles in the corridor, require raptors to make only one flight adjustment to avoid obstacles, and potentially lower the overall collision risk (APLIC 2012). However, locations where the Project is parallel to lower-voltage transmission lines may result in the placement of wires at different heights across the corridor, which can cause birds to avoid one obstacle but fail to detect and avoid others (APLIC 2006).

Utility Project activities conducted in proximity to an active nest during the breeding season would likely result in nest abandonment (a direct effect) and possibly mortality of young (an indirect, adverse effect). Utility Project facilities constructed near a raptor nest (active, unoccupied, or inactive) would likely prevent that nest from being used in the future, because many species of raptors alternate between nest sites within a breeding territory and tend to avoid nest sites near disturbances (Kruger 2002).

Under the BLM Vernal Field Office RMP (2008f), best management practices require a 0.25- to 0.5-mile construction buffer around active nest sites throughout the courtship and fledging stages. A 1.0-mile buffer would be applied around peregrine falcon nests; however, none were detected during the raptor surveys. The assumption is that these buffers would allow space for even the more sensitive raptor species (such as ferruginous hawks) to remain undisturbed. Inactive raptor nests, including eagle nests, are defined as nests that do not exhibit evidence of use, such as greenery in the nest, fresh whitewash, obvious nest maintenance, or the observed presence of adults or young at the nest, for a period of three consecutive years. Some raptors will refurbish a nest that has been out of use for more than two years if it is in a preferred location.

Much of the surface disturbance from the Utility Project would occur in locations where raptors already encounter at least some degree of visual and noise disruptions. In addition, as increased noise levels and visual disturbances associated with construction activities would be localized and short-term, displacement to adjacent habitats would likely be temporary in nature and would not likely alter the productivity of current raptor populations within the Utility Project area. In addition, the topography (e.g., mesa tops, cliff faces, rock outcrops) in which most identified raptor nest sites are located precludes the development of proposed facilities in the immediate vicinity of these areas.

Much of the surface disturbance in the Utility Project would occur in areas of existing infrastructure and in habitats fragmented by past energy development activity. The gradual transformation and degradation of habitats within the Project vicinity from past mining and energy development is likely a contributing factor on the current nesting activity in the area. While conducting baseline studies, SWCA (2013j) located 91 raptor nests, of which 72 (79 percent) were unoccupied and 19 (21 percent) displayed signs of activity. One unoccupied raptor nest was identified in the Utility Project according to SWCA (2013i).

Improvements to Dragon Road will not likely create an increase to public access but would create the potential for collisions with automobiles during construction activities. Also, construction activities could include the use of helicopters that would increase the potential for direct mortalities to raptors and indirect and temporary disturbance by noise. Construction of the Utility Project would initially disturb 679.4 acres of wildlife habitat that support small mammals and other wildlife that serve as prey for raptors.

While prey populations in the Utility Project would likely be affected by the Utility Project, prey numbers would be expected to soon rebound to pre-disturbance levels following reclamation of the disturbance area involving transmission and pipelines, unused portions of lay-down areas and roads that are no longer productive. Once reclaimed, these areas will likely promote an increased density of biomass and small mammals that would be comparable to those of undisturbed areas.

Electric distribution and transmission structures would be designed according to the site-specific avian plan developed to assist the engineering design, and will utilize standards from the APLIC and Moon Lake Avian Protection Plan, which would significantly reduce the risk of electrocution of raptors. Adherence to these guidelines would help avoid direct impacts and lessen indirect impacts. In addition, project-related development in areas directly associated with raptor nest and roost areas would be guided by the use of Best Management Practices for Raptors and Their Associated Habitats in Utah (BLM 2006a) and the FWS Utah Raptor Protection Guidelines using seasonal and spatial buffers as well as mitigation to maintain and enhance raptor nesting and foraging habitat, while allowing for other resource uses. Additionally, implementation of ACEPMs, and conservation measures in the BLM RMP (2008f) and MLEA Avian Protection Plan would be followed. With the implementation of these measures, construction, operation, and maintenance of the Utility Project would not be expected to produce any long-term effects on raptors in the Project area.

4.2.8.1.2 Non-federal Connected Action South Project

Effects to wildlife from the proposed South Project construction would be similar to those described above for the Utility Project. Indirect and short-term effects would also occur from an increase in traffic on Dragon Road, Highway 45 and some local roads for the duration of construction activity associated with the South Project increasing the potential for wildlife collisions resulting in a loss of individual wildlife species. ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. Therefore, long-term indirect effects of the South Project on wildlife are anticipated to occur from maintenance and operation activities for the life of the project.

Big Game

Mule Deer

Under the South Project effects would be similar to those described for the Utility Project for mule deer. Within the South Project, approximately 6,585.7 acres of UDWR-designated winter crucial mule deer habitat would be impacted (Table 4-23) by construction of the South Project. Other indirect impacts of the South Project on mule deer include vehicle-related mortalities resulting from an increase in the use by vehicles, both project and non-project related. Increases in traffic would be the same for all big game species and are not repeated (refer to Section 4.2.15 for details on traffic volume).

Table 4-23
Big-Game UDWR-designated Habitat in the South Project

Big-Game Habitat	Season	Type	Acres
Mule deer	Winter	Crucial	6,585.7
Pronghorn	None	none	0.0
Rocky Mountain bighorn sheep	Year-long	Crucial	422.2
Bison	Year-long	Crucial	6,585.7
Rocky Mountain elk	Winter	Substantial	3,958.7

Following construction, initial disturbance areas associated with the South Project not needed for operational purposes would be reclaimed following design feature commitments identified in Table 4-1) within areas where surface disturbances have occurred. This would reduce the long-term disturbance to UDWR-designated crucial habitat for mule deer associated with implementation of the South Project. Section 2.2.8.9 describes the Project Cleanup and Final Reclamation and the Green River District Reclamation Guidelines (BLM 2009).

Pronghorn Antelope

Under the South Project effects would be similar to those described for the Utility Project for big game. The impacts to pronghorn and other big game under the South Project would be habitat loss and fragmentation and would be similar to all big game.

No UDWR-defined pronghorn habitat occurs in the South Project area but pronghorn are likely to occupy areas of the area on a year round basis (Table 4-23).

Rocky Mountain Bighorn Sheep and Bison

Under the South Project, indirect effects would be similar to those described for the Project Utility for big game. 422.2 acres of UDWR-designated year-long, crucial habitat for Rocky Mountain bighorn sheep would be impacted (Table 4-23). General indirect effects of the South Project would be similar to other big game in the South Project area.

Bison

Under the South Project, effects would be similar to those described for the Project Utility for big game. 6,585.7 acres of UDWR-designated year-long, crucial habitat for bison would be impacted. Indirect effects of the South Project on bison would be the same as other big game under the South Project (Table 4-23).

Rocky Mountain Elk

In general, impacts related to the South Project on Rocky Mountain elk are similar to impacts on other big game from the South Project. About 3,959 acres of UDWR-designated substantial winter habitat was identified in the South Project area (Table 4-23). However, individual elk could use portions of the South Project area throughout the year. A reduction in the amount of forage availability in these areas could preclude some individuals from accessing habitats specific to their winter migration cycles that could lead to a decrease in overall production or fitness.

Migratory Birds

Impacts on migratory birds within the South Project are discussed together qualitatively; however, estimates of surface disturbance in vegetation communities that provide habitat for migratory birds are summarized in Section 4.2.6. Birds likely to use the South Project area are identified in Table 3-19.

Impacts on migratory birds would be similar to those described under the Project Utility for wildlife (e.g., general wildlife and big game). Loss, alteration, and fragmentation of migratory bird habitat can adversely affect survival and breeding success, which can cause or contribute to population declines in migratory bird species (Finch 1991). While habitat loss to permanent development is assumed to affect any bird species that may have been present, the effects of habitat alteration and vegetation change on birds can be subtle, and may not always represent a complete loss of habitat for all birds.

Construction and operation of the South Project would contribute to the loss, fragmentation, and modification of migratory bird habitat. Currently, the Applicant has not completed a mine plan but land disturbance within the South Project would encompass between 7,320 to 9,320 acres over the life of the Project. Mine operations would actively mine 300 to 500 acres at any given time and would be reclaimed by backfilling, recontouring, and revegetating. Vegetation communities in the South Project area (refer to Table 4-17) consists of eight types covering 6,585.7 acres. Table 4-24 provides the possible percent range of disturbance to vegetation communities that provide habitat for migratory birds.

Table 4-24
Percent Surface Disturbance to Vegetation Communities in the South Project Area Over Time

Community Type	Acres[1]	Range of Disturbance (percent)[1]
Colorado Plateau Mixed Low Sagebrush Shrubland	2,174.5	29.7 – 23.3
Colorado Plateau Pinyon-Juniper Shrubland	228.9	3.1 – 2.5
Colorado Plateau Pinyon-Juniper Woodland	97.9	1.3 – 1.0
Inter-Mountain Basins Big Sagebrush Shrubland	250.5	3.4 – 2.7
Inter-Mountain Basins Greasewood Flat	391.6	5.4 – 4.2
Inter-Mountain Basins Shale Badland	2,073.7	28.3 – 22.3
Invasive Annual Grassland	79.7	1.1 – 1.0
White Shale Badland	1,288.9	17.6 – 13.8
Total	6,585.7	90.0 – 71.0

NOTE: [1]The range of disturbance is the percent of vegetation communities potentially disturbed over the life of the Project. The range of land disturbance over time would be between 7,320 to 9,320 acres.

Another indirect effect on migratory birds includes the potential for contamination from spills or from water storage areas. These include contaminated wastewater with salts and brines, organic chemicals, petroleum hydrocarbons, surfactants, or substances, which may pose a risk to migratory birds and other wildlife. If open water storage areas are developed measures could be implemented to cover these areas will offset adverse effects on migratory birds.

Both direct and indirect effects on migratory birds under the South Project would be similar for all migratory bird species, but would vary depending on loss of habitat types (i.e., loss of vegetation communities) and species' sensitivities to disturbance. The direct removal or fragmentation of vegetative communities used by migratory birds would persist for the study area, until successful reclamation is achieved.

ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. However, Project-related development in raptor nest and roost areas would adhere to the FWS Utah Raptor Protection Guidelines, including compliance with seasonal and spatial buffers as well as additional mitigation to maintain and enhance nesting and foraging habitat, while allowing for other resource uses. Additionally, conservation measures identified in the MLEA Avian Protection Plan would be followed.

Raptors

Within the South Project area, twelve raptor/raven nests were identified in the South Project area. Of these, one appeared to be an active golden eagle nest located outside of the mine disturbance area.

Impacts to raptors in the South Project area would be similar to those discussed for the Utility Project.

ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. However, Project-related development in areas directly associated with raptor nest and roost areas would be guided by the use of the FWS Utah Raptor Protection Guidelines using seasonal and spatial buffers as well as mitigation to maintain and enhance raptor nesting and foraging habitat, while allowing for other resource uses. Additionally, implementation of ACEPMs and the MLEA Avian Protection Plan would be followed.

4.2.8.1.3 No Action Alternative – No Utility Project

No improvements would be made to Dragon Road under the No Action Alternative. Short term indirect effects to Dragon Road, Highway 45 and local roads would result from an increase in traffic during construction of the South Project. Long-term indirect effects would occur to Dragon Road, Highway 45, local roads, and U.S. 40 if trucking is selected as the means for transporting product from the South Project to market. Trucking product would result in the addition of large trucks on already congested roadways and increase the potential for collisions with wildlife.

4.2.8.1.4 No Action Alternative – Non-federal Connected Action South Project

Impacts would be similar to those discussed for the Proposed Action – Non-federal Connected Action South Project Alternative.

In addition, no improvements would be made to Dragon Road. Short term indirect effects to Dragon Road, Highway 45, and local roads would result from an increase in traffic during construction of the South Project. Long-term indirect effects would occur to Dragon Road, Highway 45, local roads, and U.S. 40 if trucking is selected as the means for transporting product from the South Project to market. Trucking product would result in the addition of large trucks on already congested roadways and increase the potential for collisions with wildlife.

4.2.8.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures for the Utility Project that would reduce adverse impacts to this resource are included in Table 4-1. Adverse impacts on wildlife would occur under the Utility Project to varying degrees, depending on the activities. Unavoidable adverse impacts associated with the Utility Project that could not be fully mitigated include the following:

- Loss of habitat for general wildlife, big game, upland game species, migratory birds, raptors, and other wildlife.
- Risks of wildlife collisions construction equipment, automobiles, and transmission lines.
- Displacement of wildlife species during construction.

The South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant.

4.2.8.3 Irretrievable and Irreversible Commitments of Resources

Loss of potential habitat necessary for the survival or recovery of wildlife species would be irretrievable until disturbed areas were actively and adequately restored. The fragmentation of habitat for wildlife species from the presence of the permanent facilities of the Utility Project would be irretrievable until these features were removed and reclaimed following completion of the projects. Wildlife mortality due to project activities would be an irreversible impact. Further, any contamination of wildlife or wildlife habitat would be irretrievable until remediated.

The South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant.

4.2.8.4 Relationship of Short-term Uses to Long-term Productivity

Construction of the Utility Project would provide a relatively short-term use that would result in long-term loss and fragmentation of wildlife habitat. Indirect effects resulting from increased traffic, as well as legal and illegal hunting, would also have long-term negative impacts on the habitat suitability and productivity of wildlife species in the Utility Project study area. These impacts would decrease the long-term productivity of wildlife habitat within the Utility Project study area, but would not eliminate it.

The South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant.

4.2.9 Special Status Wildlife

This section addresses potential impacts to special status wildlife from the development of Utility Project and the development of the South Project, or selection of the No Action Alternative.

4.2.9.1 Direct and Indirect Effects

In general, impacts from construction and operational activities associated with the Utility Project and South Project (Proposed Action or No Action Alternative) would be similar to those discussed in the preceding sections for vegetation communities (Section 4.2.6) and wildlife (Section 4.2.8). However, these impacts can be more significant for special status wildlife species (including those listed as threatened or endangered under the ESA of 1973, as amended; BLM sensitive species; species proposed for listing; species of special concern; other FWS or BLM species identified as unique or rare; other UDWR (2011) or UNHP species designated as unique or rare), if present, since the distribution and abundance of many of these species are limited in the Utility Project study area and surrounding region. Adverse impacts on special status wildlife species would occur if construction or operation of any component of the proposed project would cause substantial changes to the existing abundance, distribution, or habitat value for a special wildlife species.

4.2.9.1.1 Proposed Action – Utility Project

Direct and indirect effects of construction and operation of the Utility Project on special status wildlife could include loss of special status species habitat resulting in potential long-term impacts on the sustainability of populations as described below.

4.2.9.1.1.1 Species Listed as Federally Threatened, Endangered, or Proposed

This section describes the potential effects of the Utility Project on federally listed, proposed, and candidate species carried forward for evaluation. Listed fish species are discussed in Section 4.2.10. In general, the magnitude and nature of effects resulting from the construction and operation of the Project utility corridor is assessed for the species relative to current existing conditions in terms of whether the effects are expected to reduce species survival and recovery. Conclusions regarding the effects of the Utility Project on the species, as well as a determination of effect, are presented for each species carried forward for analysis.

Western Yellow-billed Cuckoo

The western yellow-billed cuckoo is an obligate riparian species that nests and forages in cottonwood-willow woodlands with a dense sub-canopy usually within the floodplain of a waterbody. While there is a low potential for the species to occur within the Project Utility corridor, their presence within the area cannot be entirely discounted. The survey protocol for yellow-billed cuckoo has been revised. Because the 2013 survey did not use this updated protocol, BLM will provide survey following the new protocol for inclusion in the Final EIS. Current data indicates that suitable habitat occurs along the White River within the Utility Project study area and within isolated portions of perennial tributaries with a sustainable riparian overstory.

The Utility Project would not have direct effects on 2.0 acres of invasive southwest riparian woodland and shrubland habitat and 0.5 acres of Rocky Mountain lower montane riparian woodland habitat. Collectively, there are approximately 2.6 acres of potentially suitable riparian habitat found within the 100-year floodplain of the White River that could provide suitable habitat for the western yellow-billed in the Utility Project study area. Under existing regulations, guidelines, and ACEPMs, the Utility Project would be located to avoid or minimize impacts in riparian areas and the 100-year floodplain of the White River, and appropriate erosion control and revegetation measures would be employed to reduce the potential for indirect effects on the species, which could include decreased water quality, and degradation of riparian vegetation due to erosion and sedimentation associated with surface disturbance.

Greater Sage-grouse

Activities under the Utility Project could result in both direct and indirect impacts on greater sage-grouse habitat.

Helicopter surveys and a preliminary habitat evaluation conducted in 2012 documented potential greater sage-grouse or sage-grouse leks, and in 2013 additional surveys for sage-grouse were conducted. No sage-grouse activity or active leks were observed in 2012 or 2013 and UDWR does not have record of documented leks in the Project area. Rowland (2004) demonstrates that hens nest and raise their broods within 1.75 and 2.5 miles of their breeding lek. The Utility Project is unlikely to affect active sage-grouse leks; however the Utility Project could affect 611.4 acres (1.8 percent) of the 34,347 acres of occupied, brood, and winter habitat of the greater sage-grouse within the GHMA. The affected area constitutes a small percentage of like-habitats throughout the range for this species.

Adherence to ACEPMs, BMPs, and timing restrictions would help avoid direct impacts, and lessen indirect impacts from the Utility Project. In addition, Management Actions identified in BLM Utah Greater Sage-Grouse Approved Resource Management Plan (2015c) would apply. Specifically, MA-SSS-5 applies to the Utility Project because project activities would result in habitat loss and degradation to sage-grouse GHMA. Net conservation gain would result from implementation of minimization of impacts through ACEPM and through compensatory mitigation described in the BLM Utah Greater Sage Grouse Approved Resource Management Plan. For these reasons, implementation of the Utility Project is not expected to produce any appreciable long-term negative changes to greater sage-grouse within the Utility Project study area.

As a result, implementation of the Utility Project could have indirect effects to habitat, which may result in a temporary reduction in local population trends and habitat but would not likely contribute to the federal listing of the species.

Black-footed Ferret

A non-essential experimental population of black-footed ferret *(Mustela nigripes)* was established in Uintah County in 1998 (63 Federal Register 52824). This population is managed within the boundary of the Coyote Basin PMZ. Approximately 205 acres of the Coyote Basin PMZ occur in the ferret analysis area, including one mapped prairie-dog town. The black-footed ferret occurs in close association with prairie dogs (*Cynomys spp*.) in grasslands, steppe, and shrub-steppe vegetation communities. According to the BLM (2008f), the black-footed ferret experimental reintroduction occurs within Coyote Basin. The ferret lives in prairie dog burrows and feeds on the prairie dog. The prairie dog is afforded protection as a consequence of the ferret recovery plan. According to SWCA (2013i), the BLM dismissed the requirement that presence/absence surveys be conducted for this project because all ferret re-introductions to date have occurred considerably farther north of the analysis area.

The Utility Project would impact 1.4 acres of the PMZ in the utilities area and specifically associated with the improvements to the access road. Direct impacts would also include active prairie dog habitat that would provide additional habitat outside the PMZ. About 20 acres of active prairie dog colonies and about 0.2 acres of inactive prairie dog colonies occur in the Utility Project. If black-footed ferrets are present in prairie dog colonies along the proposed Utility Project, direct impacts would include increased habitat loss and fragmentation from the disturbance of prairie dog colonies or complexes. Indirect effects of construction and operation activities associated with the proposed Utility Project could cause mortalities resulting from collisions with construction equipment and vehicles along the access road. Direct effects would also include ground disturbance and heavy machinery operation during Project construction that could result in direct mortality of prairie dogs (including the white-tailed prairie dog) and black-footed ferrets if prairie dog towns are not avoided. In some locations affected by project construction, clearing of shrub cover underlain by friable soils adjacent to existing prairie dog towns could result in prairie dog dispersal and localized increases in their abundance.

Another indirect effect of the Utility Project that could affect black-footed ferrets and white-tailed prairie dogs is increased raptor predation following construction of transmission towers that could provide perches for raptors in grassland, steppe, and shrub-steppe habitats.

The applicant has committed to the following mitigation measures (refer to Section 2.2.11) identified by the BLM and cooperating agencies (refer to Table 4-1). As discussed in Section 2.2.11, the applicant would implement the measures as standard practice of construction, operation, and maintenance. The agency-identified mitigation measures for the Utility Project are listed in Table 4-1. With implementation of best management practices, timing restrictions, and applicant committed mitigation, direct effects on ferret habitat from the Utility Project would be temporary in nature and relatively minor.

As discussed above, BLM did not require surveys for black-footed ferret during 2013 because annual surveys are conducted during spring and fall as part of a multi-agency effort. The proposed Project is not likely to jeopardize the survival or recovery of the wild or reintroduced nonessential experimental populations of the black-footed ferret due to potential for occurrence of wild populations of black-footed ferrets within the Utility Project study area.

4.2.9.1.1.2 BLM Sensitive Species

Construction and operation of the Utility Project on special status wildlife and their habitats would be similar to those for wildlife as discussed in Section 4.2.8. Like those species listed as threatened or endangered under the ESA, as amended; including BLM sensitive species; species proposed for listing; species of concern; or species identified as unique or rare; UDWR or UNHP species designated as unique or rare, if present, would be more severe since the distribution and populations of these species are limited in the Utility Project area. As a result, the BLM RMP (2008f) incorporates resource protection measures and recommended BMPs to maintain, protect, and enhance habitats that will support a diversity of non-listed sensitive fish, wildlife, and plant species. The intent of these measures is to achieve and maintain suitable habitat for desired population levels and distribution within the area covered by the RMP.

Golden Eagle

Short and long-term direct and indirect effects of the Utility Project on golden eagles would include temporary displacement caused by increased human activity, nest desertions, and/or reproductive failure caused by project-related disturbances, reductions in prey populations due to habitat fragmentation, and increased public access and human disturbances.

Impacts to golden eagles from implementation of the Utility Project would be similar to those identified for raptors in Section 4.2.8 including displacement caused by increased human activity, nest desertions and/or reproductive failure caused by project-related disturbances, increased public access and subsequent human disturbance resulting from new road construction, and temporary reductions in prey populations due to habitat fragmentation and alteration.

The Utility Project would result in direct adverse long-term impacts to breeding, nesting, and wintering golden eagles. The level of these impacts would be contingent on the location of the proposed development activities relative to occupied territories, active or inactive nest sites, wintering areas, and foraging areas. Surface disturbance by the Utility Project, both permanent and temporary, is described in Table 2-1 and Table 2-2. Within the utility areas, there would be a permanent loss of approximately 1,036.2 acres of habitat for potential golden eagle prey species. The loss of some prey species may limit foraging opportunities for individual eagles. Impacts to small mammal populations due to habitat loss and fragmentation can result in less prey for raptors, which could result in reduced raptor densities within the vicinity of the Project. In addition, golden eagles may avoid hunting grounds where construction or operational activities are taking place. Similar to the bald eagle, roadside carrion would increase the potential for vehicle collisions with golden eagles in the utility area as a result of increased traffic levels.

Including temporary surface disturbance of 225 acres and permanent surface disturbance, Approximately 1,261.2 acres of surface disturbance is proposed within 0.5 mile active golden eagle nests. Nests within 1.0 mile of the utility areas include: Three active golden eagle nests within 1.0 mile of the utility corridor at distances of 0.47, 0.77, and 0.77 mile; Four inactive golden eagle nests were located within 1.0 mile of the utility corridor; one nest classified as an inactive golden/buteo was located inside the utility corridor; and, six inactive golden/buteo nests within 1.0 mile of the utility corridor based on survey data (SWCA 2013i).

Project development and construction in proximity to an active nest during the breeding season may result in nest abandonment (a direct adverse effect) and mortality of young (an indirect, adverse effect). Temporary displacement of eagles or avoidance of nesting sites caused by increased human activity, traffic, and traffic levels could result from Utility Project activities.

Because golden eagles frequently alternate between nest sites within a breeding territory, the presence of surface facilities where ongoing traffic or human activity occurs could prevent inactive nests from being used in the future. It is likely that previous development and ongoing operations could result in habitat unsuitable for future use by golden eagles.

ACEPMs and mitigation measures for the Utility Project would minimize indirect impacts on suitable habitat and eliminate direct impacts on individual birds during and after the nesting season.

Development of the Utility Project could result in direct disturbances to golden eagles that could include construction noise and line-of-sight disturbance. Indirect effects of implementing the Utility Project are similar to those described for other raptors. ACEPMs and mitigation measures would minimize indirect impacts on suitable habitat and eliminate direct impacts from the Utility Project on individual birds during and after the nesting season.

Adherence to ACEPMs, BMPs, and timing restrictions would help avoid direct impacts, and lessen indirect effects on golden eagles. For these reasons, implementation of the Utility Project is not expected to produce any appreciable long-term negative changes on golden eagles within the area.

Short-eared Owl

Implementation of the Utility Project could result in direct and indirect impacts on the short-eared owl. Direct impacts on short-eared owls could primarily include loss and fragmentation of nesting and foraging habitats. Indirect impacts could include displacement from foraging areas and reduction of prey species' habitat. SWCA did not identify short-eared owls or nests during 2013 surveys. Short-eared owl nests are often located on the ground and are difficult to see in areas of dense vegetation. Active nests could potentially be missed during aerial or ground surveys, which could result in impacts on breeding, nesting, and fledgling success and may also be subject to mortality from collisions with construction vehicles or equipment.

The approved Vernal RMP (BLM 2008f) has established a seasonal and spatial restriction for short-eared owls of 0.25 mile during the active breeding season (i.e., March 1 to August 31). If short-eared owls are documented within a 0.25 mile of any proposed project activities, surface disturbing activities would not commence until after August 31.

It is likely that previous energy development and continuing operations have resulted in a reduction in habitat suitability and may preclude future use by this species within the Utility Project corridor.

Burrowing Owl

Approximately 616.5 acres of white-tailed prairie dog colonies have been identified within the Utility Project study area, which also serves as suitable habitat for the burrowing owl. Approximately 20.2 acres of this habitat would be disturbed under the Utility Project. Implementation of the Utility Project would have both direct and indirect adverse impacts on burrowing owls in the Utility Project study area. The adverse impacts would include a direct loss of nesting and foraging habitat; loss of prey and prey habitat; an increased risk of vehicle-related mortality; increased displacement due to increased noise and human presence; and increased habitat fragmentation and habitat modification. Surface-disturbing activities or areas with concentrated human activity in the vicinity of an active burrowing owl nest could lead to nest abandonment, thereby affecting the breeding pair and their annual productivity. Since burrowing owls alternate between nest sites within a breeding territory, any surface facilities where ongoing traffic or human presence occurs in or near active prairie dog colonies could prevent burrows from being used as nest sites in the future. Avoidance of disturbed areas could lead to an increased use of adjacent habitat, which could then lead to increased inter- and intra-specific competition for resources with these adjacent habitats.

With implementation of the Utility Project, the greatest indirect impacts would likely be related to reduced forage and nesting habitat. The approved Vernal RMP (BLM 2008f) has established a seasonal and spatial restriction for burrowing owls of 0.25 mile during the active breeding season (i.e., March 1 to August 31). If burrowing owls are documented within a 0.25 mile of any proposed project activities, surface disturbing activities would not commence until after August 31. Thus, direct impacts on active burrowing owl nests would be avoided. Indirect, negative impacts could include displacement from foraging areas and reduction of prey species. Based on these potential indirect effects, the Utility Project may affect individual burrowing owls. Adherence to ACEPMs for the Utility Project and Vernal RMP (2008f) Conservations Measures would reduce impacts on the owl.

Ferruginous Hawk

Implementation of the Utility Project could result in both direct and indirect impacts on the ferruginous hawk. Impacts on ferruginous hawks from implementation of the Utility Project would be very similar to those identified for raptors, including temporary displacement caused by increased human activity, nest desertions and/or reproductive failure caused by project-related disturbances, increased public access, and human disturbance resulting from temporary reductions in prey populations due to habitat fragmentation and alteration from construction activities.

Ferruginous hawks are particularly susceptible to human-caused disturbances during courtship and incubation periods, and the species will abandon nests if disturbed prior to the eggs hatching (Wheeler 2003). No surface disturbance is proposed within 0.5 mile of ferruginous hawk nests within the Project utility corridor. Construction activities plus increased traffic could potentially disrupt breeding and nesting activities in the corridor. As a result, displacement could lead to increased use of adjacent habitats, which could consequently lead to increased inter- and intra-specific competition for resources.

Surface disturbances associated with the Utility Project would result in the initial, direct loss of and fragmentation of approximately 679.5 acres of habitat for prey species, such as ground squirrels, prairie dogs, jackrabbits, rabbits, small rodents, and birds. The direct habitat loss and reduced habitat values in foraging areas, loss of prey and prey habitat, plus an increased potential for collisions with vehicles traveling, may limit foraging opportunities for individual ferruginous hawks.

BLM-required seasonal and spatial restrictions would minimize direct impacts on suitable habitat and eliminate direct impacts on individual birds during the nesting season. Under these measures, no construction or surface-disturbing activities would occur within 0.5 mile of an active nest during the breeding season, which occurs from March 1 through August 1. This measure also reduces the risk of direct mortality and nest abandonment during the breeding season. With the implementation of this ACEPM and other conservation measures, including reclamation the Proposed Action effects on ferruginous hawk would be minor. ACEPMs and Vernal RMP (2008f) recommended Conservation Measures for the Utility Project would reduce impacts on the ferruginous hawk.

Bald Eagle

As discussed in Section 3.2.9.3.2, no bald eagle nests have been documented in the Utility Project study area. Therefore, direct and indirect impacts on bald eagle nests or nesting activity are not anticipated as a result of the Utility Project. However, potential indirect impacts from the Utility Project that may affect wintering bald eagles that roost in along the White River corridor and forage within the Utility Project include:

Indirect habitat loss in foraging areas and/or habitat degradation to roosting areas due to construction activities that include:

- Temporary habitat loss due to changes in vegetation structure.
- Temporary displacement caused by increased human activity, traffic, and noise levels/types
- Increased potential for collisions with vehicles when foraging on carrion

Implementation of the Utility Project would result in the direct, initial short-term loss of suitable habitat for prey species during the construction of the Project utility corridor. Loss of prey habitat could decrease prey abundance, which has been shown to cause eagles to shift their geographic foraging patterns. These shifts in foraging patterns may force eagles to travel farther and expend additional energy that causes greater physical stress (Brown 1993). Additionally, any degradation of stream habitat and associated fisheries would lower the availability of aquatic prey for foraging eagles. Other effects on bald eagles could include direct habitat loss and temporary habitat loss associated with surface disturbance and changes/losses in vegetation structure from project development.

Wintering eagles are likely to search for prey in the Utility Project from early November through late March. Because bald eagles will feed on roadside carrion (particularly during these months), the risk of collisions by a vehicle would increase under the Utility Project due to a commensurate increase in traffic levels associated with construction and operation of the Utility Project. Measures to control speed limits and adherence to the removal of big game carcasses from roadsides could be implemented to reduce the potential for vehicle-related collisions with bald eagles.

Additionally, development activities could result in short-term displacement and increased stress levels in roosting and foraging bald eagles during the winter months when roosting typically occurs. However, these potential impacts would likely be minimal because no eagle roosting and foraging habitats were identified in the White River corridor.

Adherence to ACEPMs, BMPs, avoidance and protection of cottonwood trees, and timing restrictions would help avoid direct impacts, and lessen indirect impacts. For these reasons, implementation of the Utility Project is not expected to produce any appreciable long-term negative changes on bald eagles within the Utility Project study area. Additionally, cottonwood trees would be avoided and protected.

Overall, the Utility Project may directly and indirectly impact individual bald eagles, but the effects are likely to be related to increased activity during construction and would be temporary.

Lewis's Woodpecker

This species may be present along portions of the White River corridor in the riparian areas. Impacts on the Lewis's woodpecker include the direct loss of any large mature trees in riparian areas that could serve as suitable reproduction and foraging areas, timing of surface disturbing actions, and increased human presence during sensitive breeding and nesting periods. These impacts could cause individual breeding pairs to abandon the area and/or abandon the nest and young by choosing other areas.

Because 2.6 acres of suitable reproduction and foraging habitat for the Lewis's woodpecker occurs along the White River, indirect impacts would include increased inter- and intra-species competition for suitable breeding and foraging sites elsewhere along the riparian corridors.

Adherence to ACEPMs for the Utility Project, BMPs, avoidance, and protection of riparian areas would help avoid direct impacts, and lessen indirect impacts. For these reasons, implementation of the Utility Project is not expected to produce any appreciable long-term effects on Lewis's woodpecker within the Utility Project study area.

Long-billed Curlew

The conversion of grassland habitat represents a direct loss of breeding habitat for the long-billed curlew. Under the Utility Project, no grassland habitat utilized for nesting and foraging would be disturbed by construction activity. Should Utility Project construction activities occur during spring and summer months, breeding birds migrating and nesting in grassland habitat near the Project may be subject to indirect effects such as noise and visual disturbances.

Indirect disturbance such as environmental stress upon breeding pairs of long-billed curlew may lead to nest abandonment, lowered reproductive success, and reduced physical condition. The movement of individuals into adjacent habitats could increase intra- and inter- specific competition due to increases in animal density within these habitats. Displacement to other, possibly less suitable habitat areas could result in lowered overall physical conditioning of the birds, affecting breeding success and survivability of young. The Utility Project will not impact the Ouray National Wildlife Refuge, which is the only area near the Utility Project that nesting long-billed curlews have been observed. Adherence to ACEPMs for the Utility Project would reduce impacts on the long-billed curlew.

White-tailed Prairie Dog

Of the 616.5 acres of mapped (active and inactive) white-tailed prairie dog colonies, implementation of the Utility Project would result in the direct disturbance to 20.2 acres. Potential direct adverse impacts on this species associated with the Project include the following: habitat loss due to clearing and crushing of vegetation; fragmentation of available habitat due to project construction, operation, and maintenance; temporary displacement of animals; increased potential for vehicle collisions with prairie dogs; alteration of surface water drainages; and degraded habitat values due to increased soil compaction. Indirect effects to white-tailed prairie dogs include increased shooting pressure caused by improved access into remote areas.

Construction activities have the potential to introduce and spread noxious weeds and invasive species. Invasive species may reduce the overall quality of forage for prairie dogs and ultimately may limit prairie dog populations. Successful interim and final reclamation efforts could re-establish some of the white-tailed prairie dog habitat impacted over time. However, impacts on white-tailed prairie dogs are likely to occur due to difficulties with reclamation in the Uinta Basin and a potential increase of weedy species. Weed control would reduce habitat degradation and mitigation measures for the Utility Project to reduce speeding on area roads would lessen the potential for collisions between prairie dogs and vehicles.

The Vernal Resource Management Plan (BLM 2008f) provides management protections for white-tailed prairie dog colonies by providing provisions to minimize impacts on white-tailed prairie dog colonies. These provisions could reduce impacts related to habitat loss and fragmentation in the Utility Project corridor. Direct impacts on white-tailed prairie dogs are expected. While Project construction, operation, and maintenance may directly and indirectly affect individual white-tailed prairie dogs, they are primarily related to construction activities and temporary in nature.

Spotted Bat, Fringed Myotis, Big Free-tailed Bat, and Townsend’s Big-eared Bat

Approximately 3,760 acres of pinyon-juniper woodland, desert shrub, and riparian woodland habitats used for foraging by the fringed myotis, spotted bat, big free-tailed bat, and Townsend’s big-eared bat would be disturbed within the entire Utility Project study area. The Utility Project would disturb about 617.8 acres of this potential roost and foraging habitat.

Considering these species are uncommon in northeastern Utah (Oliver 2000) and there is a relative abundance of foraging habitat in the adjacent habitats within the Utility Project study area, the loss of foraging habitat is not anticipated to be a significant impact to for the fringed myotis, spotted bat, big free-tailed bat, and Townsend's big-eared bat.

Indirect impacts on these species are likely to include noise from construction activities, vehicle traffic, and increased human presence. Many bat species are easily disturbed by noise and human presence (Oliver 2000). These species are especially sensitive to disturbance during roosting, maternity, and parturition. Abandonment of roost sites may occur due to increased human presence and noise disturbance (Oliver 2000).

Artificial light used for operations conducted during the evening have the potential to increase disruption of foraging behavior and increase the risk of bat predation.

These bats species are relatively uncommon in northern Utah (Oliver 2000) and the foraging habitat for these species is relatively abundant in the region, the loss of habitat as a result of the Project would not be significant. Implementation of the ACEPMs and reclamation of disturbed areas would further reduce the potential effects on bats.

Mountain Plover

No mountain plover have been identified within the Utility Project corridor. Direct impacts on mountain plover would result from the direct loss of grassland-low shrub habitat suitable for reproduction and foraging, as well as the timing of surface disturbing actions and increased human presence during migration periods. These impacts could cause individual individuals to abandon the area.

Indirect impacts extend direct impacts on include increased inter- and intra-species competition for suitable foraging sites during migration. The Utility Project would result in disturbance to approximately 72.1 acres of salt desert scrub and 422.3 acres of sagebrush of potential mountain plover habitat. According to the BLM (EPG 2015a), mountain plover habitat quality in the Utility Project study area is low and no birds have been identified during surveys.

Implementation of ACEPMs and BMPs for the Utility Project will further reduce indirect effects on mountain plover. As a result, adverse effects on the plover would be minor and temporary.

4.2.9.1.2 Non-federal Connected Action South Project

Impacts to special status wildlife would occur from the proposed South Project similar to the Utility Project. Indirect and short-term effects would also occur from an increase in traffic on Dragon Road, Highway 45, and some local roads for the duration of construction activity associated with the South Project, increasing the potential for elevated noise, increased human interactions, and collisions with construction equipment and automobiles, resulting in a loss of individual special status wildlife species. The South Project, a non-federal connected action, would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise required by state or federal regulations or otherwise determined by the Applicant.

4.2.9.1.2.1 Species Listed as Federally Threatened, Endangered, or Proposed

This section describes the potential effects of the South Project on federally listed, proposed, and candidate species carried forward for evaluation. Listed fish species are discussed in Section 4.2.10. In general, the magnitude and nature of effects resulting from the construction and operation of the South Project is assessed for the species relative to current existing conditions in terms of whether the effects are expected to reduce species survival and recovery. Conclusions regarding the effects of the South Project on the species, as well as a determination of effect, are presented for each species carried forward for analysis.

Western Yellow-billed Cuckoo

There are no documented occurrences of yellow-billed cuckoo in the South Project area. Habitat is generally confined to riparian areas along rivers and streams. There are no direct effects to cuckoo habitat since no disturbances to riparian areas would occur under the South Project. For the same reasons, the potential for indirect effects on the cuckoo would be unlikely to occur.

Under existing regulations and guidelines, the South Project facilities would be located to avoid or minimize impacts in riparian areas and appropriate erosion control and revegetation measures would be employed to reduce the potential for indirect effects on the species, which could include decreased water quality and degradation of riparian vegetation due to erosion and sedimentation associated with surface disturbance.

No loss of individual cuckoos or disturbance to habitat is anticipated through implementation of the South Project; therefore, implementation of the South Project is not likely to adversely affect the yellow-billed cuckoo.

Greater Sage-grouse

Activities under the South Project could result in indirect impacts on greater sage-grouse. South Project construction and operational activities near occupied habitat and leks (during breeding season) could have direct impacts on the greater sage-grouse. The use of construction and personal vehicles and disturbance to courtship activities can increase the risk of mortality of adult sage-grouse, eggs, chicks, and fledglings. Studies by Rowland (2004) have shown that human presence and noise associated with surface disturbance or ongoing activities could lead to lek abandonment by sage-grouse.

Surveys were completed by aerial surveys to conduct a preliminary habitat evaluation in 2012 and document potential greater sage-grouse or sage-grouse leks. In 2013 another survey was conducted, including three days of lek counts near an unconfirmed lek on the western boundary of the South Project area. No sage-grouse activity or active leks were observed in 2012 or 2013 and UDWR does not have record of documented leks in the Utility Project study area. Although 5,227 acres of occupied, brood, and winter habitat would be indirectly affected by development of the South Project; this constitutes a small percentage of like-habitats throughout the range for this species. As a result, implementation of the South Project could have indirect effects to habitat, which may result in a temporary reduction in local population trends and habitat but would not likely contribute to the listing of the species.

Black-footed Ferret

A non-essential experimental population of black-footed ferret *(Mustela nigripes)* was established in Uintah County in 1998 (63 Federal Register 52824). This population is managed within the boundary of the Coyote Basin PMZ. Approximately 205 acres of the Coyote Basin PMZ occur in the ferret analysis area, including one mapped prairie-dog town. The black-footed ferret occurs in close association with prairie dogs (*Cynomys spp*.) in grasslands, steppe, and shrub-steppe vegetation communities. According to SWCA (2013i), the BLM dismissed the requirement that presence/absence surveys be conducted for this project because all ferret re-introductions to date have occurred considerably farther north of the analysis area. Additional survey and coordination with FWS will be conducted as part of the permitting process required by UDOGM during final design of the South Project.

The South Project would have no impacts on the PMZ for ferrets. If black-footed ferrets are present in prairie dog colonies in the South Project area, indirect impacts would include increased habitat loss and fragmentation from the disturbance of prairie dog colonies or complexes. Construction and operation activities associated with the South Project could cause mortalities resulting from collisions with construction equipment and vehicles.

Additionally, other indirect effects could include clearing of shrub cover underlain by friable soils adjacent to existing prairie dog towns could result in prairie dog dispersal and localized increases in their abundance. Increased raptor predation following construction of transmission towers could provide perches for raptors in grassland, steppe, and shrub-steppe habitats. Increased predation on prairie dogs by raptors may result in reduced prey availability for ferrets. Other indirect impacts could include habitat alteration due to fragmentation, dust deposition, and spread of noxious and invasive plants; and disturbance due to noise and human presence. Indirect impacts could also include a reduction of prairie dog colonies (i.e., a reduction in black-footed ferret food source) due to the spread of infectious diseases such as canine distemper and sylvatic plague diseases (which could be spread from domestic animals if these are allowed to come into contact with prairie dog populations).

As discussed above, the BLM did not require surveys for black-footed ferret during 2013. The proposed South Project may affect, but is not likely to adversely affect, wild or reintroduced nonessential experimental populations of the black-footed ferret. This determination is based on agency provided information and the lack of potential for occurrence of wild populations of black-footed ferrets within the South Project area.

4.2.9.1.2.2 BLM Sensitive Species

Golden Eagle

Short and long-term indirect effects of the South Project on golden eagles are similar to those described under the Utility Project.

One active golden eagle nest was located inside the south project area (this nest is also within 0.77 mile of the utility corridor). Four active golden eagle nests were located within 1.0 mile of the south project area at distances of 0.29, 0.66, 0.68 and 0.89 mile.

One inactive golden eagle nest was located inside the south project area and nine inactive golden eagle nests were within 1.0 mile of the South Project area and nine inactive nests were within 1.0 mile of the south project area.

Two nests classified as inactive Golden/Buteo were inside the south project area and three inactive Golden/Buteo nests were within 1.0 mile of the South Project area.

Development of the South Project could result in indirect disturbances to golden eagles that could include construction noise and line-of-sight disturbance. Other indirect effects of implementing the South Project are similar to those described for other raptors. The South Project, a non-federal connected action, would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant. Without mitigation, the potential to impact habitat or individual birds during and after the nesting season would likely be greater than the Utility Project.

However, implementation of the South Project is not likely to contribute to golden eagles being listed.

Short-eared Owl

Short and long-term indirect effects of the South Project on ferruginous hawks are similar to those for other raptors (refer to Section 4.2.8).

No active or inactive nests were identified for this species. About 3,143 acres of potentially suitable wintering habitat exists within the South Project, which would serve as habitat for prey species such as ground squirrels, prairie dogs, jackrabbits, rabbits, small rodents, and birds. The indirect habitat loss and reduced habitat values in foraging areas, loss of prey and prey habitat, plus an increased potential for collisions with vehicles traveling, may limit foraging opportunities for individual short-eared owls.

Development of the South Project could result in indirect disturbances to short-eared owls that could include construction noise and line-of-sight disturbance. Other indirect effects of implementing the South Project are similar to those described for other raptors. The South Project, a non-federal connected action, would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant. Without mitigation, the potential to impact habitat or individual birds during and after the nesting season would likely be greater than the Utility Project.

Although implementation of the South Project may affect individual short-eared owls, it is not likely to result in long-term adverse effects.

Burrowing Owl

Short and long-term indirect effects of the South Project on burrowing owls are similar to those for other raptors (refer to Section 4.2.8) and those described for the Utility Project.

No active prairie dog burrows or towns or burrowing owls were identified in the South Project area. A total of 2,424.9 acres of Sagebrush Shrubland, 391.6 acres of Greasewood Flat, and 79.7 acres of Developed or Disturbed areas occur within the South Project that could provide general habitat for the owl.

With implementation of the South Project, the greatest indirect impacts would likely be related to reduced forage and nesting habitat. In addition, development of the South Project could result in indirect disturbances to burrowing owls that could include construction noise and line-of-sight disturbance. Other indirect effects of implementing the South Project are similar to those described for other raptors.

The South Project, a non-federal connected action, would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant. Adverse effects on burrowing owls would be minor. However, without mitigation, the potential to impact habitat or individual birds during and after the nesting season would likely be greater than the Utility Project.

Ferruginous Hawk

Short and long-term indirect effects of the South Project on ferruginous hawks are similar to those for other raptors (refer to Section 4.2.8).

Surface disturbances associated with the South Project would result in the initial, indirect loss of and fragmentation of approximately 326.8 acres of pinyon-juniper forest and 2,425 acres of sagebrush shrubland that would serve as habitat for prey species such as ground squirrels, prairie dogs, jackrabbits, rabbits, small rodents, and birds. The indirect habitat loss and reduced habitat values in foraging areas, loss of prey, and prey habitat, plus an increased potential for collisions with vehicles traveling, may limit foraging opportunities for individual ferruginous hawks.

The South Project, a non-federal connected action, would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant. Development of the South Project could result in indirect disturbances to ferruginous hawks that could include construction noise and line-of-sight disturbance. Other indirect effects of implementing the South Project are similar to those described for other raptors. Adverse effects on ferruginous hawks would be minor. However, without mitigation, the potential to impact habitat or individual birds during and after the nesting season would likely be greater than the Utility Project.

Bald Eagle

Short and long-term indirect effects of the South Project on bald eagles are similar to those for other raptors (refer to Section 4.2.8).

As discussed in Section 3.2.9.3.2, no bald eagle nests or riparian habitat occur in the South Project area. Therefore, indirect impacts on bald eagle nests or nesting activity are not anticipated as a result of the implementation of the South Project.

Development of the South Project could result in indirect disturbances to bald eagles that could include construction noise and line-of-sight disturbance. Indirect effects of implementing the South Project are similar to those described for other raptors.

ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. Without mitigation, the potential to impact habitat or individual birds during and after the nesting season would likely be greater than the Utility Project.

Lewis's Woodpecker

Short and long-term indirect effects of the South Project on Lewis's woodpecker are similar to those for other migratory birds (refer to Section 4.2.8).

This species may be present along portions of the South Project located within 326.8 acres of potentially suitable pinyon-juniper forest habitat. No individuals were found to occur in the South Project area.

Development of the Project could result in indirect disturbances to Lewis's woodpecker that could include the loss of nesting, foraging, and wintering habitat, which would lead to displacement of individuals, reduced productivity, and habitat fragmentation. Other indirect effects of implementing the South Project are similar to those described for other migratory birds.

ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. Without mitigation, the potential to impact habitat or individual birds during and after the nesting season would likely be greater than the Utility Project.

Long-billed Curlew

Short and long-term indirect effects of the South Project on long-billed curlew are similar to those for other migratory birds (refer to Section 4.2.8). According to surveys conducted in 2013, no habitat or individuals exist within the South Project Area.

ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. Impacts to long-billed curlew are anticipated to be minor. However, without mitigation, the potential impacts to habitat or individual birds during and after the nesting season would likely be greater than those described for the Utility Project.

White-tailed Prairie Dog

Implementation of the South Project would not result in indirect impacts to white-tailed prairie dog habitat or individuals as no white-tailed prairie dog colonies were determined to exist within the South Project area. Therefore, no indirect impacts on white-tailed prairie dogs are expected since none were identified to occupy the South Project area.

Mountain Plover

No mountain plover have been identified within the Utility Project study area. Further, mountain plovers have only been documented in northeastern Utah breeding in the Leland Bench area approximately

34 miles west of the Utility Project study area (EPG 2015a). Manning and White (2001) also found that mountain plover were associated with white-tailed prairie dogs and near roadways or development areas (e.g., oil well pads).

Construction of the South Project would disturb about 2,425 acres of sagebrush scrubland which could serve as potential mountain plover habitat.

Indirect effects of implementing the South Project are similar to those described for other migratory birds. ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. Development of the South Project could result in indirect disturbances to mountain plover that could include the loss of potential foraging, and wintering habitat, which would lead to displacement of individuals during migration. Adverse effects on mountain plover would be negligible in the South Project area. However, without mitigation, the potential impacts to habitat or individual birds during and after the nesting season would likely be greater than those described for the Utility Project.

Spotted Bat, Fringed Myotis, Big Free-tailed Bat, and Townsend's Big-eared Bat

Approximately 3,761.2 acres of pinyon-juniper woodland, desert shrub and riparian woodland habitats used for foraging by the fringed myotis, spotted bat, big free-tailed bat and Townsend's big-eared bat would be disturbed within the entire Utility Project study area. The South Project would disturb about 3,143.3 acres of this potential roost and foraging habitat. Considering these species are uncommon in northeastern Utah (Oliver 2000) and there is a relative abundance of foraging habitat in the adjacent habitats within the Uinta Basin, the indirect effects of the loss of foraging habitat is not anticipated to be a significant impact on the fringed myotis, spotted bat, big free-tailed, and Townsend's big-eared bat.

Development of the South Project could result in indirect impacts on these species likely to include noise from construction activities, vehicle traffic, and increased human presence. Many bat species are easily disturbed by noise and human presence (Oliver 2000). These species are especially sensitive to disturbance during roosting, maternity, and parturition. Abandonment of roost sites may occur due to increased human presence and noise disturbance (Oliver 2000). However, given that these bat species utilize cliff and rock crevices and those habitats do not occur in the South Project area, disturbance to day-roosting bats is unlikely.

Indirect effects on bats would be minor. ACEPMs, BMPs, design, and proposed mitigation measures for the Utility Project, including reclamation, would not be applied for the South Project, unless otherwise determined by the Applicant. However, without mitigation, the potential impacts to bats would likely be greater than those described for the Utility Project.

4.2.9.1.3 No Action Alternative – No Utility Project

Under the No Action Alternative, Dragon Road would remain unpaved. Impacts from more prevalent truck traffic would include fugitive dust, noise, increase erosion of Dragon Road, and increase vehicle and wildlife conflicts. No other surface disturbance is anticipated to occur.

4.2.9.1.4 No Action Alternative – Non-federal Connected Action South Project

The No Action Alternative would result in a higher number of trucks within the study area than the Proposed Action. Impacts on special status wildlife resources would remain the same as those described for Proposed Action – Non-federal Connected Action South Project.

4.2.9.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures that would reduce adverse impacts to this resource are included in Table 4-1. Unavoidable adverse impacts from the Utility Project that could not be fully mitigated include the following:

- Long-term losses of potential habitat useful for the survival or recovery of special status wildlife species.
- Collisions with automobiles and transmission lines.
- Displacement of wildlife species during construction, operation, and maintenance activities.

The South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant. Without mitigation, potential impacts would likely be greater than those described for the Utility Project.

4.2.9.3 Irretrievable and Irreversible Commitments of Resources

Losses of potential habitat necessary for the survival or recovery of special status wildlife species would be irretrievable until disturbed areas were actively and adequately restored. The fragmentation of habitat for special status wildlife species from the Utility Project would be irretrievable until these features were removed and reclaimed following project completion.

The South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant. Without mitigation, potential impacts would likely be greater than those described for the Utility Project.

4.2.9.4 Relationship of Short-term Uses to Long-term Productivity

Construction of the Utility Project would provide a relatively short-term use that would result in long-term loss and fragmentation of habitat for special status wildlife species. Noxious weed invasion into the habitat of special status wildlife species would also be a long-term effect of the construction and project-related activities, and could affect the long-term productivity of habitats that are invaded.

The South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant. Without mitigation, potential impacts would likely be greater than those described for the Utility Project.

4.2.10 Special Status Fish

This section addresses potential impacts on special status fish resources from the development of Utility Project, development of the South Project, or selection of the No Action Alternative.

4.2.10.1 Direct and Indirect Effects

Direct and indirect effects of implementation of the Utility Project and South Project (Proposed Action or No Action) on Colorado River Fish may include:

- Withdrawal of water from the Green River that reduces its flow and degrades the water quality of the stream down gradient from the point of the withdrawal;
- Accidental chemical spills or product spills and/or leakage that could potentially contaminate surface water;

- Surface disturbance that becomes a non-point source of sediment and dissolved salt to surface water bodies.

General impacts to Colorado River endangered fish, including bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker, may include flow depletions due to consumptive water use in the Green River, and an increase in accidental spills of pollutants, and increase in sedimentation of several streams and drainages, including the White River. The drainages and streams in the Utility Project study area are tributaries to the White River, including Evacuation Creek, Hells Hole Canyon, Weaver Canyon, Coyote Wash, and Park Canyon. Each of these tributaries is ephemeral with the exception of Evacuation Creek, which maintains a perennial base flow.

The Applicant owns an existing senior water right for 15 cfs (#49-258, with a priority date of 1965) that allows for a point of diversion from the Green River. This water right is approved for irrigation, domestic, mining, and industrial uses. DGT's existing well field is located near Jensen, Utah adjacent to the Green River. Under the water right there are 26 points of diversion, which enables the Applicant to select preferred points of diversion but also allows the Applicant to retain backup options as needed to ensure reliability of the water supply system in the utility area. The points of diversion to be used under the water right are those located adjacent to the Applicant's privately owned land near Jensen, Utah. The final points of diversion will be filed with the UDWaR.

Relevant to Colorado River Fish, UDWaR's (2015) Water Plan for the State of Utah reported that the estimated precipitation input to the Uinta Basin is 9,000,000 acre-feet per year; vegetation and natural systems use 7,172,400 acre-feet and groundwater recharge is estimated at 630,000. Thus, the Basin Yield or Available Supply is 1,187,600 acre-feet. Uses in the basin include irrigation depletions of 411,000 acre-feet, Municipal and Industrial of 16,000 acre-feet, surface evaporation from reservoirs of 101,700 acre-feet and water exported from the basin of 481,000 acre-feet. Inflow to the basin from the Green River, Black's Fork River, Yampa River and the White River totals 3,459,000 acre-feet. Adding the net Basin Yield to the total inflow yields 3,940.000 acre-feet flowing out of the basin. In addition, 186,000 acre-feet are reserved for the Ute and Navajo Tribes (UDWaR 2015).

Water supply sources for the Utility Project and South Project (Proposed Action or No Action Alternative) have been previously authorized under the existing water right. Additional water use needs would require consultation with FWS since this would lead to direct effects on Colorado River Fish. The use of the Applicant's existing water right is not anticipated to significantly reduce flows in the Green River or have effects on Colorado River Fish or habitat. If additional water depletion occurs (beyond the allotted 15 cfs per year), Enefit will pay a water depletion fee and work with the Colorado River Recovery Program to determine other measures necessary to offset the negative effects of to the river system. Water requirements for utility area activities would be acquired from permitted sources. Table 4-11, describes consumptive water use for the Utility Project.

The Applicant owns an existing senior water right for 15 cfs (#49-258, with a priority date of 1965) that allows for a point of diversion from either the White River or the Green River. This water right is approved for irrigation, domestic, mining, and industrial uses. DGT's exiting well field is located near Jensen, Utah adjacent to the Green River. Under the water right there are 26 points of diversion, which enables the Applicant to select preferred points of diversion but also allows the Applicant to retain backup options as needed to ensure reliability of the water supply system in the utility area. The points of diversion to be used under the water right are those located adjacent to the Applicant's privately owned land near Jensen, Utah. The final points of diversion will be filed with the UDWaR.

Diversion points along the Green River would be used since the river has a significantly larger base flow year round than does the White River; therefore, it can more easily accommodate the 15 cfs water right amount. The maximum amount of water that can be used for industrial purposes as part of this water right, is 10,739.75 acre-feet/year (0.9 percent of the Basin Yield). The direct extraction of water from the Green River would have a minor effect on stream flows in the river. The average flow rate on the Green River near Ouray, Utah is 3,897 cfs (USGS 2015).

4.2.10.1.1 Proposed Action – Utility Project

The Utility Project would cross the White River, approximately four miles southeast of Bonanza, Utah. The right-of-way for the utility is planned to vary from 25-feet where a single pipeline would be located, to over 350 feet where the water, gas, and product lines would be located adjacent to the dual overhead power lines. In some locations, including at the White River crossing, the pipeline right-of-way and power line right-of-way are separated by a distance of as much as much as 900 feet.

Under the Utility Project, pipelines and transmission lines would cross a number of streams. The proposed method of crossing the White River for the pipelines is a trenchless construction method called micro-tunneling, and an overhead, aerial span crossing for the 138kV transmission lines (refer to Chapter 2). Two separate crossings are anticipated for the buried pipelines. The smaller lines, including natural gas and product pipelines, would be combined into a single cased crossing to save time and reduce risk. The larger 30-inch water line would require a separate cased crossing. The overhead 138kV transmission lines would utilize standard construction methods to install towers on either side of the canyon adjacent to the existing power line alignment. The 138kV lines would easily span the required distance across the White River canyon. Transmission line tower placement would be such that towers would be set back a minimum of 50 feet from the edge of the drainage, and transmission lines would span the drainage to preclude any disturbance.

An increased risk of spills from construction activities is likely to adversely affect fish. Accidental chemical spills or product spills and/or leakage during construction of the Utility Project could potentially contaminate nearby surface water and/or groundwater. Depending on the depth of groundwater in the area of the spill, large spills may reach the groundwater table and eventually reach surface water. Using appropriate BMPs during construction and operations would minimize impacts.

During operations, if a pipeline were to leak or rupture, it is possible that its contents could drain into nearby ephemeral and perennial streams. Under the Utility Project, there would be approximately 19 miles of water supply pipeline, approximately 9 miles of natural gas supply pipeline, and approximately 11 miles of product delivery pipeline. The proposed corridor for the buried pipelines crosses the White River at a single location, and crosses Evacuation Creek and several unnamed washes at numerous locations.

The toxicity of an accidental SCO product or natural gas condensate spill to a particular stream or river would depend on the amount spilled, the level of attenuation before reaching the water, and the flow volume (and dilution) of the stream or river. Spills occurring in proximity to streams would potentially result in lethal levels of toxic substances affecting Colorado River Fish and other aquatic organisms.

Erosion and sedimentation may occur in areas of disturbance. The magnitude of erosion and sediment impacts on surface water resources would depend on several factors, including the proximity of the disturbed area to surface waters, slope aspect and gradient, the erosion potential of the affected soil types, the duration and timing of construction activities, and the success or failure of reclamation and mitigation measures.

Construction and development activities could result in increased sedimentation and runoff, which in turn could increase sediment loading during runoff-producing storm events. The potential for impacts would be greatest shortly after the start of construction activities and would decrease in time due to stabilization, reclamation, and revegetation efforts. Sediment or contaminants contained in or absorbed onto sediments can be transported into the surface waters and impact water quality.

To reduce indirect effects on Colorado River Fish, the Applicant will comply with storm water regulatory requirements that mandate use of BMPs to minimize impacts to water quality.

Implementation of non-structural and structural control methods would minimize erosion and sedimentation impacts on Colorado River Fish and habitat resources in streams. Non-structural controls include clearing, grading, and construction practices that include surface roughening and crowning and ditching of roadways. Structural controls would be used in disturbance areas to minimize the amount of sediment that reaches a watercourse. Structural controls, including but not limited to straw bales, berms, and other barriers, would be identified and implemented based on specific site conditions. These measures will be described in the Stormwater Pollution Prevention Plan to be developed for the Project.

Further, all applicable BLM-committed Conservation Measures for Colorado River fishes, as described in the Vernal RMP (BLM 2008f), would be used as needed to mitigate potential impacts to endangered and sensitive fishes and their habitat.

4.2.10.1.1.1 Species Listed as Federally Threatened, Endangered, or Proposed

This section describes the potential effects of the Utility Project on federally listed, proposed, and candidate species carried forward for evaluation. Listed fish species are discussed in Section 4.2.10. In general, the magnitude and nature of effects resulting from the construction and operation of the Utility Project is assessed for Colorado River Fish relative to current existing conditions in terms of whether the effects are expected to reduce species survival and recovery.

Because the potential construction near the White River would be limited to areas outside the 100-year floodplain it is unlikely, with implementation of ACEPMs described in Section 2.2.11 and the implementation of Conservation Measures for Colorado River fishes, as described in the Vernal RMP (BLM 2008f), that an increase in contaminants or sediments would have lasting adverse effects on Colorado River Fish in the White River

Based on the project water depletions described in Section 4.2.10.1 and potential increase in sediment yields of the Green River, implementation of the Utility Project may affect, is likely to adversely affect the listed Colorado River fish species, including bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker. Indirect effects on these listed fish species would be mitigated by implementation of ACEPMs, BMPs and Conservation Measures outline in the Vernal RMP (2008f).

4.2.10.1.1.2 BLM Sensitive Fish Species

The roundtail chub, bluehead sucker, and flannelmouth sucker are listed by the State of Utah and the BLM as sensitive species. All of these fish are Colorado River system endemic species and would not be negatively affected by the Utility Project. Impacts on these species from the Utility Project would be the same as those on federally listed Colorado River fish, as described in Section 4.2.10.

4.2.10.1.2 Non-federal Connected Action South Project

Construction of the South Project, including improvements to Dragon Road, would have indirect effects on listed Colorado River fish. The Applicant's resource holdings, including all private land and state/federal leases, cover more than 30,000 acres and are transected from south to north by Evacuation Creek, a perennial stream that flows into the White River located north of the South Project area. The Applicant is still in the planning and preliminary engineering design process for the South Project; therefore, water supply amounts for various construction and operation processes are only available as preliminary estimates at this time and are described in Section 2.2.12.1.4. The Applicant has indicated they intend to use the 15 cfs spare capacity in DGT's existing water conveyance system from the Green River to the BPP for construction and operation of the South Project. Section 4.2.10.1 describes water consumption related to the Project.

An increased risk of spills from construction activities is likely to adversely affect fish. Accidental chemical spills or product spills and/or leakage during construction of the South Project could potentially contaminate nearby surface water and/or groundwater. Depending on the depth of groundwater in the area of the spill, large spills may reach the groundwater table and eventually reach surface water. Using appropriate BMPs during construction and operations would minimize impacts.

During operations, if a pipeline were to leak or rupture, it is possible that its contents could drain into nearby ephemeral and perennial streams. The proposed corridor for the buried pipelines crosses the White River at a single location (under the Utility Project), and crosses Evacuation Creek and several unnamed washes at numerous locations.

The toxicity of an accidental SCO product or natural gas condensate spill to a particular stream or river would depend on the amount spilled, the level of attenuation before reaching the water, and the flow volume (and dilution) of the stream or river. Spills occurring in proximity to streams would potentially result in lethal levels of toxic substances affecting Colorado River Fish and other aquatic organisms.

In the South Project area, erosion and sedimentation may occur in areas of land disturbance. The magnitude of erosion and sediment impacts on surface water resources would depend on several factors, including the proximity of the disturbed area to surface waters, slope aspect and gradient, the erosion potential of the affected soil types, the duration and timing of construction activities, and the success or failure of reclamation and mitigation measures.

Construction and development activities could result in increased sedimentation and runoff, which in turn could increase sediment loading during runoff-producing storm events. The potential for impacts would be greatest shortly after the start of construction activities and would decrease in time due to stabilization, reclamation, and revegetation efforts. Sediment or contaminants contained in or absorbed onto sediments can be transported into the surface waters and impact water quality.

4.2.10.1.2.1 Species Listed as Federally Threatened, Endangered, or Proposed

Indirect effects on listed Colorado River Fish would be the same as those described under the Utility Project. Applicant committed measures, design features, and mitigation measures that apply to protected species are included in Table 4-1. Based on the project water depletions described in Section 4.2.10.1 and potential increase in sediment yields of the Green River, implementation of the Utility Project may affect, is likely to adversely affect the listed Colorado River fish species, including bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker.

4.2.10.1.2.2 BLM Sensitive Fish Species

The roundtail chub, bluehead sucker, and flannelmouth sucker are listed by the State of Utah and the BLM as sensitive species. All of these fish are Colorado River system endemic species. Impacts on these species from the Utility Project would be the same as those on federally listed Colorado River fish, as described in Section 4.2.10.

Implementation and adherence to BMPs for protected species would mitigate potential impacts sensitive fish and their habitat.

4.2.10.1.3 No Action Alternative – No Utility Project

Under the No Action Alternative, there would be no impacts on special status fish resources.

4.2.10.1.4 No Action Alternative – Non-federal Connected Action South Project

Under the No Action Alternative, impacts on special status fish resources would still exist as described for the Non-federal Connected Action South Project. Alternative means of obtaining needed water for the South Project could potentially include pursuing additional water rights. Adequate information for this scenario is not available to estimate specific impacts. Refer to Section 4.2.5.1.4 for further detail regarding Water Resources. In addition, the risk of spills of solid and hazardous waste could result from increased truck traffic. Refer to Section 4.2.18.1.1.2 for further detail.

4.2.10.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures that would reduce adverse impacts to protected species are included in Table 4-1. The following adverse impacts would remain after application of those features and measures:

- Water depletion from the Colorado River Basin resulting in impacts on Colorado River endangered and sensitive fish species.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.10.3 Irretrievable and Irreversible Commitments of Resources

Any losses of potential habitat necessary for the survival or recovery of special status fish species would be irretrievable until disturbed areas were actively and adequately restored. The potential sedimentation effects on aquatic habitats for special status fish species from the Utility Project would be irretrievable until these features were removed and reclaimed following project completion.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.10.4 Relationship of Short-term Uses to Long-term Productivity

Implementation of the Utility Project could provide a short-term surface disturbance use resulting in erosion and sedimentation that would result in long-term loss of fish or aquatic habitat in the White River or its tributaries. Indirect effects from sedimentation would also have long-term negative impacts on the habitat suitability of fish and other aquatic species in the utilities area.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.11 Cultural Resources

4.2.11.1 Direct and Indirect Effects

4.2.11.1.1 Proposed Action – Utility Project

A total of 13 sites would potentially be subject to direct impacts associated with the construction of the Utility Project. Potential impacts on sites in the Project APE could be direct and permanent ground disturbance associated with the construction of tower locations, pipelines, associated ancillary facilities, and access roads, and direct and indirect permanent disturbances due to changes in public accessibility (i.e., the introduction of new or improved access roads). Potential impacts on sites adjacent to the Project APE could be direct and indirect permanent disturbances due to changes in public accessibility; and direct and indirect long-term visual, atmospheric, and auditory intrusions that could compromise aspects of site integrity, such as setting, feeling, and association, which are components of NRHP eligibility. These types of disturbance could damage or destroy cultural resources if not mitigated.

Key resources identified in the Project APE along the Utility Project consist of one prehistoric rock shelter (42UN5374) of unknown cultural affiliation and the historic White River Stage Station site (42UN2558). The prehistoric rock shelter was recommended eligible for the NRHP under Criterion D for its potential to yield data from subsurface deposits. Further investigation was recommended for this prehistoric habitation site (Lechert et al. 2013). The White River Stage Station site was recommended eligible for the NRHP under Criteria A and D because the site contains both surface and subsurface manifestations, which still have the potential to provide information about the stage station, as well as later activities. This site is associated with transportation related to early mining activities in the Uinta Basin, an important historical point in the expansion, settlement, and development of industry in eastern Utah. Further investigation was recommended for the White River Stage Station site (Lechert et al. 2013). The nature of the Project surface and subsurface ground disturbances, such as heavy machinery and stripping impacts from mining and construction activities, has the potential to adversely affect these sites, which have been recommended eligible for the NRHP.

The western boundary of the prehistoric rock shelter is located within the Project APE. It is anticipated that the utility corridors (natural gas line, product line, and water line) could be micro-sited during final engineering to fully avoid impacts to this prehistoric site. In the event this site could not be fully avoided, the Applicant would work in consultation with the BLM Vernal Field Office to determine appropriate mitigation activities to document this site prior to construction and monitor the area during construction.

Impacts on the NRHP eligible White River Stage Station site are anticipated to be significant and unavoidable. The utility corridors are currently planned to traverse the historic stage station site, approximately four miles southeast of Bonanza, Utah. Excavation of the trenches through the site for the utility corridors would result in an adverse effect to the historic property. Potential effects on the site may include, but are not limited to, damage to surface and subsurface structures, and/or features (e.g., privy pits, ash lenses, and refuse pits). As currently designed, opportunities for micro-siting the utility corridors would not appear to be an effective means for avoidance of impacts at this location. Modification of construction methods (e.g. stove-pipe) applied during implementation of the Project may reduce surface impacts to the site through reduction of the workspace and size of the crew; however, these measures would not mitigate or serve to reduce the primary impact of excavating the trenches through the site. Specific impacts to the site resulting from the construction of the Project cannot be quantified without further investigation, which would take place prior to implementation of the Project. Pursuant to the requirements of Section 106 of the NHPA, the Applicant would work in consultation with the BLM Vernal Field Office to determine appropriate mitigation activities to document this site prior to construction and monitor the area during construction.

4.2.11.1.2 Non-federal Connected Action South Project

A total of 76 sites would potentially be subject to impacts associated with the construction of the South Project. Key resources identified in the Project APE along the South Project consist of two historic mining sites (prospector pits and associated artifact scatters). These historic sites were recommended eligible for the NRHP under Criterion A for their likely association with mining activities, which took place in the Uinta Basin in the early half of the twentieth century, an important historical point in the expansion, settlement, and development of industry of eastern Utah (Lechert et al. 2013). Without mitigation, the type of potential impacts would be the same as those described for the Utility Project.

4.2.11.1.3 No Action Alternative – No Utility Project

No impacts on cultural resources located within the proposed utility corridor would occur if the Utility Project were not implemented. However, the South Project area would still be developed to full build-out on private lands owned by the Applicant under the No Action Alternative. The Applicant would employ alternative means in place of development of the utility corridor and potential impacts within the South Project area and those resulting from the deployment of alternative means would result in potential impacts.

4.2.11.1.4 No Action Alternative – Non-federal Connected Action South Project

Potential impacts on cultural resources would not be minimized through the No Action Alternative. Under the No Action Alternative, the South Project area would still be developed to full build-out on private lands owned by Applicant. Under the No Action Alternative, the Project would impact known cultural resources or potential unrecorded cultural resources that exist in the boundaries of the South Project area. Without mitigation, the type of potential impacts would be the same as those described for the Utility Project.

4.2.11.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures that would reduce adverse impacts to this resource from development of the Utility Project are included in Table 4-1. There is a potential for unavoidable adverse impacts on cultural resources, despite compliance with Section 106. The greatest risk is the destruction of or physical impacts on unknown sites. Adherence to relevant cultural resources regulations would provide opportunities for mitigation or recovery of these sites.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.11.3 Irretrievable and Irreversible Commitments of Resources

Class I and Class III inventories have been completed for the entirety of the Utility Project study area. As a result of these investigations, numerous cultural resources are known to exist within the direct and indirect effects APEs. Despite the existing body of information for the Utility Project study area, the potential for additional cultural resources sites to be encountered is high, as a result, the potential for irretrievable and irreversible impacts on cultural resources exists. These impacts include the potential for damage to sites through direct and permanent ground disturbance associated with the construction of tower locations, pipelines, associated ancillary facilities, and access roads, and direct and indirect permanent disturbances due to changes in public accessibility (i.e., the introduction of new or improved access roads). Through compliance with Section 106, the potential for irretrievable and irreversible damage to cultural resources sites may be mitigated in advance of construction activities. However, risk of irreversible impacts on sites discovered during the construction cannot be quantified.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.11.4 Relationship of Short-term Uses to Long-term Productivity

Proper mitigation and compliance with Section 106 would reduce, but not eliminate, impacts on cultural resources from development of the Utility Project. Regardless of whether the stated use is short or long term, physical impacts on cultural resources are permanent. Cultural resources impacted or destroyed during ground disturbing activities are permanently affected.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.12 Paleontological Resources

4.2.12.1 Direct and Indirect Effects

The construction of the Utility Project and South Project (Proposed Action or No Action Alternatives) could result in both direct and indirect adverse effects on paleontological resources. Potential direct effects associated with construction activities include the loss of a paleontological resource as a result of ground-disturbing activities. Indirect effects associated with the construction, maintenance, and operation of the Utility Project and South Project (Proposed Action or No Action Alternatives) could include:

- Increased access of the general public to sensitive geological units and unauthorized collection or vandalism.
- Increased erosion as a result of ground-disturbing activities that exposes new paleontological resources.

4.2.12.1.1 Proposed Action – Utility Project

A fossil locality search and paleontological resources survey of the Project was previously performed. As a result of these investigations, numerous fossil localities are known to have previously existed within one-mile of the Project, several of which were within the APE.

There are 10 geological units crossed by the Utility Project: Alluvial fan deposits (Qaf), Colluvium (Qc), mixed alluvium and colluvium (Qac), mixed alluvium and eolian deposits (Qae), stream alluvium (Qal), stream terrace deposits (Qat), Member A of the Uinta Formation (Tua), Member B of the Uinta Formation (Tub), Member C of the Uinta Formation (Tuc), and the Parachute Creek Member of Green River Formation (Tgp). The Utility Project could impact 110 acres having a PFYC of 2, 318 acres having a PFYC of 3, and 358 acres having a PFYC of 5 for the Utility Corridor. A Paleontological Resource Assessment previously performed for the Utility Project study area found numerous fossil localities within the geologic units Tgp and Tub. Although previous collection of significant paleontological resources on the surface occurred, there still exists the potential for paleontological resources to be uncovered below the surface. There would be no impacts to those paleontological resources previously collected during the survey. Through compliance with NEPA, FLPMA, and PRPA, mitigation of paleontological resources can reduce the impacts.

4.2.12.1.2 Non-federal Connected Action South Project

There are five geologic units within the APE for the South Project: Mass movements, slides, slumps, and flows (Qms), Mixed alluvium and colluvium (Qac), Mixed alluvium and eolian deposits (Qae), Member A of the Uinta Formation (Tua), and the Parachute Creek Member of the Green River Formation (Tgp). The South Project could impact 362 acres having a PFYC of 2, 5157 acres having a PFYC of 3, and 1066 acres having a PFYC of 5. Although previous collection of significant paleontological resources on the surface occurred, there still exists the potential for paleontological resources to be uncovered below the surface. Through compliance with the FLPMA and PRPA, mitigation of paleontological resources can reduce the impacts.

4.2.12.1.3 No Action Alternative – No Utility Project

Under the No Action Alternative, there would be no impacts on paleontological resources.

4.2.12.1.4 No Action Alternative – Non-federal Connected Action South Project

Under the No Action Alternative, impacts on paleontological resources would still exist as previously described for the South Project.

4.2.12.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures that would reduce adverse impacts to this resource from development of the Utility Project are included in Table 4-1. There is a potential for unavoidable adverse impacts on paleontological resources despite adherence to laws and regulations of the FLPMA and PRPA. In addition, there is the chance of an unanticipated discovery of a paleontological resource in areas where sensitivity is low. Such unanticipated discovery could lead to partial or complete destruction of a paleontological resource.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.12.3 Irretrievable and Irreversible Commitments of Resources

Although previous collection of significant paleontological resources on the surface occurred, there still exists the potential for paleontological resources to be uncovered below the surface during development of the Utility Project. Therefore, there is the potential risk of irreversible impacts on paleontological resources discovered during construction.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.12.4 Relationship of Short-term Uses to Long-term Productivity

Proper mitigation and compliance with the FLPMA and PRPA would reduce, but not eliminate, impacts on paleontological resources during the development of the Utility Project. Regardless of a short-term or long-term use, physical impacts, such as damage or destruction, on paleontological resources are permanent.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.13 Visual Resources

4.2.13.1 Direct and Indirect Effects

4.2.13.1.1 Proposed Action – Utility Project

4.2.13.1.1.1 Scenery

White River SQRU (Class A): The Utility Project would further influence and begin to locally dominate the character of the White River, in an area of medium sensitivity, adjacent to an existing pipeline with an overhead utility bridge crossing over the White River and smaller transmission line. Due to the structural elements associated with the existing pipeline and transmission line, the transmission line structures proposed as part of the Utility Project would expand the area influenced by cultural modifications, and based upon the enclosed nature of this landscape, would be mostly associated with the aerial crossing of the two proposed transmission lines.

Hell’s Hole SQRU (Class B): The Utility Project would only occupy a small area within this landscape (along the western edge) but due to the scale of the proposed cultural modifications, including two transmission lines, the effects on adjacent scenery would further influence the landscape character in the Hell’s Hole SQRU.

Red Wash/Kennedy Wash/ Devil's Playground (Class B): Due to the extent of existing cultural modifications adjacent to the Utility Project, including transmission lines, the BPP, and oil and gas extraction operations, the Utility Project would further industrialize the landscape character but not dominate the existing character.

Southam (Class B): The Utility Project would cross this landscape along its eastern edge, in proximity to an existing pipeline, and would locally dominate landscape character due to the prominence of the proposed transmission line structures and geometric right-of-way clearing associated with the construction of three pipelines. The character of Southam Canyon (located in this SQRU) would be minimally influenced by the Utility Project due to topographic screening.

Bonanza (Class C): The extent of existing cultural modifications adjacent to the Utility Project, associated with oil and gas extraction operations and pipelines, and the Utility Project would further industrialize the landscape character. In areas with less intense existing development, the Utility Project would begin to locally dominate the character of this SQRU through the introduction of vertical transmission line structures across the landscape.

Deadman's Bench (Class C): Due to the extent of existing cultural modifications adjacent to the Utility Project, including pipelines, the BPP (located 2 miles north of this SQRU), and oil and gas extraction operations, the Utility Project would further industrialize the landscape character but not dominate the existing character.

In addition, the area within each SQRU that could be influenced by the Utility Project was assessed by refining a two-mile buffer from the Utility Project components using the aforementioned viewshed analysis to eliminate areas where the Utility Project would not be visible. Table 4-25 includes the total area of each SQRU, the area influenced by the Utility Project, and the percentage of the SQRU influenced by the Utility Project.

Table 4-25
Extent of BLM Scenic Quality Rating Units Influenced by the Utility Project

Scenic Quality Rating Unit			Area influenced by the Utility Project (acres)	Percentage of SQRU Influenced by the Utility Project
Name	Class	Area (acres)		
White River	Class A	40,869	7,136	17
Hell's Hole	Class B	16,957	2,620	15
Red Wash/Kennedy Wash/ Devil's Playground	Class B	81,784	9,417	12
Southam	Class B	63,317	5,601	9
Bonanza	Class C	69,873	18,357	26
Deadman's Bench	Class C	78,693	7,136	9

4.2.13.1.1.2 Viewing Locations

KOP #1 – Atchees Wash Road: Due to the distance from the Utility Project (more than 6 miles away) and level of topographic screening from this location, impacts on views would be minimal from this location.

KOP #2 – Rainbow Ghost Road: Due to the level of topographic screening adjacent to this viewpoint, views of the Utility Project would be screened from this location.

KOP #3 – Former IOP: Due to the level of topographic screening adjacent to this viewpoint, views of the Utility Project would be screened from this location.

KOP #4 – White River: Due to the enclosed setting associated with this viewpoint, views of the Utility Project would be screened by local topographic features.

KOP #5 – Highway 45/Dragon Road: Impacts on views from this location would result from the introduction of vertical transmission line structures, right-of-way vegetation clearing, and construction of project access roads and improvements to Dragon Road. These elements would be located 0.5 mile away from this viewpoint, but due to topographic screening (except for the improvement to Dragon Road), views of the Utility Project would occur approximately 1 mile away. The proposed pipelines would repeat the form, line, color, and texture associated with an existing pipeline but would expand the area viewed as modified from this location. In addition, the proposed transmission lines, due to their vertical prominence, would increase visibility of the Utility Project from this location. Intermittent topographic screening would minimize dominance of views by the Utility Project and in locations where it would be visible, would be co-dominant with the existing setting.

KOP #6 – Goblin City: Due to the distance from the Utility Project (approximately 10 miles away) and level of topographic screening from this location, impacts on views would be minimal from this location.

KOP #7 – Fidlar/Little Bonanza: Impacts on views from this location would be minimal due to the extent of existing development located adjacent to this viewpoint and between this location and the Utility Project. Rolling topography would intermittently screen portions of the Utility Project, and where visible, would be co-dominant with existing development limiting its effect on views.

KOP #8 – Kennedy Wash: Impacts on views from this location would be minimal due to the extent of existing development located between this location and the Utility Project, including an existing transmission line in the immediate foreground, the BPP, and oil and gas extraction operations. Rolling topography would intermittently screen portions of the Utility Project further limiting the level of visual contrast introduced the South Corridor Project.

KOP #9 – Duck Rock: Impacts on views from this location would result from the introduction of vertical transmission line structures, right-of-way vegetation clearing, and construction of project access roads where the Utility Project would cross the White River. The Utility Project would be viewed from approximately 0.5 mile away in context with an existing pipeline (above-ground at the river crossing) and smaller transmission line. Views of the Utility Project from Duck Rock would be unobstructed, but due to the elevated viewing location, would view the project components backdropped against the landscape. The proposed transmission lines and pipelines would repeat the form, line, color, and texture associated with the utilities at the White River crossing. A visual simulation conducted from Duck Rock, of the crossing of the White River, is included in Appendix G.

4.2.13.1.1.3 Compliance with Visual Resource Management Class Objectives

Based on the contrast rating analysis conducted from the nine identified KOP locations, the Utility Project would meet BLM VRM objectives for Class II, III, and IV, where these classes are crossed and therefore, be compliant with visual resource direction in the Vernal Field Office RMP. The completed contrast rating worksheets are included in Appendix G as well as the visual simulation from KOP #9 – Duck Rock where the Utility Project would cross the White River in VRM Class II land.

4.2.13.1.2 Non-federal Connected Action South Project

4.2.13.1.2.1 Scenery

White River SQRU (Class A): Due the enclosed nature of this landscape setting, there would be limited influence from the adjacent scenery modified by the South Project, approximately 5 miles to the south, except for the portion of this SQRU extending south between the Hell’s Hole and Southam SQRUs. In this area, the South Project would influence this landscape setting through the introduction of large-scale cultural modifications in adjacent SQRUs.

Hell’s Hole SQRU (Class B): The proposed mine and plant associated with the South Project would be located in the southern portion of this SQRU where the character adjacent to the South Project, and on adjacent ridges, would be dominated by the proposed cultural modifications. Further north in the SQRU, the South Project would minimally alter landscape character as the proposed cultural modifications would be screened by terrain, limiting the extent of influence from the South Project in this portion of the SQRU.

Long Draw SQRU (Class B): The proposed mine associated with the South Project would dominate the character of the northeastern portion of the Long Draw SQRU between Excavation Creek and East Fork of Asphalt Wash. The South Project plant would not be located in this SQRU, but due to the scale of the proposed cultural modification, the effects on adjacent scenery would further influence the character of the SQRU on the same ridges influenced by the proposed mine. Due to topographic screening west of this area, the remaining portion of the SQRU would be minimally influenced by the South Project.

Park Canyon SQRU (Class B): The proposed mine associated with the South Project would dominate the character of the northern portion of the Park Canyon SQRU, north of Evacuation Creek and on ridges to south of the creek. The South Project plant would not be located in this SQRU, but due to the scale of the proposed cultural modification, the effects on adjacent scenery would further influence the character of the Park Canyon SQRU. Note, due to topographic screening, the portion of this SQRU adjacent to Evacuation Creek would be minimally influenced by the South Project.

Southam SQRU (Class B): The proposed mine and plant associated with the South Project would be located in the southeastern portion of this SQRU where the character adjacent to the South Project, east of Southam Canyon, would be dominated by the proposed cultural modifications. Further to the west, the South Project would minimally alter landscape character as the proposed cultural modifications would be screened by terrain, limiting the extent of influence from the South Project in this portion of the SQRU.

Weaver Canyon SQRU (Class B): The South Project would not occur within this SQRU but due to the scale of the South Project, the effects on adjacent scenery would further influence the character of the Weaver Canyon SQRU.

Table 4-26 includes the total area of the each SQRU, the area influenced by the South Project, and the percentage of the SQRU influenced by the South Project.

Table 4-26
Extent of BLM Scenic Quality Rating Units Influenced by the South Project

Scenic Quality Rating Unit			Area Influenced by the South Project (acres)	Percentage of SQRU Influenced by the South Project
Name	**Class**	**Area (acres)**		
White River	Class A	40,869	1,460	4
Hell’s Hole	Class B	16,957	5,852	35
Long Draw	Class B	64,680	9,182	14
Park Canyon	Class B	36,005	7,182	20
Southam	Class B	63,317	11,803	19
Weaver Canyon	Class B	1,199	609	51

4.2.13.1.2.2 Viewing Locations

KOP #1 – Atchees Wash Road: The South Project would be visible from this location, approximately 3 miles away, where views would be unobstructed. The geometric landforms associated with the proposed mine and change in soil color resulting from excavation, would begin to dominate views from this location. The proposed plant would also be visible, but due to the distance, approximately 6 miles away and backdropping by adjacent terrain, would influence but not dominate these views.

KOP #2 – Rainbow Ghost Road: Due to the level of topographic screening adjacent to this viewpoint, views of the South Project would be screened from this location.

KOP #3 – Former IOP: Due to the level of topographic screening adjacent to this viewpoint, views of the South Project would be screened from this location.

KOP #4 – White River: Due to the enclosed setting associated with this viewpoint, views of the South Project would be screened by local topographic features.

KOP #5 – Highway 45/Dragon Road: The South Project would be potentially visible from this location, approximately 4 miles away, based on the height of spoil piles associated the proposed mine and adjacent topographic screening. If visible, the South Project would not be consistent with the form, line, color, and texture present in the existing viewshed, in particular, the introduction of geometric landforms into an area characterized by rolling hills and ridges. Through full build-out, the South Project would begin to dominate views from this location.

KOP #6 – Goblin City: Due to the distance from the South Project (approximately 10 miles away) and level of topographic screening from this location, impacts on views would be minimal from this location.

KOP #7 – Fidlar/Little Bonanza: Due to the distance from the South Project (approximately 13 miles away) and level of topographic screening from this location, impacts on views would be minimal from this location.

KOP #8 – Kennedy Wash: Due to the distance from the South Project (approximately 16 miles away) and level of topographic screening from this location, impacts on views would be minimal from this location.

KOP #9 – Duck Rock: Due to the level of topographic screening adjacent to this viewpoint, views of the South Project would be screened from this location.

4.2.13.1.3 No Action Alternative – No Utility Project

4.2.13.1.3.1 Scenery

Impacts on scenery would be minimized through the No Action Alternative, as no structural components, right-of-way vegetation clearing, or construction access road would be necessary for this alternative. Additional effects on scenery as part of the No Action Alterative would include additional vehicle traffic on existing roads, local utility re-location, and other alternative means to support the South Project, which would minimally influence landscape character.

4.2.13.1.3.2 Viewing Locations

Similar to the discussion of impacts on scenery, impacts on views would be minimized, through the No Action Alternative as there are no structural components, right-of-way vegetation clearing, or construction access road necessary for this alternative. Additional effects on views as part of the No Action Alterative would include additional vehicle traffic on existing roads, local utility re-location, and other alternative means to support the South Project, which would minimally influence views from the KOP locations.

4.2.13.1.3.3 Compliance with Visual Resource Management Class Objectives

Since there would be no noticeable change introduced by the No Action Alternative on BLM-administered lands, the No Action Alternative is compliant with BLM VRM Class objectives.

4.2.13.1.4 No Action Alternative – Non-federal Connected Action South Project

4.2.13.1.4.1 Scenery

Impacts on scenery resulting from the South Project would be similar to the Proposed Action – Non-federal Connected Action South Project unless additional structural components are proposed for the South Project due to the selection of the No Action Alternative. These elements would increase visibility of the South Project from adjacent lands leading to an incremental increase of impacts on scenery through the introduction of additional cultural modifications.

4.2.13.1.4.2 Viewing Locations

Similar to the discussion of impacts on scenery, impacts resulting from the South Project would be similar to the Proposed Action – Non-federal Connected Action South Project unless additional structural components are proposed for the South Project. These additional structural elements would increase visibility of the South Project from KOP locations leading to greater modification of these viewsheds.

4.2.13.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures for the Utility Project that would reduce adverse impacts to this resource are included in Table 4-1. The introduction of the Utility Project (three proposed pipelines and two transmission lines) would cause unavoidable impacts on scenery and views where these elements would dominate the landscape character or viewsheds. The modification of the existing landscape's form, line, color, and texture would reduce the natural appearance of the area. Through the application of mitigation to reduce the visual dominance of the Utility Project, as well as to meet BLM VRM Class objectives, these modifications would be less intense but still generate long-term impacts.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.13.3 Irretrievable and Irreversible Commitments of Resources

No irreversible impacts are expected for visual resource as a result of the Utility Project. Areas of surface disturbances can be reclaimed, transmission structures dismantled, and access roads can be closed and reclaimed. There would be a long-term irretrievable impact on visual resources during the planned 30-year lifespan of the Utility Project due to the presence of the aforementioned project components, which will be removed (or reclaimed) after the planned project lifespan.

The South Project, expected to be built under either alternative, would result in similar impacts, as it would introduce irretrievable effects on scenery due to the level of modification to the setting from mining operations and views of these areas from BLM-administered lands.

4.2.13.4 Relationship of Short-term Uses to Long-term Productivity

The introduction of the Utility Project would have long-term adverse impacts on scenery and views. The presence of vertical transmission line structures, right-of-way vegetation clearing, and construction of project access roads and improvement to Dragon Road would contrast with the existing landscape's form, line, color, and texture. These modifications would continue to impact scenery and views until reclamation and revegetation have been successfully completed. As stated previously, the Utility Project would, over the long-term, comply with BLM VRM Class objectives.

The South Project, expected to be built under either alternative, would result in similar impacts.

4.2.14 Lands and Access

4.2.14.1 Direct and Indirect Effects

4.2.14.1.1 Proposed Action – Utility Project

4.2.14.1.1.1 Existing Land Use

Existing land use resources include general developed land uses and grazing allotments. The construction, operation, and maintenance of the Utility Project would result in both direct and indirect effects on these resources. The following describes acres crossed for these uses and the potential effects.

General Developed Land Uses

Table 4-27 describes the potential effects on the general developed land uses and acres crossed by the Utility Project.

Table 4-27
General Developed Land Uses Crossed by the Utility Project

Land Use	Acres Crossed	Direct and Indirect Effects
Industrial		
General Industrial	0.3	General industrial uses are crossed by the access roads for the Utility Project. Potential direct effects would include loss of industrial uses, conflicts with industrial uses such as limiting operations of the use during construction of the access roads, or limiting or removing access to the use.
Oil and Gas Projects	1.3	Oil and gas liquid extraction areas are crossed by the transmission line, water supply pipeline, and product delivery line for the Utility Project. Potential direct effects would include loss of oil and gas liquid extraction and conflicts with oil and gas liquid extraction such as interference with the production and operation of these areas during construction. Refer to discussion below for more information related to impacts on oil and gas liquid extraction projects.
Tailings Pond	0.5	The tailings pond is crossed by the transmission line for the Utility Project. Potential direct effects would include loss of the tailing ponds or conflicts with the tailings pond, such as interference with the operation of the facility.
Utilities		
Bonanza Power Plant	13.6	The BPP is crossed by the transmission line and water supply pipeline for the Utility Project. Potential direct effects would include interference with the management of the plant during construction. It is not anticipated these project features would limit or remove the use of the plant.

Avoidance of facilities to the extent possible and coordination with facility owners will be conducted to address potential impacts and identify possible solutions.

Oil and Gas Projects

As noted in Section 3.2.14.3.1.3, Oil and Gas Projects, there are several oil and gas development projects in the study area. 1.3 acres of oil and gas development would potentially be impacted by the Project. In addition to the potential effects described in the table above, the following impacts may also occur.

EOG Resources, Inc. submitted a letter during scoping explaining the locations of the Project paths would conflict and possibly interfere with operation of their facilities. EOG Resources, Inc. provided direction regarding avoidance of well pads by the transmission line portion of the Project and asked that an alternate path for the water supply pipeline be used to avoid a proposed well pad and associated access road and pipeline. There are no plans to relocate any EOG Resources, Inc. facilities and no other alternatives for the water supply pipeline have been proposed. Although transmission and pipeline rights-of-way associated with the Project development would not necessarily preclude other land uses, they would result in both direct and indirect impacts. Impacts could potentially include interference with operations of the well pad production (e.g., inability to raise a workover rig) and disruption to construction of the well pads (e.g., ground clearing or blasting). Refer to paragraphs below for information regarding valid existing rights.

The Applicant will coordinate with facility owners and avoid facilities the extent possible. In cases where oil and gas development cannot be avoided, valid existing rights will be addressed. Valid existing rights are the legal rights or interest associated with a land or mineral estate. These rights cannot be divested from the estate until the interest expires or is relinquished. For minerals, valid existing rights govern authorizations for activities on existing mineral leases and mining claims. The rights vary, but generally involve the right to explore, produce, and develop within the constraints of the law and other regulations and policy at the time the lease/claim was established or authorized (BLM 2008). In an instance where the Utility Project could not avoid a mineral extraction operation, a mineral entry would take precedence over other land uses. The granting of a utility right-of-way would not overrule the mineral owners' right to develop and extract minerals within the right-of-way identified.

Grazing Allotments

Grazing allotments are crossed by all project features for the Utility Project (including access roads and temporary laydown areas).

Grazing is a primary use of public and private lands throughout the Project area and is a major source of income for private landowners. Rights-of-way across grazing allotments and rangeland would be obtained through right-of-way grants, special use permits, or easements negotiated between the Applicant and various federal, state, and local governments; other companies; and private landowners.

Short-term impacts would result from temporary construction disturbance due to the:

- Potential spread of noxious and invasive plant species,
- Interference with livestock management,
- Interference of access to livestock operations, and
- Increased mortality of livestock from increased traffic.

Long-term impacts on grazing would result from permanent construction disturbance due to loss of vegetation on land occupied by tower pads and permanent access roads. Short- and long-term impacts on grazing would occur in upland rangeland habitat.

The grazing allotments crossed by the Project are as follows:

- Bonanza (39.9 acres)
- Coyote Wash (428.8 acres)
- Hell's Hole (233.5 acres)
- Watson BC (63.2 acres)
- White River Bottoms (3.7 acres)

4.2.14.1.1.2 Future Land Use

The Utility Project would cross the PacifiCorp Energy Gateway South Project and potentially the State of Utah Department of Natural Resources Division of Water Resources proposed reservoir project (exact location is unknown).

Potential effects on these future land uses would include conflicts with future energy facilities, including the design, construction, and operation of these facilities and/or limiting future development of utility or industrial projects. During scoping, the UDWaR requested that the BLM include a condition that if the reservoir is built, the Applicant or any successor would need to relocate or rebuild facilities to be compatible with the reservoir. As of July 2013, there were no active plans to develop the reservoir, but a need may arise in the future.

The Utility Project's crossing of SITLA's Bonanza Oil Shale block may inhibit future oil shale development due to the presence of the rights-of-ways.

The Applicant land holdings/leases crossed by the Project are as follows:

- BLM RD&D Lease (68.4 acres)
- Applicant Private Land Lease (100.1 acres)
- SITLA Lease (101.9 acres)

4.2.14.1.2 Non-federal Connected Action South Project

4.2.14.1.2.1 Existing Land Use

The construction, operation, and maintenance of the South Project would result in indirect effects on existing land use (general developed uses and grazing allotments). The following describes acres crossed for these uses and the potential indirect effects.

General Developed Land Uses

No general developed land uses have been identified where the South Project is proposed. However, indirect effects of oil shale development would be associated with changing existing off-lease land uses, including conversion of land in and around local communities outside of the Utility Project study area from existing uses (agricultural, open space, etc.) to provide services and housing for employees and families that move to the region in support of oil shale development. The value of private ranches and residences outside of the Project Area may be affected by oil shale developments or associated rights-of-way because of perceived noise, human health, sale of water rights, or aesthetic concerns.

Grazing Allotments

Short-term and long-term indirect impacts would result from temporary construction disturbance due to the:

- Potential spread of noxious and invasive plant species,
- Interference with livestock management,
- Interference of access to livestock operations, and
- Increased mortality of livestock from increased traffic.

Long-term indirect impacts on grazing would result from permanent construction disturbance due to loss of vegetation on land occupied by the South Project.

The grazing allotments crossed by the Project are as follows:

- Hell's Hole (2.6 acres)
- Watson BC (636,58.0 acres)

Future Land Use

No future land uses have been identified where the South Project is proposed. Therefore, no effects on general developed land uses are anticipated to occur as a result of the development of the South Project.

4.2.14.1.3 No Action Alternative – No Utility Project

4.2.14.1.3.1 Existing Land Use

Impacts on existing land use (general developed land uses and grazing allotments) would be minimized through the No Action Alternative, as no structural components, right-of-way vegetation clearing, or construction access road would be necessary for this alternative. Additional effects on existing land use as part of the No Action Alterative would include additional vehicle traffic on existing roads, local utility re-location, and other alternative means to support the South Project, which would have a minimal effect on existing land uses. Refer to Section 4.2.15, Travel Management, for more information on the effects of increased vehicle traffic.

4.2.14.1.3.2 Future Land Use

Impacts on future land use would be minimized through the No Action Alternative, as no structural components, right-of-way vegetation clearing, or construction access road would be necessary for this alternative. Additional effects on future land use as part of the No Action Alterative would include additional vehicle traffic on existing roads, local utility re-location, and other alternative means to support the South Project, which would have little to no effect on future land uses.

4.2.14.1.4 No Action Alternative – Non-federal Connected Action South Project

The indirect impacts on existing land use (general developed land uses and grazing allotments) and future land use under the No Action Alternative would be similar to those described for the Proposed Action – Non-federal Connected Action South Project except for increased vehicle traffic. Refer to Section 4.2.15, Travel Management, for more information on the effects of increased vehicle traffic. No other impacts are anticipated from the alternative means of developing the South Project (as listed in Section 2.3.1.1).

4.2.14.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures applicable to the Utility Project that would reduce adverse impacts to this resource are included in Table 4-1. Unavoidable adverse impacts on grazing would result from temporary construction disturbance due to loss of vegetation on land occupied by the Utility Project. Unavoidable acres of surface disturbance and facilities generated by the Utility Project would remain in that state until reclaimed.

4.2.14.3 Irretrievable and Irreversible Commitments of Resources

No irreversible impacts are expected for land use and access as a result of the Utility Project. Irretrievable areas of surface disturbance and facilities generated by the Utility Project would remain in that state until reclaimed.

4.2.14.4 Relationship of Short-term Uses to Long-term Productivity

The short-term impacts expected to occur as a result of construction of the Utility Project are not expected to result in adverse impacts to the long-term productivity of public land resources in the area.

The Utility Project is unlikely to impact long-term existing or future land use, land ownership, or land management. The aboveground facilities for the transmission line would eventually be removed at the end of their life spans, and the land would be reclaimed to natural conditions. The reclamation of arid desert lands can take several decades, but reclamation would reduce the long-term impacts on public land resources.

4.2.15 Travel Management

4.2.15.1 Direct and Indirect Effects

4.2.15.1.1 Utility Project – Utility Project

Existing roadways would be used to facilitate development of the Utility Project. Traffic volume anticipated during the construction of the Utility Project is discussed qualitatively based on information from the construction duration and manpower estimates provided by the Applicant.

In order to accommodate construction and operation of the Proposed Project, as well as general employee and supply traffic, the Applicant is proposing to make improvements to Dragon Road as part of the Utility Project. Direct effects from the proposed improvements include minor realignment, widening, and paving. The Applicant would expand the right-of-way from the existing 45 feet to 60 feet, and the road would be designed to meet the minimum requirements of the Uintah County Class 1B (paved) road typical section. The improvements to Dragon Road would result in 5.7 miles of new surface disturbance (Enefit 2014). The Utility Project will be constructed generally parallel to Dragon Road to improve access for maintenance, and therefore minimize the need for additional road construction.

Dragon Road, Highway 45, and other local existing roads and right-of-way would be used for surface travel during construction and ongoing maintenance of the Utility Project. There would be a short-term increase in presence of large trucks and construction equipment on local roads and rights-of-way due to construction activity. There would also be an increased potential for accidents and spills during the construction period. Project traffic would decrease when construction activity is complete.

Long-term effects to transportation and access would result from ongoing Utility Project maintenance and operation activity, ongoing employee travel, and the potential for brief alterations to access during maintenance activities.

The Applicant would coordinate with Uintah County regarding the use of roadways and utility corridors prior to construction to ensure that crossings adhere to all regulations and that all necessary local permits and authorizations are in place. In addition, a Traffic and Transportation Management Plan was developed as part of the POD to ensure necessary coordination occurs with roadway agencies to limit any conflict between roadway users and the Utility Project during both short-term construction activities and long-term operation activities.

4.2.15.1.2 Non-federal Connected Action South Project

Indirect effects would occur from the proposed improvements to Dragon Road as described above for the Utility Project.

In addition, long-term indirect impacts would include addition of heavy equipment and large trucks on roadways to facilitate construction of the South Project. Impacts would occur from an increase in traffic on Dragon Road, Highway 45 and some local roads for the duration of construction activity associated with the South Project.

Indirect and long-term effects of the South Project would include an increase in traffic from employees' travel, deliveries, and ongoing maintenance operations. In addition, long-term impacts to Dragon Road, Highway 45, and existing roads would include an increase in traffic due to employee access to the South Project and periodic presence of maintenance vehicles along the utility corridor route. Long-term impacts to Dragon Road include modifications that will improve safety and functionality of the roadway.

The Applicant would coordinate with Uintah County regarding the use of roadways and utility corridors prior to construction to ensure that crossings adhere to all regulations and that all necessary local permits and authorizations are in place.

4.2.15.1.3 No Action Alternative – No Utility Project

No impacts would occur under the No Action Alternative.

4.2.15.1.4 No Action Alternative – Non-federal Connected Action South Project

Both short-term and long-term impacts to the transportation system (federal, state, county, and local roads) would result from an increase of large trucks and heavy equipment use on existing roadways. Impacts would be most notable on Dragon Road because this road would not be paved or otherwise improved under the No Action Alternative.

Long-term indirect effects include use of oil haul trucks with double trailers to facilitate transport of product. Truck traffic is anticipated to consist of 100 trucks per day for Phase 1 (25000 barrels per day for about four operational years) and 200 trucks per day during Phase 2 (50,000 barrels per day for about 30 operational years). During full build-out, the increase in truck traffic would equate to one truck travelling on Dragon Road, Highway 45, local roads, and US 40 every 7.2 minutes. Trucking product would result in the addition of large trucks on already congested roadways, increase risk for accidents, increase potential for spills, and place additional wear on federal, state, and local routes.

No other impacts are anticipated from the alternative means of developing the South Project (as listed in Section 2.3.1.1).

4.2.15.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures applicable to the Utility Project that would reduce adverse impacts to this resource are included in Table 4-1. In addition, the Traffic and Transportation Plan (included as an appendix to the POD) would be applied to further minimize potential impacts during short-term and long-term project activities.

Should the South Project be developed without approval of the Utility Project, increased truck traffic associated with the South Project and acquisition of utilities by alternative means would pose an unavoidable increased risk of accidental spills along roads. This risk would be greater under the No Action Alternative – Non-federal Connected Action South Project due to the potential for trucking utilities in to the South Project and trucking product back out to market. Mitigation Measures (Table 4-1) and the Traffic and Transportation Management Plan (included as an appendix to the POD) would not be applied be applied to minimize potential impacts.

4.2.15.3 Irretrievable and Irreversible Commitments of Resources

The irretrievable and irreversible commitment of resources from the development of the Utility Project would be limited to the development of Dragon Road and would cause a small increase in traffic on existing transportation routes from employees accessing the Utility Project and South Project. The increased use of these roads would also result in a small increase in cost related to wear and tear of these facilities.

Should the South Project be developed without approval of the Utility Project, additional truck traffic on existing roads would result in an irretrievable commitment of resources. The additional heavy truck traffic would cause additional wear (and cost of maintenance and repair) on local, state, and federal roads. This commitment of resources would be greater under the No Action Alternative – Non-federal Connected

Action South Project due to the potential for trucking utilities in to the South Project and trucking product back out to market.

4.2.15.4 Relationship of Short-term Uses to Long-term Productivity

The short-term impacts to travel management expected to occur as a result of construction of the Utility Project are not expected to result in adverse impacts to the long-term productivity of public land resources in the area.

The improvement to Dragon Road would improve the long-term productivity of the transportation resource beyond the life of the project.

4.2.16 Recreation

4.2.16.1 Direct and Indirect Effects

4.2.16.1.1 Proposed Action – Utility Project

Direct impacts on recreation are discussed below.

4.2.16.1.1.1 Off-highway Vehicle Use

OHV users in the project area are mainly restricted to designated roads, trails, or OHV areas. Short-term effects on OHV users during construction could include restricted access or temporary closure of roads, trails, or OHV areas and increased traffic from construction vehicles and equipment. Increased dust/vehicle emissions could also occur. Long-term effects from the Utility Project on OHV users would be minimal. Roads, trails, or OHV areas are not anticipated to be permanently unavailable.

4.2.16.1.1.2 Duck Rock Recreation Site

Impacts on the Duck Rock Recreation Site are anticipated to be minimal. The site is located approximately 140 feet from the Utility Project. Potential effects on the site may include limiting access to the site or affecting the viewer experience from the site. Visual impacts are discussed in Section 4.2.13.

4.2.16.1.2 Non-federal Connected Action South Project

There are no existing or planned recreation uses for the Applicant-owned land. No indirect impacts on OHV users or recreation sites are anticipated from the South Project.

4.2.16.1.3 No Action Alternative – No Utility Project

No improvements to Dragon Road would be made under the No Action Alternative. Therefore, construction impacts associated with roadway improvements would not occur. However, trucking the product from the South Project to market would increase the amount of truck traffic on the unpaved Dragon Road and Highway 45. Increased traffic (and related dust and noise) may affect the recreation experience for OHV users and viewers at the Duck Rock Recreation Site.

4.2.16.1.4 No Action Alternative – Non-federal Connected Action South Project

Impacts on recreation would be similar to those described for the Utility Project under the No Action Alternative. No other impacts are anticipated from the alternative means of developing the South Project (as listed in Section 2.3.1.1).

4.2.16.2 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures applicable to the Utility Project that would reduce adverse impacts to this resource are included in Table 4-1. All impacts identified for recreation are considered to be unavoidable adverse impacts.

4.2.16.3 Irretrievable and Irreversible Commitments of Resources

Irretrievable and irreversible commitments of recreation resources could potentially occur on particular recreationist's experience.

4.2.16.4 Relationship of Short-term Uses to Long-term Productivity

The short-term impacts to recreation expected to occur as a result of construction of the Utility Project are not expected to result in adverse impacts to the long-term productivity of public land resources in the area.

Anticipated impacts on long-term productivity of recreation activities within the study area include a change in the recreationist's experience of the area.

4.2.17 Social and Economic Conditions

4.2.17.1 Direct and Indirect Effects

4.2.17.1.1 Proposed Action – Utility Project

4.2.17.1.1.1 Impacts on Employment and Economic Conditions

The construction, operation, and maintenance of the three underground pipelines (water supply, natural gas supply, and product delivery), two transmission lines and improvements to Dragon Road are expected to have beneficial impacts on local employment and economic conditions. The largest potential impact from the Utility Project on employment would occur during the construction phase. It is expected that direct employment for the Utility Project will require approximately 85 to 110 workers during each of the two mobilization periods, which are expected to last 12 and 19 months, respectively. This increase in direct employment is likely to generate a minor positive impact to local economic conditions.

The construction of the proposed lines and facilities would require a number of tasks and associated specialized skill sets. It is possible that some of these construction workers would commute to the Project site from their residences within the study area. However, due to the relatively remote nature of this region, it also is likely that construction workforce would temporarily relocate from larger metropolitan areas such as Salt Lake City, Denver, and Cheyenne to support the Utility Project.

The majority of the workers would live temporarily at locations and communities near the Utility Project. These workers would be expected to live in recreational vehicle (RV) parks, rental houses, and apartments, and in local motels and hotels.

Earnings of 85 to 110 construction workers are estimated to range between $4.4 million to $5.8 million annually, based on average earnings for construction jobs in three county study areas (U.S. Bureau of Economic Analysis [BEA] 2015).[1] These earnings represent between 3 and 4 percent of the earnings in the study area, which were $139 million in 2013 (BEA 2015).

[1]Average earnings for construction workers of $52,313 in 2013 were based on BEA average earnings for the construction industry for the counties in the study area (Duchesne, Uintah and Rio Blanco), which includes both full-time and part-time employment.

Construction earnings will support the economy where construction workers live. As construction workers spend their money in the local communities where they are housed, revenues would increase for some local businesses, such as hotels, restaurants, gas stations, and grocery stores, supporting jobs and incomes for these businesses and their employees. Because some of the construction workers are not anticipated to be permanent residents of the study area, induced spending would be less than locally residing employees as construction workers will send a portion of their earnings to their home area.

Construction expenditures for the pipelines and transmission lines, as shown in Table 4-28, will support construction jobs in the region, positively impacting this industry in the study area. In addition to construction labor expenditures, these costs include materials, development engineering, and equipment.

Table 4-28
Estimated Costs of Utility Project

Project Component	Estimated Costs (Million $)
Raw Water Pipeline	$29.8
Natural Gas Pipeline	$9.5
Product Pipeline	$15.5
Electrical Transmission Lines	$27.3
Dragon Road Re-alignment	$43.0
Total Cost	$125.1
SOURCE: Enefit 2014	

Given the remote nature of the study area, it is likely that a significant portion of these expenditures will be sources outside the study areas. However, some of these expenditures would be made locally and would support downstream jobs and income in the region.

4.2.17.1.1.2 Impacts on Population

The Utility Project is located in Eastern Utah adjacent to a number of very small towns; the project workforce is likely to live temporarily in some of the region's larger towns, including Roosevelt, Vernal, and Naples, Utah, and Rangely, Colorado with 2013 populations of 6,300, 9,500, 2,149, and 2,200, respectively. Approximately 110 workers would represent less than one percent of the population in these three towns. The slight increase in employment is not expected to cause any measurable impacts on population trends. Any changes in population due to the Utility Project would be small and temporary and would not affect these projected trends.

4.2.17.1.1.3 Impacts on Government-Provided Services

The Utility Project is expected to have temporary and minimal impacts on government-provided services across the study area. This is due to the fact that changes in employment and population are predicted to be small and mostly temporary with the construction, operation, and maintenance of the utility Project. Workers are not expected to bring their families, and impacts on school enrollment are not expected to occur. Emergency services, law enforcement, and medical facilities would be adequate to address the construction crews expected to live in temporary or permanent housing in the study area. Therefore, it is not anticipated there would be a measurable change in supply or demand of relevant government services throughout the study area.

4.2.17.1.1.4 Property Tax Impacts

Annual property taxes that can be expected with the construction and operation of the Utility Project are summarized in Table 4-29. The property taxes to be paid while the pipelines and transmission lines are under construction were estimated by applying an average tax rate of 1.04 percent to the construction cost of each component of the Utility Project for Uintah County where the project will be located (Patterson 2009). The average tax rate for utilities was estimated by dividing total taxes charged against utilities in

Uintah County by the total assessed value of utilities in 2013 (Utah State Tax Commission 2014). To estimate an average cash flow for the pipelines and transmission lines, a capitalization rate of 7.93 percent (Utah State Tax Commission 2015) was applied to the cost of construction to estimate the annual cash flows. The annual tax revenue for the remaining years was then estimated by applying the 1.04 percent average tax rate to the annual cash flow.

Table 4-29
Estimate Annual Property Tax Receipts for Utility Project

Location	Property Tax Levied (Dollars)	Percent of State Property Tax Levied	Utility Property Tax Levied (Dollars)	Utility Tax to Total Tax Levied in Each Geography (Percent)
Uintah County	$57,031,932	2.2	$3,993,421	7.0
State of Utah	$2,603,159,199	100.0	$165,828,317	6.4
SOURCE: Patterson 2009; Utah State Tax Commission 2014 (Analysis by the Louis Berger Group)				

4.2.17.1.1.5 Impacts on Sales Tax Revenues

The Utility Project is expected to generate additional sales tax revenues for county and state governments. Locally purchased materials, such as concrete, lumber, and other supplies, would contribute sales taxes to local jurisdictions. Additionally, workers residing temporarily in local communities would generate sales and use taxes as well as lodging fees through their spending on retail, food and beverage, accommodations, and other items.

4.2.17.1.1.6 Environmental Justice

Because potential environmental justice populations exist in the study area, it is necessary to determine if impacts are likely to fall disproportionately on these populations. Given the small number of individuals that are living near the proposed Utility Project, it is not anticipated that this project will have any disproportionate impact on low income or minority populations.

4.2.17.1.2 Non-federal Connected Action South Project

4.2.17.1.2.1 Impacts on Employment and Economic Conditions

The construction and operation of the South Project is also expected to have beneficial impacts on local employment and economic conditions. Direct employment resulting from the South Project was estimated with information on potential production from the facility and direct employment factors published in the *Proposed Land Use Plan Amendments for Allocation of Oil Shale and Tar Sands Resources on Land Administered by the Bureau of Land Management in Colorado, Utah and Wyoming and Final Environmental Impact Statement* (BLM 2012g). Estimated direct employment for construction and operation of the South Project is summarized in Table 4-30.

Table 4-30
Estimated Direct Employment of the South Project

Operation Phase	Direct Employment (FTEs/1,000 barrels/day)	Estimated Production Level for Applicant Facility (barrels/day)	Estimated Direct Employment from the South Project
Construction (5 years)	50.5	50,000	2,525
Operation (25 years)[1]	34.6	50,000	1,730

NOTES:
[1]The Utility Corridor and South Projects as currently planned would continue for at least 30 years: Enefit POD April 2014.
FTE – Full-time equivalent
SOURCE: BLM 2012g (Analysis by the Louis Berger Group)

The largest potential impact from the South Project on employment would occur during the construction phase. It is expected that direct employment for the South Project will require up to 2,500 workers. The full build-out of the South Project is expected to be commissioned in multiple development phases and the timing of construction or the number of workers needed for each phase is unknown at this time. This increase in direct employment is likely to generate a significant positive impact to local economic conditions. The workforce requirements for construction of the South Project could potentially double the size of the construction industry in terms of employment that existed in the study area in 2013.

It is expected that construction of the proposed South Project would require a number of tasks and associated specialized skill sets. While it is possible that some of these construction workers would commute to the South Project from their residences within the study area, a significant number are expected to relocate to the study area during the construction phase. While it is likely that construction workforce would temporarily relocate from larger metropolitan areas such as Salt Lake City, Denver, and Cheyenne to support the South Project, the workforce demands may require workers to relocate from outside this larger region as well.

The majority of the workers would live temporarily at locations and communities (Vernal, Rangely, Roosevelt, and Naples) near the Project site. These workers would be expected to live in RV parks, rental houses and apartments, and in local motels and hotels.

Earnings of 2,500 construction workers are estimated to generate $131 million annually, based on average earnings for construction jobs in the study area (BEA 2015).[2] These earnings represent 94 percent of the total earnings in the study area, which were $139 million in 2013 (BEA 2015).

Construction earnings will support the economy where construction workers live. As construction workers spend their money in the local communities where they are housed, revenues would increase for some local businesses, such as hotels, restaurants, gas stations, and grocery stores, supporting jobs and incomes for these businesses and their employees. Because some of the construction workers are not anticipated to be permanent residents of the study area, induced spending would be less than locally residing employees as construction workers will send a portion of their earnings to their home area.

Operation of the South Project is also expected to have significant positive economic impacts in the study area. Increases in employment were estimated similar to those for construction of the South Project as summarized in Table 4-30. According to this analysis, when the facility is operating at full build-out target production, employment may reach as much as 1,700 FTE. It is expected that the majority of the workers supporting the operations of the South Project would move to locations and communities closest to the project site including Vernal, Roosevelt, and Rangeley.

Earnings of 2,100 operational workers are estimated to generate $100 million annually, based on average earnings for mining jobs in the study area (BEA 2015).[3] These earnings represent 29 percent of the total earnings in the study area for mining, which were $346 million in 2013 (BEA 2015).

Operational earnings will support economy where mining workers live. As mining workers spend their money in the local communities where they live, revenues would increase for some local businesses, such as restaurants, gas stations, and grocery stores, health and child care, supporting jobs, and incomes for these businesses and their employees. Because all of the operational workers are expected to relocate

[2]Average earnings for construction workers of $52,313 in 2013 were based on BEA average earnings for the construction industry for the three counties in the study area (Duchesne, Uintah, and Rio Blanco), which includes both full-time and part-time employment.

[3]Average earnings for construction workers of $47,780 in 2013 were based on BEA average earnings for the mining industry for the three counties in the study area (Duchesne, Uintah, and Rio Blanco), which includes both full-time and part-time employment.

permanently to the area, induced spending associated with the expanded workforce is expected to have significant positive impacts on the local economy.

4.2.17.1.2.2 Impacts on Population

The South Project is proposed to be developed in a rural part of Uintah County in eastern Utah. It is expected that the project workforce would live in some of the region's larger towns, including Roosevelt, Vernal, and Naples, in Utah, and Rangely, Colorado with 2013 populations of 6,300, 9,500, 2,149, and 2,200, respectively. Approximately 2,000 to 2,500 workers are expected to either temporarily or permanently support either the construction or operation of the South Project. It is also expected that a significant proportion of this workforce would migrate into the study area. This direct employment would represent more than 13 percent of the population in these three towns. This is likely to cause a significant measureable impact on population trends in these communities and throughout the study area.

4.2.17.1.2.3 Impacts on Government-Provided Services

Population in-migration associated with the construction and operation of the South Project would result in increased demand for educational and public services (police, fire protection, health services, etc.). An increase in population in the study area is likely to lead to an increase in enrollment in local schools where workers relocate with their families. In-migration was estimated to increase enrollment by 485 students based on current enrollment levels in local school districts. If teacher-student ratios are maintained at current levels, the number of teachers needed to meet this demand would be 22 FTEs. While some school districts are likely to benefit from additional tax revenues associated with the Utility and South Projects, some school districts are located outside Uintah County and would not benefit from these additional funds and would have to adjust to an increase in educational demands in other ways.

Population in-migration would also lead to increases in demand for other government services. The Final OSTS Preliminary EIS (BLM 2012e) estimated the increase in government employment and revenues with oil shale facilities. Using data from this study, the increase in government services due to the South Project were estimated and summarized below:

- Government Employees
  - Construction (30)
  - Operation (64)
- Change in Local Government Expenditures
  - Construction (1.2 percent)
  - Operation (2.6 percent)

The increases in government employment and expenditures were based on those levels needed per 1,000 people. For the South Project, government employment was estimated to increase by 30 FTEs during construction and 64 during operations. Government expenditures were estimated to increase by 1.2 percent during construction and 2.6 percent for operations due to the South Project. It is not known at this time which communities will be affected by in-migration.

4.2.17.1.2.4 Impacts on Housing

It is expected that the majority of workers will migrate to the study area to support construction and operation of the South Project. Under construction, these workers would be expected to live in RV parks, rental houses and apartments, and in local motels and hotels. Under operations, workers would relocate permanently to the study area and would thus be looking for permanent residential options. The Final OSTS Preliminary EIS estimated that the demand for housing due to the development of oil shale facilities could result in an increase in the demand for housing from 160 to 280 units and absorb 1.5 to 3.2

percent in housing vacancy in local areas (BLM 2013a). It is expected that this increase in demand would have a minor impact on housing in the study area based on the latest statistics on housing characteristics in the study area, which indicate that there is available housing stock to absorb this increase demand in housing for the project.

4.2.17.1.2.5 Property Tax Impacts

The development and operation of the South Project is expected to generate additional property taxes for local and state government entities in Utah. At this time, there is not sufficient information available to estimate the increase in property taxes for the South Project.

4.2.17.1.2.6 Impacts on Sales Tax Revenues

The South Project is expected to generate additional sales tax revenues for county and state governments. Locally purchased materials, such as concrete, lumber, and other supplies, would contribute sales taxes to local jurisdictions. Additionally, workers residing temporarily or permanently in local communities would generate sales and use taxes as well as lodging fees through their spending on retail, food and beverage, accommodations, and other items.

4.2.17.1.2.7 Social Disruptions

The development and operation of the South Project has the potential to cause some social disruptions in local communities. The development of the project is likely to create a large in-migration of temporary population during construction and a permanent population at the start of operations. If this migration occurs rapidly, it may not allow for proper planning by local communities to adjust to a large influx of new residents. This timing could potentially result in some social disruption and changes in social organization. These community disruptions, if significant, can lead to social distress resulting in an increase in drug use, alcoholism, divorce, juvenile delinquency, and deterioration of mental health and declines perceived quality of life (BLM 2012e).

4.2.17.1.2.8 Environmental Justice

Because potential environmental justice populations exist in the study area, it is necessary to determine if impacts are likely to fall disproportionately on these populations. The South Project is expected to contribute positively to potential environmental justice communities through additional job and income opportunities and fiscal receipts to counties. However, these populations also could be affected adversely by the Project's impacts on additional resource areas (e.g., traffic, air quality, social disruption). Air quality and traffic impacts are expected to be short-term with air emission dispersion limited to the vicinity of the construction activity, and impacts would not result in violations. In addition, given the small number of individuals that are living near the proposed South Project, it is not anticipated that this project will have any disproportionate impact on low income or minority populations.

4.2.17.1.3 No Action Alternative – No Utility Project

Under the No Action Alternative, the BLM would deny the Applicant's rights-of-way to construct, operate, and maintain the facilities described for the Utility Project on land they administer. However, the Applicant would seek to obtain the utilities required for the South Project by alternative means. Some of the actions would require additional development and construction, which would generate minor positive, temporary increases in employment and income in the study area associated with the construction of the South Project. These actions are not expected to impact population, public services, or government tax revenues in the area.

4.2.17.1.4 No Action Alternative – Non-federal Connected Action South Project

The South Project would be expected to be developed under the No Action Alternative with a change in design and operations. It is expected the social and economic impacts would be similar to those discussed under South Project.

4.2.18 Public Health and Safety

4.2.18.1 Solid Waste

4.2.18.1.1 Direct and Indirect Effects

4.2.18.1.1.1 Proposed Action – Utility Project

The direct effects of the Utility Project construction on Public Health and Safety associated with solid waste will be negligible. Solid waste consisting of non-hazardous construction debris, used oil, empty containers, and packaging, will be removed from the Utility Project work Site during and at the close of the construction mobilizations. Proper handling and disposal of wastes will avoid air, land, and water impacts associated with improper management of non-hazardous construction-related wastes.

The possible indirect effects relate to the location and availability of permitted landfills and disposal sites. Construction debris and other non-hazardous wastes will be transported on existing roads to a municipal landfill, such as one located in Vernal, Utah. Based on the extent and duration of the construction mobilizations, it is not anticipated that the volume of wastes generated by the Utility Project will overload the existing landfill capacity. Proper handling and transport of wastes will avoid indirect effects on air, land, and water associated with improper management of non-hazardous construction-related wastes.

4.2.18.1.1.2 Non-federal Connected Action South Project

The potential for effects due to generation and disposal of solid wastes by the South Project is related to mining of oil shale, the operation of the shale oil refinery plant, and disposal of the spent oil shale. 40 CFR 1502.22 provides guidance for disclosing unknown information. For this project, it is unknown what quantifiable impact to public health and safety would result from the South Project because it has not yet been fully designed and engineered. This information is unknown, and cannot be obtained, due to the fact that design and engineering of the South Project will change based on whether or not the BLM allows the Applicant to build one or more of the proposed utilities. BLM believes this unknown information is not essential to a reasoned choice between alternatives because the South Project will proceed to full buildout regardless of BLM's decision, and BLM qualitatively knows that impacts to public health and safety under the No Action Alternative from the South Project are generally going to be higher than under the Proposed Action alternative due to the need for the Applicant to generate their own electricity and utilize trucks to deliver water and product to and from the South Project (increased traffic on a gravel road). In addition, obtaining the unknown safety quantifications from the South Project would be cost prohibitive because it would require the Applicant to design and engineer the entire South Project twice - once for the No Action and once for the Proposed Action alternatives. The relevance of the unknown data is to disclose the full public health and safety impacts from the South Project. However, the BLM anticipates that this information will be generated by the Applicant and analyzed by UDOGM and/or EPA during the mine and plant permitting process. In lieu of this data, in the following sections the BLM has qualitatively discussed the anticipated impacts from the South Project and summarized existing scientific evidence and studies from which assumptions were based. Please note that the BLM has quantified increased public health and safety impacts from the South Project whenever reasonable assumptions for the increased truck traffic under the No Action Alternative could be made.

Solid waste consisting of non-hazardous vehicle maintenance shop waste, construction debris, used refractory and filters, wastewater treatment sludge (non-hazardous) used oil, empty containers, packaging, and other similar materials will be generated by routine mine and shale oil refinery operations. The volume of the wastes can be assessed after the process design and operational procedures are developed for the South Project. These wastes will be accumulated in suitable containers, removed from the Site, and transported on existing roads to a municipal landfill, such as one located in Vernal, Utah.

The South Project would comply with the applicable federal, state, and local requirements related to the transport and disposal of wastes from the South Project, and thereby mitigate potential indirect effects. The Uintah County Code of Ordinances (UCCOD, Ch. 8.24) regulates the management, transport, and disposal of solid, non-hazardous wastes within Uintah County. Under these rules, the South Project would be required to obtain a permit for disposal of non-hazardous wastes at the Vernal, Utah landfill, which would involve disclosing the anticipated types and volumes of wastes. Proper handling and disposal of solid wastes in this manner will avoid impacts to air, land, and water resources.

Spent oil shale, the residual rock material that remains after retorting the shale, will be disposed at the Site on private land. Typical methods for disposal include stockpiling or burying in the open mined-out areas. The EPA published the statement relating the potential for spent (i.e., retorted) oil shale to constitute a hazardous waste (EPA 2008). This statement examined the ignitability, corrosivity, metal toxicity and leachability of the spent oil shale. The review listed for representative samples the content of toxic metals, which were well below thresholds that would qualify these wastes as hazardous, or that represented a risk of toxic effects by leaching of the metal content. It was concluded by the EPA that spent oil shale from above-ground retorting operations, such as those planned at the South Project, is not likely to exhibit hazardous characteristics. Given this conclusion, it is not anticipated that proper on-site disposal of the spent oil shale and residues will be a source of indirect effects.

4.2.18.1.2 No Action Alternative – No Utility Project

No direct or indirect effects on Public Health and Safety associated with Solid Waste would occur if the Utility Project were not implemented, since there would be no construction activities to generate solid wastes.

4.2.18.1.3 No Action Alternative – Non-federal Connected Action South Project

Under the No Action Alternative, the South Project would be developed to full build-out, which would have indirect effects as discussed for the Proposed Action – Non-federal Connected action South Project. There will be additional delivery vehicle and product tank truck traffic to support operations due to the unavailability of pipelines. The additional tank truck traffic would accelerate the deterioration of the existing Dragon Road, which is not designed for the anticipated traffic levels. Ongoing maintenance or improvement of this road may be needed to ensure safe transport of solid wastes. Potential effects on Public Health and Safety associated with solid waste generation through operation of the South Project would be the same as those discussed above for the South Project.

4.2.18.1.4 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures applicable to the Utility Project that would reduce adverse impacts to this resource are included in Table 4-1. There are no unavoidable adverse impacts on public health and safety related to the generation, proper handling and disposal of solid wastes for the Utility Project. The implementation of waste handling and disposal procedures during the construction mobilizations that comply with applicable regulations will mitigate such effects.

The operation of the South Project, expected to be built under either alternative, would result in similar impacts. The on-site disposal of spent oil shale will not cause unavoidable impacts, as this material has been identified by EPA as non-hazardous with little potential to cause contamination (EPA 2008).

Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant.

4.2.18.1.5 Irretrievable and Irreversible Commitments of Resources

There are minor irretrievable and irreversible commitments of resources related to the generation, proper handling, and disposal of solid wastes for the Utility Project. Disposal of solid wastes during Utility Project construction mobilizations will add incrementally to the wastes that will be disposed in landfills from current and future industrial and municipal sources. However, the Utility Project will have a negligible effect on the disposal resource provided by these facilities. Disposal of spent oil shale by burying in the mined-out areas is not anticipated to be a cause of contamination through leaching, and will reduce permanent changes to land contours due to mining.

The operation of the South Project, expected to be built under either alternative, would result in similar impacts.

4.2.18.1.6 Relationship of Short-term Uses to Long-term Productivity

The short-term impacts to public health and safety expected to occur as a result of construction of the Utility Project are not expected to result in adverse impacts to the long-term productivity of public land resources in the area.

Construction of the Utility Corridor would result in short-term disposal of solid wastes in regional landfills, and the disposal of spent (retorted) oil shale by burying on site. These uses are anticipated to have negligible effect on long-term productivity of the Site and landfill resources. Disposal of solid wastes during Utility Project construction mobilizations, and during later operation of the South Project, will add incrementally to the landfilling of non-hazardous wastes in the region. Disposal of spent oil shale by burying in the mined-out areas is not anticipated to be a cause of contamination through leaching (EPA 2008), and these areas would likely be suitable for reuse or reclamation.

The operation of the South Project, expected to be built under either alternative, would result in similar impacts.

4.2.18.2 Hazardous Materials and Waste

4.2.18.2.1 Direct and Indirect Effects

4.2.18.2.1.1 Proposed Action – Utility Project

The direct effects of the Utility Project construction on Public Health and Safety associated with hazardous materials and waste will be negligible. The potentially hazardous materials used in transmission line and pipeline construction, and operation/maintenance of equipment and vehicles are consumed in small volumes (e.g., adhesives, solvents, etc.). Substantial accumulation of hazardous wastes at the Site is not anticipated. Remaining hazardous wastes from material usage and equipment maintenance will be removed from the Site during and at the close of the construction mobilizations. Proper handling and disposal of hazardous wastes is required by federal regulations (which apply on tribal lands) and these procedures will avoid direct effects on air, land, and water resources associated with improper management of hazardous construction-related wastes.

Indirect effects to be considered relate to transportation of hazardous materials to and from the Utility Project work site and the location and availability of RCRA-permitted disposal sites. The landfill resource closest to the Utility Project work site, Uintah County Landfill in Vernal, Utah, does not accept hazardous wastes. Hazardous waste transfer and disposal facilities (e.g., Stericycle) are located in the relatively industrialized corridor near Salt Lake City, which would be a possible receiving facility for hazardous wastes generated by the Utility Project. The anticipated small volume of hazardous wastes generated by the Utility Project will not tax the existing disposal facility capacity. Proper handling and transport of wastes in compliance with federal requirements will avoid indirect effects on air, land, and water associated with improper management of non-hazardous construction-related wastes.

4.2.18.2.1.2 Non-federal Connected Action South Project

The potential for effects due to use of hazardous materials and disposal of hazardous solid wastes by the South Project is related to mining of oil shale and the operation of the shale oil refinery plant. With respect to spent (retorted) oil shale, the EPA published the statement relating the potential for this material to constitute a hazardous waste (EPA 2008). Based on the review of representative data for ignitability, corrosivity, metal toxicity and leachability of spent oil shale, the EPA concluded that “it is very unlikely that such material [spent oil shale] is a hazardous waste under Subtitle C of RCRA” (EPA 2008). Disposal of spent oil shale as a non-hazardous material is discussed in the above section on solid waste.

Certain potentially hazardous wastes consisting of vehicle maintenance shop waste, contaminated oil, and residual adhesives/solvents are expected to be generated by routine mine and shale oil refinery operations. The volume of these wastes can be assessed after the process design and operational procedures are developed for the South Project. However, based on experience at comparable industrial facilities, the proper disposal of such wastes would result in negligible direct effects. The South Project would comply with the applicable requirements related to the transport and disposal of hazardous wastes, and thereby mitigate potential indirect effects. Under applicable federal rules (e.g., RCRA under 40 CFR 260 to 263, and Oil Management under 40 CFR 112) these wastes will be accumulated in suitable containers, removed from the Site, and transported on existing roads to a RCRA-permitted treatment and disposal facility. Hazardous waste disposal facilities (e.g., Stericycle) are located in the relatively industrialized corridor near Salt Lake City, which would be a possible receiving facility for hazardous wastes generated by the South Project.

4.2.18.2.2 No Action Alternative – No Utility Project

No direct or indirect effects on Public Health and Safety associated with hazardous materials or wastes would occur if the Utility Project were not implemented, since there would be no construction activities to generate such wastes.

4.2.18.2.3 No Action Alternative – Non-federal Connected Action South Project

Under the No Action Alternative, the South Project would be developed to full build-out, which would have negligible effects as discussed in the preceding section. In addition, there will be additional delivery vehicle and product tank truck traffic to support operations due to the unavailability of pipelines. This additional traffic will not tangibly increase the production or use of hazardous materials, or the generation of hazardous wastes related to operation of the oil shale mine and South Project. However, the additional tank truck traffic would accelerate the deterioration of the existing Dragon Road, which is not designed for the anticipated traffic levels. Ongoing maintenance or improvement of this road may be needed to ensure safe transport of hazardous wastes. No other impacts are anticipated from the alternative means of developing the South Project (as listed in Section 2.3.1.1).

4.2.18.2.4 Unavoidable Adverse Impacts

Applicant committed measures, design features, and mitigation measures applicable to the Utility Project that would reduce adverse impacts to this resource are included in Table 4-1. There are no Unavoidable Adverse Impacts on Public Health and Safety related to the generation, proper handling, and disposal of hazardous wastes. The implementation of waste handling and disposal procedures during the construction mobilizations that comply with applicable federal regulations (e.g., RCRA under 40 CFR 260 to 263, and Oil Management under 40 CFR 112) will mitigate such effects.

The operation of the South Project, expected to be built under either alternative, would result in similar impacts. Because it is a non-federal connected action, the South Project would not be subject to ACEPMs or mitigation measures identified for the Utility Project, unless otherwise determined by the Applicant. Spent oil shale is very likely not to constitute a hazardous waste based on review by EPA, and has little potential to cause contamination (EPA 2008).

4.2.18.2.5 Irretrievable and Irreversible Commitments of Resources

There are minor Irretrievable and Irreversible Commitments of Resources related to the generation, proper handling, and disposal of hazardous wastes. Transport and disposal of hazardous wastes during Utility Project construction mobilizations will add incrementally to the amount of such wastes that will be disposed at RCRA-permitted facilities in the region from current and future industrial and municipal sources. However, the Utility Project will have a negligible effect on the disposal resource provided by these facilities.

The operation of the South Project, expected to be built under either alternative, would result in similar impacts.

4.2.18.2.6 Relationship of Short-term Uses to Long-term Productivity

The short-term impacts to public health and safety associated with hazardous materials or wastes expected to occur as a result of construction of the Utility Project are not expected to result in adverse impacts to the long-term productivity of public land resources in the area.

Construction of the Utility Corridor would result in short-term generation, transport, and disposal of hazardous wastes. These uses are anticipated to have negligible effect on long-term productivity of the Site and regional disposal resources. Substantial accumulation of hazardous wastes at the Site is not anticipated, which will avoid contamination that may affect long-term productivity. Disposal of solid wastes during Utility Project construction mobilizations will add incrementally to the landfilling of non-hazardous wastes that will be disposed at RCRA-permitted facilities in the region from current and future industrial and municipal sources. This will have a negligible effect on the long-term productivity of these facilities.

The operation of the South Project, expected to be built under either alternative, would result in similar impacts.

4.3 Cumulative Impacts for the Proposed Action

4.3.1 Introduction

This section presents the cumulative effects associated with the Utility Project, including (1) a general definition of cumulative effects, (2) elements that were considered in the cumulative effects analysis, (3) the assessment approach, and (4) the results of the assessment of cumulative effects for the Project (refer to Maps A-11a and A-11b in Appendix A). The BLM has identified a cumulative impact analysis area (CIAA) to support this assessment, which includes the areas affected by the non-federal connected South Project, for purposes of evaluation of impacts to a certain extent. Because the BLM is without authority to approve or disapprove development of the South Project itself, no alternative ways of developing the South Project need be nor are considered. Rather, the potential impacts of development of the South Project, as currently anticipated, have been incorporated into the cumulative impacts analysis as a reasonably foreseeable future action (RFFA). Finally, the effects of the South Project are not attributable to the Proposed Action of approving the Utility Project and do not count toward the significance of the Proposed Action's impacts.

4.3.1.1 Definition

Cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the impact on the environment that results from the incremental impact of the action when added to past and other present projects and RFFAs (including the South Project), regardless of what agency (federal or non-federal) or person undertakes other such actions. Cumulative impacts could result from individually minor but collectively significant actions taking place over a period of time. The purpose of the cumulative impacts/effects analysis is to ensure that the decision-makers consider the full range of consequences of the alternatives. Cumulative effects, discussed in this section, are the total effects on a given resource or ecosystem of all actions taken or proposed.

The CEQ distinguishes between direct and indirect effects of a Proposed Action. Direct effects are caused by the Utility Project and occur at the same time and place. Indirect effects can also be caused by the Utility Project and the South Project, considered for purposes of this NEPA analysis as a non-federal connected action, but are later in time or further removed in distance, yet are still reasonably foreseeable (40 CFR 1508.8).

4.3.1.2 Cumulative Effects Issues

The identification of issues for analysis in the EIS is discussed in Section 1.5.2. Those issues determined to potentially involve a cumulative effect of the Proposed Action with past and other present projects and RFFAs (including the South Project) are included in the cumulative effects analysis.

4.3.1.3 Geographic and Temporal Scope

The geographic scope is the spatial extent where cumulative effects may occur on a resource. The geographic scope is assessed, and will often be different, for each cumulative effects issue. It is generally based on the natural boundaries of the resource affected by the Proposed Action. In several cases, the geographic scope for a resource is substantially larger than the corresponding study area for project-related effects to consider an area large enough to encompass likely effects from other projects, like the South Project, on the same resource. In this instance, the CIAA includes the South Project because of the relationship with the Proposed Action; and in several instances, impacts of the Utility Project and the South Project are considered together.

The temporal scope is established by the timeframe for a cumulative effects issue – that is, the duration of short-term and long-term effects anticipated. For this analysis, the duration of short-term effects is anticipated to be 5 years for construction and stabilization and for operation and maintenance, assuming proposed Project utilities would be for the life of the South Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned. Together, the geographic and temporal scopes make up the CIAA. Table 4-31 describes the CIAA for each resource.

Table 4-31
Cumulative Impact Analysis Area by Resource

Resource	Temporal Scope	Geographic Scope	Summary of Approach
Greenhouse Gases	5 years for construction and stabilization and for operation and maintenance, assuming proposed Project utilities would be for the life of the South Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	Uinta Basin plus nearby Class I and Sensitive Class II areas	Qualitatively assess the general nature of cumulative impacts due to construction activity and GHG emissions associated with the Utility Project, the South Project, and other current or future projects Review Project GHG emissions in the context of other existing sources in the region Qualitatively assess the likely factors pertaining to cumulative effects that could result from increased regional GHG emissions. Qualitatively assess cumulative effects that may be associated with GHG emissions from the Utility Project, the South Project, and other current or future projects based on assumptions and/or estimated values (to be developed with BLM and the cooperating agencies). Qualitatively assess worst-case scenario cumulative effects
Air Quality	5 years for construction and stabilization and for operation and maintenance, assuming proposed Project utilities would be for the life of the South Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	Uinta Basin plus nearby Class I and sensitive Class II areas	Qualitatively assess potential cumulative effects on NAAQS due to emissions associated with the Proposed Action, the South Project, and other current and future projects based on assumptions and/or estimated values (to develop with the BLM and the cooperating agencies) to disclose: The types of NAAQS pollutant emissions that would likely result from the Utility Project and/or South Project (Proposed Action and/or No Action), and over the longer term from the operation of the South Project; The types of potential cumulative effects associated with the anticipated NAAQS pollutant emissions due to the No Action Alternative. Identify receptors that may be present and to which

Table 4-31
Cumulative Impact Analysis Area by Resource

Resource	Temporal Scope	Geographic Scope	Summary of Approach
			contributions to cumulative effects may be discernable due to direct and indirect pollutant emissions Review Project NAAQS pollutant emissions in the context of other existing sources in the region Qualitatively assess the likely factors pertaining to cumulative effects that could result from increased regional NAAQS pollutant emissions. Qualitatively assess worst-case scenario effects
Soil Resources	5 years for construction and stabilization and for operation and maintenance, assuming proposed utilities would be for the life of the Project (30 years or longer) and could be permanent if the Project is not decommissioned	The geographical extent of soil units crossed by the Utility Project and South Project	Estimate the extent of development associated with the Utility Project, the South Project, past and other present projects, and RFFAs to assess potential impacts on areas of high soil erosion
Mineral Resources	5 years for construction and stabilization and for operation and maintenance, assuming proposed utilities would be for the life of the Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	Study area for direct and indirect effects (one mile on either side of the Utility Project, and South Project(s)); Uintah County	Qualitatively evaluate the extent of development associated with the Utility Project, the South Project, past and other present projects, and RFFAs to assess potential cumulative effects on mineral resources with regards to conflicting with the development of a mineral resource
Water Resources	5 years for construction and stabilization and for operation and maintenance, assuming proposed Project utilities would be for the life of the South Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	12-digit Hydrologic Unit Code (HUC) (watershed) drainage areas crossed by the Utility Project and the South Project	Qualitatively assess potential cumulative impacts on any water resources particularly valuable or susceptible to surface disturbing activities (e.g., riparian areas along the White River and Evacuation Creek, perennial systems) Qualitatively assess potential cumulative impacts on areas with high potential for discharging erosion related sediment into water resources (i.e., areas particularly susceptible to erosion) Qualitatively assess the extent of

Table 4-31
Cumulative Impact Analysis Area by Resource

Resource	Temporal Scope	Geographic Scope	Summary of Approach
			water use associated with operation and maintenance of the Utility Project, the South Project, past and other present projects, and RFFAs
Vegetation	5 years for construction and stabilization and for operation and maintenance, assuming proposed Project utilities would be for the life of the South Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	12-digit HUC (watershed) drainage areas crossed by the Utility Project and the South Project	Qualitatively assess potential cumulative impacts on vegetation associated with the spread of noxious weeds related to the Utility Project, South Project, past and other present projects, and RFFAs
Special Status Plants	5 years for construction and stabilization and for operation and maintenance, assuming proposed Project utilities would be for the life of the South Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	Areas of potentially suitable habitat and known populations within 12-digit HUC (watershed) drainage areas crossed by the Utility Project and the South Project (Note: For key plant species such as White River and Graham's penstemon, the area might be expanded to the range-wide distribution of the plans.)	Qualitatively assess potential cumulative impacts on special status plant species populations or potential habitats for species without available agency or modeled data
Wildlife	5 years for construction and stabilization and for operation and maintenance, assuming proposed Project utilities would be for the life of the South Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	Big game: Areas of mapped crucial or seasonally important habitat within herd units crossed by the Utility Project and the South Project Migratory birds: Vegetation communities within 12-digit HUC (watershed) drainage areas crossed by the Utility Project and the South Project	Qualitatively assess extent of development associated with the Utility Project, the South Project, past and other present projects, and RFFAs in mapped big game habitat, including crucial big game habitat and migratory bird habitat
Special Status Wildlife	5 years for construction and stabilization and for operation and maintenance, assuming proposed Project utilities would be for the life of the South Project (30 years or longer) and could be permanent if the	Boundary of habitat that is crossed by the Utility Project and the South Project	Qualitatively assess potential cumulative impacts on long-term sustainability of special status populations by species group

Table 4-31 Cumulative Impact Analysis Area by Resource			
Resource	**Temporal Scope**	**Geographic Scope**	**Summary of Approach**
	Utility Project is not decommissioned		
Fish and Aquatic Resources	5 years for construction and stabilization and for operation and maintenance, assuming proposed utilities would be for the life of the Utility Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	River systems crossed by the Utility Project (White River)	Qualitatively assess potential cumulative impacts on critical habitats or known locations of special status species within one mile upstream from the Utility Project, past and other present projects, and RFFAs
Cultural Resources	5 years for construction and stabilization and for operation and maintenance, assuming proposed utilities would be for the life of the Utility Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	Study area for direct and indirect effects (one mile on either side of the proposed corridor alignment(s) of the Utility Project and the South Project	Qualitatively assess potential cumulative effects on cultural resources, including the potential for effective mitigation
Paleontological Resources	5 years for construction and stabilization and for operation and maintenance, assuming proposed utilities would be for the life of the Utility Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	Study area for direct and indirect effects (one mile on either side of the proposed corridor alignment(s))	Quantitatively assess extent of cumulative surface disturbance in Potential Fossil Yield Classes 4 and 5
Visual Resources	5 years for construction and stabilization and for operation and maintenance, assuming proposed utilities would be for the life of the Utility Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	Scenery: The portions of BLM SQRU within two miles of the Utility Project and within 5 miles for the South Project. Viewers: Defined by the agency-approved KOP locations that would have views of the Utility Project	Scenery: For key SQRUs, qualitatively assess cumulative effects on landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modification as appropriate. Viewers: Describe potential cumulative impacts on views at KOPs
Lands and Access	5 years for construction and stabilization and for operation and maintenance, assuming proposed utilities would be for the life of the Utility Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	Study area for direct and indirect effects (one mile on either side of the proposed corridor alignment(s)); Uintah County	Qualitatively assess potential conflicts with transportation and access associated with the Utility Project, the South Project, past and other present projects, and RFFAs
Transportation and Access	5 years for construction	Includes Uintah County and adjacent counties with routes that would be used to for construction activities.	Qualitatively evaluate possible cumulative effects on existing transportation and access.
Recreation	5 years for construction and stabilization and for operation	Study area for direct and indirect effects	Qualitatively assess potential conflicts with recreation uses

Table 4-31
Cumulative Impact Analysis Area by Resource

Resource	Temporal Scope	Geographic Scope	Summary of Approach
	and maintenance, assuming proposed utilities would be for the life of the Utility Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	(one mile on either side of the proposed corridor alignment(s)); Uintah County	associated with the Utility Project, the South Project, past and other present projects, and RFFAs
Social and Economic Conditions, Environmental Justice	5 years for construction and stabilization and for operation and maintenance, assuming proposed utilities would be for the life of the Utility Project (30 years or longer) and could be permanent if the Utility Project is not decommissioned	Study area for direct and indirect effects by county	Qualitatively evaluate possible cumulative effects on available workforce, employment, population, housing, and property values Qualitatively evaluate possible cumulative effects on minority, low income and/or tribal communities
Public Health and Safety	The timeframe for analysis is 5 years for construction and stabilization and for operation and maintenance, assuming proposed utilities would be for the life of the Utility Project (30 years or longer) and could be permanent if the Utility Project and/or South Project are not decommissioned.	Includes Uintah County and the routes that solid waste is transported from the Utility Project to disposal sites. Adjacent counties are included if facilities in those counties may receive solid wastes from the Utility Project or South Project.	Potential for hazards associated with management of solid and hazardous waste generation and proper transport and disposal in compliance with applicable regulations.

4.3.1.4 Study Approach

For most resources, resource inventory data were not available for the geographic scope of the CIAA. For such resources, cumulative effects are discussed qualitatively. Data for some resources were available for the extent of the geographic scope, including soils, livestock grazing, and paleontological resources. Cumulative effects on these resources were analyzed quantitatively.

The quantitative assessment of cumulative effects was performed using a seven-step process:

1. Compile Resource Inventory for the CIAA: The available resource in a CIAA was compiled by overlaying a polygon representing the CIAA identified for a resource issue over the relevant resource inventory data.
2. Estimate Spatial Extent of Existing Development: A single base layer of existing development was defined to include the existing land-use inventory developed for the effects analysis; buffered transmission lines, pipelines, railroads, and roads within the study area for direct and indirect effects; LANDFIRE™ data and buffered existing utilities, pipelines, railroads, and roads outside of study area for direct and indirect effects; and data collected for past and present actions in the Project area boundary.
3. Estimate Spatial Extent of RFFA Development: A single base layer of RFFA development was established based on the rationale or assumptions outlined in Table 4-32. For oil and gas development areas, the associated development for each area was estimated based on approved maximum disturbance levels and well pad spacing (i.e., the approved maximum

disturbance was distributed equally in the area boundary using approved well pad spacing). The spatial extent of RFFA development was then compiled into a single base. The base layer was not developed to contain individual attribute information; rather, the base layer includes a summary of all attributes.

4. Estimate Spatial Extent of Project Development: The area was compiled depending on the CIAA.
5. Estimate Total Cumulative Development: The layers were amalgamated to generate an estimated total cumulative development for each CIAA (i.e., the existing development data layer, the RFFA development layer, and the CIAA available resource inventory layer). In areas where existing development, RFFAs, and resource inventory all occurred, only the spatial extent of existing development and the CIAA available resource inventory were calculated (i.e., excluding RFFA development) to eliminate double-counting of development of an RFFA in areas already affected by past actions.
6. Determine Incremental Project Development: The spatial extent of the incremental Project effect on an available resource in the CIAA was determined by overlaying the existing and RFFA cumulative development layers with the estimated disturbance calculations generated from the Project description.
7. Determine Remaining Available Resource: The spatial extent of the remaining available resource (e.g., sensitive soils, units with high potential for fossil yields [paleontological resources], grazing allotments) in the CIAA was determined by assessing the area outside of the estimated total cumulative development area.

4.3.2 Past, Present, and Reasonably Foreseeable Future Actions

For purposes of this assessment, quantitative and qualitative estimates of cumulative effects on resources are based on the estimated spatial extent of development for the Utility Project and South Project (Proposed Action or No Action Alternatives) and each past and present action and other RFFAs. The past and present actions and RFFAs are listed in Table 4-32 and Table 4-33 and are presented on Map C-11a.

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Table 4-32 Past and Present Actions					
Applicant and Project Name	**Type of Action**	**General Description**	**General Location (County)**	**Approximate Size of Action (Ground Disturbance)**	**Assumptions for Analysis**
Red Leaf Resources Red Leaf Project	Oil Shale and/or Tar Sands	This project area encompasses approximately 17,000 acres of SITLA lands. The project consists of extracting approximately 9,500 barrels of oil shale per day.	Uintah County, Utah	1,747 acres (1,747 acres)	Area in the project boundary considered as the development area because development at this point is unknown.
Questar Exploration and Production Company Greater Deadman Bench	Oil and/or gas development	This project area encompasses approximately 98,785 acres. The project consists of up to 1,020 natural gas wells, and 348 oil wells, with up to 891 wells on new locations and 346 on existing locations.	8 miles northeast of Ouray, Colorado	23,995 acres (1,416 acres)	The development assumptions for this project are 2.3 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Greater Deadman Bench Final EIS, January 2008 (BLM 2008d). The source for the project boundary is the BLM Vernal Field Office (BLM 2012b).
Kerr-McGee Oil and Gas Onshore LP Greater Natural Buttes Project	Oil and/or gas development	This project area encompasses 255 square miles. The project consists of drilling 3,675 wells on 1,484 new pads and 2,191 existing pads and constructing 594 miles of new roads and 1,052 miles of new production pipelines.	T8S, R20-23E T9S, R20-24E T10S, R20-23E T11S, R21-22E	21,929 acres (1,353 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Greater Natural Buttes Final EIS, March 2012 (BLM 2012c). The source for the project boundary is the BLM Vernal Field Office (BLM 2012b).
Encana North Chapita Wells Natural Gas Development	Oil and/or gas development	The project includes 264 wells and pads, with the necessary roads and pipelines, 4 skid-mounted 1,500 horsepower compressor engines, and three central dehydrators.	6 miles northwest of Bonanza, Utah	5,272 acres (230 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, March 2012 (BLM 2012e). The source for the project boundary is the BLM Vernal Field Office (BLM 2012b).
EOG Resources, Inc. Chapita Wells-Stagecoach Area Natural Gas Development	Oil and/or gas development	This project area encompasses 31,872 acres. The project consists of up to 627 natural gas wells (473 new wells and 154 wells on existing well pads), about 99.5 miles of new roads, and 104.5 miles of pipelines.	10 miles southeast of Ouray, Colorado	16,316 acres (99 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 320 acres. These assumptions are based on information in the Chapita Wells-Stagecoach Area Natural Gas Development Final EIS, January 2008 and the Greater Natural Buttes Final EIS, March 2012 for well pad size (BLM 2008c, 2012c). The source for the project boundary is the BLM Vernal Field Office (BLM 2012b).
–	Non-Coal Mine	Active gilsonite mining operations	Vernal Field Office Jurisdiction and SITLA lands; eastern side of the Lower Green River	35 miles (43 acres)	The linear mines were assumed to be 10 feet wide based on an average width of mining scars visible on 2011 NAIP aerial imagery (NAIP 2011a, b).
–	Non-Coal Mine	Active gilsonite mining leases	SITLA lands in Uintah County, Utah	323 miles (323 acres)	Area in the project boundary considered as the development area since development at this point is unknown
–	Oil and/or Gas Development	Oil and/or gas wells throughout Vernal Field Office	Throughout BLM Vernal Field Office	51,462 acres (1,075 acres)	The development assumptions for this project are 2.5 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, March 2012 (BLM 2012c). The source for the project boundary is the BLM Utah State Office (BLM 2012i).
–	Oil and/or Gas Development	Oil and/or gas wells throughout White River Field Office	Throughout BLM White River Field Office	2,205 acres (217 acres)	The development assumptions for this project are 4 acres of disturbance per well pad and a density of 1 well pad per 40 acres. These assumptions are based on information in the White River Draft Resource Management Plan/EIS for Oil and Gas Development (BLM 2012j). The source for the project boundary is the BLM Colorado State Office (BLM 2012i).
–	Oil Shale	Active oil shale mining operations	SITLA lands in Uintah County, Utah	15,712 acres (15,712 acres)	Area in the project boundary considered as the development area since development at this point is unknown

Table 4-32
Past and Present Actions

Applicant and Project Name	Type of Action	General Description	General Location (County)	Approximate Size of Action (Ground Disturbance)	Assumptions for Analysis
–	Oil and/or Gas Development	Oil and/or gas wells throughout Utah State and SITLA lands	SITLA and State lands in Uintah County, Utah	22,714 acres (405 acres)	The development assumptions for this project are 3 acres of disturbance per well pad and a density of 1 well pad per 107 acres. This is an average of 6 wells per section based on Utah Department of Oil, Gas, and Mining map found at this website: http://stage.mapserv.utah.gov/oilgasmining/ (State of Utah 2013). The source for the project boundary is SITLA (SITLA 2013).
Additional Actions					
Existing land uses (agriculture, industrial, residential, etc.)	Digitized existing land use layer	Throughout the Project area	–	–	The development assumption for digitized existing land use is to use the acres in each polygon. The source is Environmental Planning Group, LLC (EPG) 2015.
Transmission lines	Transmission line	Throughout the Project area	–	–	The development assumption for transmission lines is based on averaging corridor widths estimated by 2011 and 2012 NAIP aerial imagery interpretation (NAIP 2011). 345kV transmission lines: 150-foot-wide corridor 138kV transmission lines: 75-foot-wide corridor The source for transmission line alignments is POWERmap Plats as digitized by EPG (POWERmap Plats 2009).
Pipelines	Pipeline	Throughout the Project area	–	–	The development assumption for pipelines is based on averaging corridor widths estimated by 2011 and 2012 NAIP aerial imagery interpretation (NAIP 2011a). 20- to 26-inch-diameter pipelines: 200-foot-wide corridor 10- to 18-inch diameter pipelines: 100-foot-wide corridor The source for pipeline alignments is POWER Engineers (POWER 2013.
Roads/Highways	Transportation	Throughout the Project area	–	–	The development assumption for highways and roads is based on averaging corridor widths estimated by 2011 and 2012 NAIP aerial imagery interpretation (NAIP 2011). Intra-state/Intra-metro Area/Inter-metro Area: 50-foot-wide corridor City/County/Local: 25-foot-wide corridor The source for the road alignments are the U.S. Department of Transportation (2013) and Automated Geographic Reference Center (2012).
Railroads	Transportation	Throughout the Project area	–	–	The development assumption for railroads is an average corridor width of 25 feet based on 2011 and 2012 NAIP aerial imagery interpretation (NAIP 2011a). The source for railroad alignments is the U.S. Department of Transportation (2013).

Table 4-33 Reasonably Foreseeable Future Actions					
Applicant and Project Name	**Type of Action**	**General Description**	**General Location (County)**	**Approximate Size of Action (Ground Disturbance)**	**Assumptions for Analysis**
Enefit's South Project	Oil Shale and/or Tar Sands	The South Project is designed to develop a green field oil shale mining and shale oil production complex, producing approximately 28 million tons of raw oil shale ore per year and 50,000 BPD of premium quality, refinery-ready shale oil from the Green River Formation at full build-out. Shale oil would be produced from multiple surface retorts, with onsite upgrading of the raw shale oil.	Uintah County, Utah (Approximately 12 miles southeast of Bonanza, Utah)	6,586 acres (6,586 acres)	Boundary of South Project used to determine disturbance.
PacifiCorp Energy Gateway South 500kV Transmission Project	Transmission Line	A 400+ mile, 500kV overhead, alternating current transmission line that crosses public and private lands.	Uintah County, Utah	13 miles (383 acres)	Centerline for transmission line buffered for a 250-foot wide corridor. Based on information in the Energy Gateway South Draft Environmental Impact Statement 2014
Vernal Field Office North Travel Management Environmental Assessment	Transportation	An inventory of all known routes located on BLM managed lands in Daggett, Duchesne, and Uintah Counties including roads, 2-track routes, and single track trails.	Daggett, Duchesne, and Uintah counties	Not applicable	This project was not included in the quantitative analysis due to the status of the plan. This project is only discussed qualitatively.
BLM RD&D Lease	Lease	BLM RD&D Lease	Uintah County, Utah	160 acres	This project was not included in the quantitative analysis because there are no currently proposed projects on this lease. This project is only discussed qualitatively.
BLM Preferential Lease	Lease	BLM Preferential Lease	Uintah County, Utah	4,960 acres	This project was not included in the quantitative analysis because there are no currently proposed projects on this lease. This project is only discussed qualitatively.
Enefit's SITLA Leases	Lease	SITLA Leases	Uintah County, Utah	6,760 acres	This project was not included in the quantitative analysis because there are no currently proposed projects on this lease. This project is only discussed qualitatively.
Enefit's North Lease	Lease	Enefit's North Lease	Uintah County, Utah	4,592 acres	This project was not included in the quantitative analysis because there are no currently proposed projects on this lease. This project is only discussed qualitatively.
Enefit's Orion Property	Lease	Enefit's Orion Property	Uintah County, Utah	13,441 acres	This project was not included in the quantitative analysis because there are no currently proposed projects on this lease. This project is only discussed qualitatively.

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4.3.3 Cumulative Impacts by Resource

4.3.3.1 Greenhouse Gases

4.3.3.1.1 Issues Identified for Analysis

For purposes of this analysis, a broad issue that has been identified for analysis is related to Utility Project GHG emissions. There may be the potential for cumulative effects on GHG emissions or climate change related to the construction and operation of the Utility Project and existing projects or RFFAs, such as the South Project.

4.3.3.1.2 Existing Conditions

The existing conditions relative to GHG or climate change cannot be realistically appraised as a factor in evaluating a single action, or even an evaluation of existing conditions due to the oil and gas sector activities in the Uinta Basin. The relative current levels of GHG emissions for a geographic region or an industrial sector can provide a set of "existing conditions" that can be applied in general to this analysis. The magnitude of estimated GHG emissions has been summarized in Section 3.2.2 for the Uinta Basin and the oil and gas sector in Utah. For the Proposed Action and No Action Alternative, the GHG emissions for which there in available information have been characterized in Sections 4.3.3.1 and 4.3.3.2, respectively.

4.3.3.1.3 Results

In an overall sense, regional or global emissions of GHG will change due to many factors, the primary ones being increased trends in industrial activity, energy production, transportation fuel consumption, total use of fossil fuels, and population growth. But within this generalized framework, it cannot be predicted with certainty the extent to which oil shale development activities, either as individual projects or on a long-term collective basis, will contribute to GHG and climate effects. There is no clear distinction to be made between the direct and indirect effects of GHG emissions compared to regional or global climate change effects. The nature of direct and indirect effects has been discussed in Section 4.3.3.1.

The incremental climate change effects due to GHG emissions on a global scale may affect climate change trends for a number of years. A threshold of 25,000 metric tons or more of CO_2eq on an annual basis has been proposed only as a reference point that could merit quantitative analysis of GHG emissions for proposed and connected actions (EPA 2014a). This level also corresponds to the minimum level of GHG emissions that warrant annual monitoring and reporting under the EPA's Mandatory Reporting Rule (40 CFR Part 98).

The Utility Project would not contribute to cumulative effects for GHG emissions, as it is of relatively short duration, and limited GHG emissions. Future changes in climate would not affect the operation or purpose of the completed utility corridors. The existence of the utility corridors would not affect other projects in the region, or promote GHG emissions other than the South Project operation. Therefore, operation of the Utility Project would not affect or promote the growth in cumulative GHG emissions elsewhere in the Uinta Basin.

Greater adverse effects could be attributed to the No Action Alternative due to the increased GHG emissions that result from an elevated level of on-road truck shipping and commuter vehicle traffic. This projected increase in vehicle use will also cause related increases in local fuel supply requirements, increased vehicle and roadway maintenance, and larger demand for workforce at the South Project. The added "carbon cost" of these additional inputs represent a greater adverse effect than that of the Proposed Action, even though the actual magnitude of the effect is not quantifiable.

It is not possible to identify specific cumulative effects related to GHG emissions changes in a specific region or specific sector. As discussed previously, the relationship between regional GHG emissions and climate effects are global in scale. While gradually increasing GHG emissions across a particular large region or sector could in theory be connected to incremental climate effects, there is no established methodology to do so.

4.3.3.2 Air Quality

4.3.3.2.1 Issues Identified for Analysis

Issues identified for analysis are related to trends of increased industrial activity, energy production, transportation fuel consumption, total use of fossil fuels, and population growth associated with the Utility Project, South Project construction and operation, and existing or anticipated projects.

4.3.3.2.2 Existing Conditions

The existing conditions relative to air quality are evaluated for Uinta Basin and surrounding regions described in Section 3.2.2 and in Table 4-31 of this EIS.

4.3.3.2.3 Results

Air pollutant emissions trends in the Uinta Basin and resultant air quality effects depend on many factors, the primary ones being increased trends in industrial activity, energy production, transportation fuel consumption, total use of fossil fuels, and population growth. But within this generalized framework, it cannot be predicted with quantitative certainty the extent to which oil shale development activities, either as individual projects or on a collective basis, will contribute to air quality effects. Normal seasonal and year-to-year fluctuations are of greater magnitude than the incremental trends that could be attributed to specific projects.

The phenomenon of elevated wintertime ozone concentrations is an effect that is attributed to the regional growth in ozone precursor and particulate emissions sources. The oil and gas extraction sector is a substantial contributor to these emissions. The Utility Project will be an insignificant contributor to these regional ozone precursor emissions. The operation of Utility Project construction vehicles and non-road equipment represent sources of ozone precursors, as has been quantified in Section 4.2.2.1.1. These emissions will occur over a relatively short and limited timeframe, and will therefore have negligible contribution to regional air quality effects.

The South Project facility, which includes operation of non-road vehicles and other fuel-burning equipment, will likely contribute to the overall observed air quality trends in Uinta Basin wintertime ozone. This potential can be evaluated by inclusion of these emissions, once they are defined, in the ARMS photochemical model.

Impacts under the No Action Alternative would be similar to those discussed for the Utility Project and South Project. However, impacts would be greater due to the potential for trucking utilities in to the South Project and trucking product out to market.

4.3.3.3 Soil Resources

4.3.3.3.1 Issues Identified for Analysis

Issues identified for analysis are related to the potential for damage to soils and increased susceptibility to erosion from approval of the Utility Project, in relation to past and other present projects, and RFFAs (including the South Project).

4.3.3.3.2 Existing Conditions

The CIAA for soils is the extent of soil units crossed by the proposed rights-of-way for the Utility Project and within the South Project. There are 26 distinct soil types within the CIAA, all of which could be impacted in different degrees from the Utility Project as well as reasonably foreseeable actions. The existing condition of these soil types, within the CIAA would include any past or present projects, which may have already impacted the soil types. Many of these soil types have varying degrees of susceptibility to wind and water erosion, which could be accelerated by the Utility Project thus adding to the impacts on that soil type.

4.3.3.3.3 Results

Cumulative effects on soil resources would result from alterations to the natural environment and land surface that could increase the rate of soil erosion by water or wind Table 4-34 presents estimate cumulative effects for soil units with high or moderate potential for wind or water erosion. The implementation of ACEPMs and mitigation measures would minimize short-term impacts, such as ground-disturbing activities stemming from implementation of the Utility Project, considered cumulatively in relation to past and other present projects and RFFAs (including the South Project), and the White River RD&D Mine. Other RFFAs, such as the establishment of new access roads to previously undisturbed areas crossed by the Utility Project, may result in long-term impacts on soil resources associated with increased public access.

Table 4-34
Cumulative Effects Summary for Sensitive Soils in Acres

Soil Type	Water Erosion	Wind Erosion	Acreage
Badland-Rock outcrop complex, 1 to 100 percent slopes	Moderate	Moderate	710
Badland-Tipperary Association, 1 to 8 percent slopes	Low	Moderate	2,741
Badland-Walknolls-Rock Outcrop Complex, 50 to 90 percent slopes	Moderate	Moderate	4,242
Cadrina Association, 2 to 25 percent slopes	Low	Low	2,089
Gilston-Muff-Cadrina, cool complex, 1 to 25 percent slopes	High	Moderate	2,350
Green River-Fluvaquents complex, 0 to 2 percent slopes	Low	Moderate	99
Jenrid-Eghelm complex, 0 to 3 percent slopes	Low	Moderate	956
Pherson-Hickerson complex, 1 to 8 percent slopes	Low	Low	1,257
Shotnick-Ioka complex, 4 to 25 percent slopes	Moderate	High	439
Solirec-Abracon-Begay complex, 2 to 25 percent slopes	Low	Moderate	10
Turzo complex, 2 to 4 percent slopes	Low	Moderate	1,792
Walknolls-Bullpen association, 2 to 25 percent slopes	Low	Low	7,165
Walknolls-Gilston association, 2 to 25 percent slopes	Low	Low	12,519
Walknolls very channery loam, 25 to 50 percent slopes	Moderate	Low	6,853
Total Available Resource	43,221		
Incremental Project Development	577		
Estimated Cumulative Development	14,222		
Remaining Available Resource	28,999		
Percent of Project Impact	4		

The Walknolls soil series (Walknolls-Bullpen association, Walknolls-Gilston association, and Walknolls very channery loam) have low to moderate susceptibility to erosion, but have the greatest amount of acreage impacted by the utility corridor. In contrast, the impact on the Gilston-Muff-Cadrina cool complex, by acreage is significantly less, but this soil series has a greater susceptibility to wind and water erosion. Thus the cumulative effects for the soil types are different by extent and vulnerability.

Impacts associated with the No Action Alternative, under which only the South Project would be developed, may be greater than the Proposed Action depending on the alternative means chosen to obtain utilities. Since there is potential for trucking utilities in to the South Project and trucking product out to market, there would be a likelihood of greater adverse impacts associated with heavy equipment and trucking, such as increased erosion and damage to soils on Dragon Road as well as on existing roads within the CIAA, than would likely occur under the Proposed Action.

4.3.3.4 Mineral Resources

4.3.3.4.1 Issues Identified for Analysis

Issues identified for analysis are related to the potential for conflicts with the development of a mineral resource in the CIAA.

4.3.3.4.2 Existing Conditions

Valid leases, areas open to development of mineral materials, and gilsonite mines are present within the CIAA for mineral resources (i.e., the area within one mile on either side of the Utility Project and South Project). These include approximately 736 acres of leases and areas of mining materials on federal, state and private lands within an approximately 31,000-acre area.

4.3.3.4.3 Results

The Utility Project and the South Project lie within the Uinta Basin, an area known for its oil and gas exploration and development, Gilsonite mines, and oil shale and tar sands deposits. A potential cumulative effect is the loss of mineral resource.

On BLM-administered lands, areas allocated as open for future oil shale development are open only to RD&D leases (BLM 2008f). The BLM would issue a commercial lease only when a lessee satisfies the conditions of its RD&D lease and the regulations in the CFR. The White River Mine RD&D site is located west of the Utility Project. On private and State lands (e.g., the South Project), oil shale development is anticipated to occur in the foreseeable future. The cumulative impacts (e.g. loss of a mineral resource) on the development of oil shale by the Utility Project and associated South Project connected action are expected to be significant.

The contribution of the Utility Project effects on mineral resources in addition to past and other present projects and RFFAs (including the South Project) could result in greater potential for effects on mineral resources due to conflicts with developing a mineral resource. Implementation of the Utility Project could preclude other surface facilities and down-hole drilling to other oil and gas resources in the CIAA.

4.3.3.5 Water Resources

4.3.3.5.1 Issues Identified for Analysis

Issues associated with the Utility Project’s cumulative impacts are related to potential for impacts to water resources that are valuable or susceptible to surface disturbing activities such as riparian areas along the White River and Evacuation Creek. In addition, issues were identified related to impacts to areas with high potential for discharging erosion related sediment into water resources, and the use of water associated with operations and maintenance of the Utility Project, past and other present projects, and RFFAs (including the South Project).

4.3.3.5.2 Existing Conditions

The CIAA for impacts on water resources is the 12-digit HUC (watershed) drainage areas crossed by the Utility Project and the South Project. As described in Section 3.2.5, the Uinta Basin encompasses an area of over 14,400 square miles of east-central Utah and northwestern Colorado. The principal drainage in the basin is the Green River, with the Duchesne and White Rivers as major tributaries. Current water use in the basin includes agricultural and municipal and industrial uses. Over 95 percent of the water supply for these uses is from surface sources and less than five percent is from groundwater.

4.3.3.5.3 Results

There may be the potential for cumulative effects on water resources related to the Utility Project when added to past and other present projects and RFFAs (including the South Project). Ground disturbance from construction and operation of the Utility Project added to past and other present projects and RFFAs (including the South Project) has the potential for localized short-term, adverse cumulative effects on water resources in the CIAA. Short-term impacts could be attributed to degrading the quality of waters from sedimentation as a result of destabilization of sensitive soils and modification of upland, riparian, and wetland vegetation.

However, implementation of design features and mitigation measures, including reclamation of disturbed areas would minimize effects on water resources. As with the Utility Project, past and other present projects and RFFAs (including the South Project) are required to follow federal and state regulations requiring design features and mitigation measures to maintain compliance with regulations (refer to Section 3.2.5).

Development of any mining project, including an oil shale project, would typically include the construction of roads, pipelines, power lines, or other facilities. Adverse effects on water resources can include, but are not limited to, decreases in water quality as a result of sedimentation from construction of stream crossings, vegetation clearing including upland, riparian and wetland areas, modification of existing stream channels, and introduction of contaminants into surface water through accidental spills, if design features of the Utility Project and South Project and mitigation measures are not met. As a general rule, any areas with steep slopes in proximity to water resources raises the potential that ground disturbance resulting from the Project as well as past and other present projects and RFFAs (including the South Project) would result in sediment being discharged to waterbodies, subsequently decreasing water quality.

Setting aside the Utility Project, which is not, itself, anticipated to require withdrawal of water, except for limited needs associated with the construction phase, long-term impacts may occur as a result of past and other present projects and RFFAs (including the South Project) that may draw water from surface water bodies from underground aquifers, depending on their location, water availability, and water quality. In such a context, the withdrawal of surface water anticipated to be associated with development of the South Project, though not itself attributable as a cumulative impact of the Proposed Action, is included in this discussion.

Withdrawal from a surface water body, which might be employed for the South Project, would reduce flow and cause sediment deposition in the stream channel. In the case of streams receiving groundwater discharge (which generally has a higher dissolved salt content), the withdrawal can degrade the water quality of the stream down gradient from the point of withdrawal because the relative proportion of groundwater remaining in the stream would increase. Because of the generally poor groundwater quality, the receiving stream may incur increases of dissolved salt, selenium, and other metals. Withdrawal of water from local streams can inadvertently affect water temperature. With reduced flow, water depths in depleted streams would decrease and be more susceptible to warming due to solar radiation in summer time, while cooling of shallower stream water would be more rapid in cold weather. Diversions from small streams would have significantly greater overall impacts than diversions from larger rivers.

In addition, loss of water could result in modification of floodplains, wetlands, and riparian areas, which can result in direct and indirect impacts on these areas to maintain water quality and recharge groundwater systems.

4.3.3.5.3.1 Results for Surface Water

Depending on the amount withdrawn for Utility Project construction, withdrawal of surface water would reduce streamflow downstream from the point of diversion. Because of the reduced flow, the stream's capacity for carrying sediment would also be reduced, and in-channel sediment deposition would be increased. The morphology of the stream channel would also adjust to the reduced flows. For stream segments where natural groundwater discharge into the stream occurs, the water withdrawal could increase the relative proportion of the groundwater contribution to the stream, thereby lowering the overall quality of the stream.

Impaired waters in the CIAA are susceptible to past and other present projects and RFFAs (including the South Project). Protective measures mandated through the NPDES would largely mitigate any adverse impacts on impaired waters from those projects, but given these waters have already been identified as impaired waters, limitations on allowable TMDLs of source pollutants contributing some level of impairment for 303(d) listed waters are already incorporated into the TMDL. These limitations restrict any new sources of impairment; levels of impairment should be either constant or declining as a result of the NPDES program.

4.3.3.5.3.2 Results for Groundwater

Groundwater withdrawals from shallow aquifers, which might be employed for the South Project, depending on their location relative to recharge and discharge, may produce a cone of depression and reduce groundwater discharge to surface water bodies or to the springs or seeps that are hydrologically connected to the groundwater. The withdrawal could reduce stream flows, and the effects would increase with the amount of water withdrawn.

Permanent changes to the groundwater flow regime due to mining and drilling could affect water rights to specific aquifers. The growth of a cone of depression may be time-delayed and affect water rights in the future.

4.3.3.6 Vegetation

4.3.3.6.1 Issues Identified for Analysis

Issues identified for analysis relate to the potential for cumulative impacts on vegetation associated with the spread of noxious weeds related to the Utility Project and past and other present projects and RFFAs (including the South Project).

4.3.3.6.2 Existing Conditions

The CIAA for vegetation is the extent of vegetation cover types crossed by the proposed rights-of-way for the Utility Project and occurring within the South Project boundary.

4.3.3.6.3 Results

The CIAA for impacts on vegetation resources accounts for impacts on vegetation resources within distinct watersheds that are collectively affected by ongoing resource management and energy extraction and are generally managed under the BLM Vernal RMP (2008f). Vegetation is removed by surface disturbing activities, such as construction of mining operations, refineries or processing facilities, roads, well pads, pipelines, power lines, compressor stations, water facilities, and other ancillary facilities. Other activities, such as livestock grazing, cross country driving, vegetation treatments, construction of utilities, and recreation sites have also resulted in the disturbance or removal of vegetation. Past oil and gas exploration in the CIAA has disturbed 19,738 acres of land, including vegetation (BLM 2008f). The RFFAs (not including the South Project) would create surface disturbances that would have similar impacts on vegetation in the CIAA as described for the Utility Project and South Project.

Any surface-disturbing activity that removes native vegetation and topsoil from the CIAA could cumulatively and incrementally contribute to the introduction, spread, and available habitat for invasive and noxious weeds. Impacts associated with the introduction and presences of noxious weeds include:

- competition with and possible elimination of native plants;
- a reduction in the overall value of forage for wildlife;
- fragmentation of available forage for wildlife; and
- increased soil erosion and dust.

Increased disturbance and presence of noxious weeds may be a result of introduction to a previously uninhabited area or increased size and density within an already inhabited area. These impacts would be most prevalent along road corridors, which undergo frequent activity and disturbance, and are often a conduit for the spread of noxious weeds into previously uninhabited areas.

Under the No Action Alternative, cumulative effects from the South Project would be similar to those discussed for the Utility Project and South Project. However, the incremental contribution of effects from the South Project could be greater under the No Action Alternative due to the potential for trucking product from the plant to market. This increase in trucking could contribute to a spread of invasive species, crushing of vegetation, increase in runoff, and damage to existing roads not equipped for large construction equipment and trucks.

4.3.3.7 Special Status Plants

4.3.3.7.1 Issues Identified for Analysis

Issues identified for analysis relate to the potential for impacts on special status plant species populations or habitats. Impacts to special status plants would be similar to those discussed for vegetation (Section 4.2.6). However, ongoing habitat loss, declining populations, and sensitivity to disturbance makes special status plants more susceptible to the cumulative impacts associated with the Utility Project in addition to other development in the CIAA.

4.3.3.7.2 Existing Conditions

The CIAA for special status plants is the extent of a species' habitat crossed by the proposed rights-of-way for the Utility Project and occurring within the South Project boundary. In addition to the Utility Project, past and other present projects and RFFAs (including the South Project) within the CIAA for special status plants could not be identified at this time. However, these could include oil and gas development, mining, and land management activities. Data from special status species inventories conducted in the Utility Project and South Project areas in 2013 were used to evaluate the presence of special status plants or habitat in the CIAA (SWCA 2013f).

Special status plants can be affected directly by implementation of ground-disturbing activities associated with the Utility Project, past and other present projects, and RFFAs (including the South Project) related to the construction of new access roads and improvements to existing roads, excavation of transmission line towers sites, trenching for pipeline construction, and mining operations. Indirect impacts on special status plants from these actions could include loss of reproductive processes and pollinators due to fugitive dust and erosion and increase the potential for invasive and noxious weeds to establish within the CIAA.

Since there is potential for moving product in to and out of the South Project and delivery by transporting product out to market, impacts associated with product delivery would increase ground disturbance due to the construction of additional facilities and acquisition and rehabilitation of existing utilities, increase opportunities for invasive and noxious weed establishment, and increased dust and erosion would continue to occur on Dragon Road as on existing roads within the CIAA.

There is habitat for one federally listed plant and five sensitive plant species that could be indirectly affected by implementation of the Project and/or the South Project: the Uinta Basin hookless cactus, Graham's penstemon, White River penstemon, Barneby's catseye, sterile yucca, and strigose Easter-daisy; thus, the implementation of the Project and/or the South Project under the Proposed Action could contribute incrementally to cumulative effects on the habitat for these plant species. However, the extent of cumulative effects on these special status plant species would be reduced through avoidance and implementation of the ACEPMs, mitigation measures, best management practices, and adherence to relevant conservation measures detailed in *the Conservation Agreement and Strategy for Graham's Beardtongue (Penstemon grahamii) and White River Beardtongue (P. scariosus var. albifluvis).*

4.3.3.7.3 Results

Uinta Basin Hookless Cactus

The CIAA for Uinta Basin hookless cactus is the extent of Level 1 and Level 2 Core Conservation Area crossed by the Utility Project and within the South Project boundary. Within the CIAA there are a number of past and other present projects and RFFAs (including the South Project) and energy extraction projects such as mining and oil and gas projects that would result in a greater potential for cumulative effects on special status plants, including *Sclerocactus*.

The types of potential effects on habitat from these cumulative actions include loss of Core 1 and Core 2 habitat from surface-disturbing activities, direct loss of individual plants, and reductions in reproductions due to fugitive dust and indirect effects on pollinators. Even taken together, the Utility Project and South Project would not contribute incrementally to disturbance of Core 1 and Core 2 habitat for the Uinta Basin hookless cactus (refer to Table 4-35).

Table 4-35
Cumulative Effects Summary for Uinta Basin Hookless Cactus Core 1 and Core 2 Habitat in Acres

Habitat Type	Total Available Resource (Acres)	Incremental Project Development (acres of disturbance)	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
Core 1 (400 m)	316	0	67	249	0
Core 2 (1,000 m)	978	0	391	587	0

Graham's Penstemon

The CIAA for Graham's beardtongue (penstemon) is the extent of PCAA crossed by the Utility Project and within the South Project boundary. There are a number of past and other present projects and RFFAs (including the South Project) that would result in a greater potential for impacts on Graham's beardtongue. According to the (2014) Cooperative Agreement (SITLA 2014), potential threats to Graham's beardtongue include:

- plant mortality, habitat loss, and habitat fragmentation due to energy development, livestock grazing, road construction and maintenance, and off-road vehicles;

- indirect disturbance to the species and their pollinators from fugitive dust and invasive plant species;
- lack of range-wide protection;
- population vulnerability due to small population size, random events, loss of genetic diversity, and inbreeding;
- mortality, stress, or habitat loss due to climate change and drought; and
- cumulative interaction of the previous individual factors.

The implementation of the Proposed Action of approving the Utility Project and past and other present projects and RFFAs (including the South Project) would contribute incrementally to 5 acres of disturbance within Unit 4 of the PCAA, or 1 percent of the estimated total cumulative disturbance (Table 4-36). No contribution to cumulative disturbance by implementation of the Utility Project and South Project within Unit 3 of the PCAA would be anticipated. Thus, the overall impact of the Proposed Action on habitat for Graham's beardtongue within the CIAA would be minor.

Table 4-36
Cumulative Effects Summary for Graham's Penstemon PCAA in Acres

Habitat Unit	Total Available Resource (Acres)	Incremental Project Development (acres of disturbance)	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
Unit 3	4,370	0	965	3,404	0
Unit 4	2,671	5	475	2,196	1

White River Penstemon

The CIAA for White River beardtongue is the same as Graham's beardtongue because the species share similar habitat.

Cumulative effects on habitat for the White River beardtongue within the CIAA would be the same as described for Graham's beardtongue.

Barneby's Catseye

The CIAA for Barneby's catseye is the extent of habitat crossed by the proposed rights-of-way for the Utility Project and occurring within the South Project boundary. Implementation of the Utility Project could also increase the potential for indirect and dispersed direct effects to this species, if present. Disturbances from construction could increase the potential for the invasion and establishment of noxious weed species. In addition, these disturbances could potentially increase wind erosion of disturbed areas, which creates airborne dust that could be transported into suitable habitat for this species. Specific habitat for Barneby's catseye is not available for the South Project area portion of the CIAA, although individual plants were identified in 2013 (SWCA). It is likely that this species would be found throughout the South Project area and could be indirectly affected by ground disturbing activities.

The Applicant has committed to ACEPMs (Section 2.2.11) and additional mitigation measures for vegetation and weeds and sensitive plant species (refer to Table 4-1) would be implemented, including measures 2, 3, 4, and 5, to further reduce indirect effects on Barneby's cateseye from the proposed Project Activities. With implementation of these measures, the incremental contribution of the construction, operation, and maintenance of the Utility Project effects on the Barneby's catseye would be minor.

Sterile Yucca

The CIAA for sterile yucca is the extent of habitat crossed by the proposed rights-of-way for the Utility Project and occurring within the South Project boundary. Data from special status species inventories conducted in the Utility Project and South Project areas in 2013 were used to evaluate the presence of sterile yucca or habitat found to occur in the CIAA (SWCA 2013i). Implementation of the Utility Project could increase the potential for indirect and dispersed direct effects to this species, if present. Disturbances from construction could increase the potential for the invasion and establishment of noxious weed species. In addition, these disturbances could potentially increase wind erosion of disturbed areas, which creates airborne dust that could be transported into suitable habitat for this species.

Although potential habitat occurs in the study area for the Utility Project and South Project no individual sterile yuccas were found to occur (SWCA 2013i). Implementation of ACEPMs (Section 2.2.11.3) and additional mitigation measures for sensitive plant species (refer to Table 4-1) would reduce the potential for the Utility Project to directly or indirectly impact the sterile yucca. Therefore, even taken together, the Utility Project and the South Project would not contribute incrementally to cumulative effects on sterile yucca.

Strigose Easter-daisy

The CIAA for strigose Easter-daisy is the extent of habitat crossed by the proposed rights-of way for the Utility Project and occurring within the South Project boundary. Implementation of the Utility Project, past and other present projects, and other RFFAs (including the South Project) could also increase the potential for indirect and dispersed direct effects to this species, if present. Disturbances from construction could increase the potential for the invasion and establishment of noxious weed species. In addition, these disturbances could potentially increase wind erosion of disturbed areas, which creates airborne dust that could be transported into suitable habitat for this species.

Implementation of ACEPMs (Section 2.2.11.3) and additional mitigation measures for sensitive plant species (refer to Table 4-1) would reduce the potential for the Utility Project to directly or indirectly impact the strigose Easter-daisy. These include measures (1-16) for special status plants (Table 4-1) and specifically measures 2, 3, 4, and 5 would reduce the potential for the Utility Project to directly or indirectly impact the strigose Easter-daisy.

4.3.3.8 Wildlife

4.3.3.8.1 Issues Identified for Analysis

Issues identified for analysis relate to the potential for cumulative effects on wildlife habitat and/or populations.

4.3.3.8.2 Existing Conditions

The CIAA for wildlife is the extent of a species' habitat crossed by the Utility Project and occurring within the South Project boundary.

Surface disturbance associated with the Proposed Action of approving the Utility Project, past and other present actions, and RFFAs (including the South Project) (refer to Table 4-33), could reduce the quality and quantity of wildlife habitat to an extent that could result in an increase in habitat fragmentation, disruption of seasonal patterns and migration, displacement of individual wildlife species, and increase the potential for collisions with vehicles.

4.3.3.8.3 Results

Big Game

Big game (particularly mule deer) would be most predisposed to cumulative effects because past and present disturbances related to energy extraction has resulted in relatively substantial habitat loss, fragmentation, and displacement of wildlife throughout the CIAA. The extent of cumulative impacts is species specific and depends on a number of factors, including:

- status and condition of the individual or the population of wildlife species affected
- quality of habitats in the CIAA
- timing of disturbances
- surface disturbance types

In general, indirect effects associated with the Proposed Action of approving the Utility Project would be anticipated, including displacement due to increased human presence in the area and associated increased noise, traffic, dust, and increased invasion of non-native plants into suitable habitat. Invasion of riparian habitats by aggressive non-native species, particularly tamarisk (*Tamarix* species) also would impact big game species by reducing the quality and quantity of riparian habitat used by big game species. Other potential types of indirect effects on the species include decreased water quality and degradation of riparian vegetation due to erosion and sedimentation associated with surface disturbance.

Mule Deer

The CIAA for mule deer is the extent of habitat crossed by the Utility Project and occurring within the South Project boundary. The implementation of the Utility Project would contribute incrementally to 147 acres of disturbance within mule deer crucial winter habitat, or about 2 percent of the estimated total estimated cumulative disturbance (Table 4-37). Further, the Utility Project would contribute incrementally to 103 acres of disturbance within crucial year-long habitat, or about 3.5 percent of the estimated cumulative disturbance (Table 4-37).

Table 4-37
Cumulative Effects Summary for Mule Deer Crucial Habitat in Acres

Crucial Habitat Type	Total Available Resource (Acres)	Incremental Project Development (acres of disturbance)	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
Mule deer crucial winter	21,677	147	7,374	14,303	2
Mule deer crucial year-long	8,256	103	2,877	5,379	3.5

The Applicant has committed to ACEPMs (Section 2.2.11.3) and additional mitigation measures (refer to Table 4-1) that would be implemented to minimize the indirect effects on big game from the Utility Project, including:

- Avoid activity during Mule deer fawning (May 15 – June 30);
- Construction activities should avoid critical winter habitat for mule deer from December 1 to April 30 to reduce unnecessary disturbance to elk and mule deer needing to conserve energy for the winter;
- Mitigate wildlife mortality from vehicle collisions. To achieve this objective, employees would be instructed to obey state- and county-posted speed limits. Carpooling, busing, or other means to limit traffic (and vehicle collisions with wildlife) would be emphasized;
- Avoid (to the extent practicable) human interactions with wildlife. To achieve this objective, the following measures could be implemented: (1) instruct all personnel to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons; (2) make personnel aware of the potential for wildlife interactions around facility structures; (3) ensure that food refuse and other garbage are not available to scavengers (e.g., by use of covered dumpsters); and (4) restrict pets from project sites;
- Operators would ensure that all construction equipment was adequately muffled and maintained to minimize disturbance to wildlife; and

- Construct fencing (as practicable) to exclude livestock, wild horses, or wildlife from all project facilities, including all water sites built for the development of facilities and roadways.

Further, with the remaining available mule deer crucial winter range (14, 303 acres) and crucial yearlong habitat (2,877 acres), local populations within the CIAA would be likely to continue to occupy their ranges and to reproduce. Thus, the overall impact of the Proposed Action of approving the Utility Project on habitat for mule deer within the CIAA would be minor.

Migratory Birds and Raptors

The CIAA for migratory birds and raptors is the extent of nesting or foraging habitat crossed by the Utility Project and within the South Project boundary. The effects on migratory birds of the Utility Project would include disturbance to habitat, including loss, alteration, and fragmentation, disturbances to seasonal patterns and nesting, and collision risks associated with transmission lines and towers, and vehicles during construction activities.

The removal and potential fragmentation of habitat attributed to the Proposed Action of approving the Utility Project, past and other present actions, and RFFAs (including the South Project) could result in disturbance to seasonal patterns (nesting and migration), collision or electrocution mortalities, and an increase in collisions with vehicles. In addition, effects on golden eagles would include displacement caused by increased human activity, nest desertions and/or reproductive failure caused by project-related disturbances, increased public access and subsequent human disturbance resulting from new road construction, and temporary reductions in prey populations due to habitat fragmentation and alteration. Indirect impacts on golden eagles from the construction of the Utility Project and South Project and past and other present projects and RFFAs (including the South Project) could include an increase in automobile traffic, which would increase the potential for collisions.

Implementation of the Proposed Action of approving the Utility Project would contribute incrementally to cumulative effects on migratory birds and raptors. The Applicant has committed to ACEPMs (Section 2.2.11.3.2) and additional mitigation measures (refer to Table 4-1) would be implemented, including mitigation measures 1-16 (Table 4-1), to further reduce indirect effects on migratory birds and raptors from the Utility Project. These include:

- Spatial and/or seasonal stipulation windows described in the BLM RMP/ROD (2008f): Appendix A (Best Management Practices for Raptors and Their Associated Habitats in Utah, August 2006). These BMP’s allow for special and seasonal buffers for various raptors.
- Any ground-disturbing activities or vegetation treatments will be performed before migratory birds begin nesting or after all young have fledged to avoid take (between September 1-March 31);
- If activities must be scheduled to start during the migratory bird season, appropriate steps to prevent migratory birds from establishing nests in the potential impact will be taken. These steps could include covering equipment and structures and use of various excluders (e.g., noise);
- If activities must be scheduled during the migratory bird breeding season, a site-specific survey for nesting birds will be performed no more than 7-10 days before groundbreaking activities or vegetation treatments. Established nests with eggs or young cannot be moved, and the birds cannot be harassed (refer to the second bullet above), until all young have fledged and are capable of leaving the nest site; and
- If nesting birds are found during the survey, appropriate spatial buffers will be established around nests. Project-related activities within the buffer areas will be postponed until the birds have left the nest. Confirmation that all young have fledged will be made by a qualified biologist. A 100-foot buffer will be employed around the active nests of passerine species. All transmission

facilities will be constructed to avian-safe design standards described in a site-specific avian plan developed to assist the engineering design which would utilize standards from the APLIC and Moon Lake Avian Protection Plan. This design feature would limit the potential for avian wildlife collision and reduce the potential for avian injury and mortality. Mortality from electrocution is unlikely as the distance between conductors and the distance between energized conductors and grounded equipment is built to standards for high-voltage transmission lines (500kV and 345kV) and is greater than the wingspan of all avian species likely to occur in the Project area.

Through compliance with spatial and seasonal avoidance stipulations, the effects of the Utility Project would be minimized. Thus, the incremental contribution of the Utility Project to overall cumulative disturbance would be minor.

4.3.3.9 Special Status Wildlife

4.3.3.9.1 Issues Identified for Analysis

Issues identified for analysis relate to the potential for impacts associated with ongoing resource management and energy extraction and transmission line development in the CIAA. More specifically, there is concern regarding impacts to the long-term sustainability of special status populations.

4.3.3.9.2 Existing Conditions

The CIAA for special status wildlife is the extent of a species' habitat crossed by the proposed rights-of-way for the Utility Project and occurring within the South Project boundary.

In general, past and other present projects and RFFAs (including the South Project) (refer to Table 4-32 and Table 4-33) related to surface disturbance would reduce the quality and quantity of special status wildlife habitat, which would lead to an increase in habitat fragmentation, disruption of seasonal patterns and migration, displacement of individual wildlife species, and increase the potential for collisions with vehicles. Under the Proposed Action, the addition of the Utility Project to past and other present projects and RFFAs (including the South Project) would result in the greater potential for effects on special status wildlife resources throughout the CIAA.

As with the Utility Project, past and other present projects and RFFAs (including the South Project) are required to follow federal and state regulations requiring design features and mitigation measures to maintain compliance with regulations (refer to Section 3.2.85).

4.3.3.9.3 Results

Western Yellow-billed Cuckoo

Within the CIAA, riparian habitat exists in the Utility Corridor which could serve as western yellow-billed cuckoo habitat. Past and present actions that have affected yellow-billed cuckoo and habitat in the CIAA include oil and gas development, mining, and land management activities. Disturbances to riparian vegetation, which serves as nesting and foraging habitat, would occur under the proposed Utility Project. No direct effects on western yellow-billed cuckoo from the Utility Project would be anticipated (refer to Section 4.2.9.1.1.1). Indirect effects would be anticipated and would include displacement due to construction activities, an increase in human activity, an increase in noise, traffic, fugitive dust, and increased invasion of non-native plants into suitable habitat. Invasion of riparian habitats by aggressive non-native species, particularly tamarisk (*Tamarix* species), would adversely impact the species. Other potential indirect impacts to the species include decreased water quality, and degradation of riparian vegetation due to erosion and sedimentation associated with surface disturbance. Indirect effects would be temporary in nature.

The Applicant has committed to ACEPMs (Section 2.2.11.3) and additional mitigation measures (refer to Table 4-1) that would be implemented, including mitigation measures 1 to 16, to further reduce indirect effects on yellow-billed cuckoo from the Utility Project. These include:

- The Applicant's primary mitigation method would be to follow the spatial and/or seasonal avoidance windows provided by FWS guidelines (2002a). Any ground-disturbing activities or vegetation treatments will be performed before migratory birds begin nesting or after all young have fledged to avoid take (between September 1-March 31);
- If activities must be scheduled to start during the migratory bird season, appropriate steps to prevent migratory birds from establishing nests in the potential impact will be taken. These steps could include covering equipment and structures and use of various excluders (e.g., noise);
- If activities must be scheduled during the migratory bird breeding season, a site-specific survey for nesting birds will be performed no more than 7-10 days before groundbreaking activities or vegetation treatments. Established nests with eggs or young cannot be moved, and the birds cannot be harassed (refer to the first bullet above), until all young have fledged and are capable of leaving the nest site; and
- If nesting birds are found during the survey, appropriate spatial buffers will be established around nests. Project-related activities within the buffer areas will be postponed until the birds have left the nest. Confirmation that all young have fledged will be made by a qualified biologist. A 100-foot buffer will be employed around the active nests of passerine species.

With implementation of these measures, the construction, operation, and maintenance of the Utility Project would be short-term and temporary and would not contribute incrementally to cumulative effects on the western yellow billed cuckoo.

Greater Sage-grouse

Important habitat areas for the Deadman's Bench greater sage-grouse population found within the CIAA include occupied, brood rearing areas, and wintering areas. The Utility Project, past and other present actions, and RFFAs (including the South Project) identified within the CIAA for greater sage-grouse include energy extraction projects (oil and gas; mining), transmission lines, and land-management activities. Greater sage-grouse populations require large patches of continuous sagebrush habitat. Land clearing activities associated with any development could disturb existing sage-grouse habitat and may cause sage-grouse to displace to habitats that may not consist of adequate vegetative cover, which would indirectly increase the potential for predation. Indirect effects on sage-grouse would include temporary project-related noise from construction.

Within the CIAA, the implementation of the Proposed Action of approving the Utility Project would be anticipated to incrementally affect 446 acres, or 4 percent of the greater sage-grouse habitat within the CIAA (refer to Table 4-38). This number includes a combined total of impacts to occupied habitat, brooding, and winter habitat. Project activities combined with impacts from past and other present projects and RFFAs (including the South Project) have potential to result in cumulative loss of sage-grouse habitat. However, the Utility Project is located within the GHMA as identified in the BLM Utah Greater Sage-Grouse Approved Resource Management Plan (2015c). Mitigation measures identified in this plan would apply to the Utility Project because project activities would result in habitat loss and degradation to sage-grouse GHMA. The Applicant would comply with mitigation measures identified in Table 4-1 to achieve net conservation gain.

Table 4-38
Cumulative Effects Summary for Greater Sage-grouse Habitat in Acres

Habitat Type	Total Available Resource (Acres)	Incremental Project Development (acres of disturbance)	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
Greater sage-grouse habitat[1]	34,347	446	10,880	23,467	4

NOTE: [1]Includes occupied, brood, and winter habitat.

Implementation of ACEPMs and mitigation measures described in Table 4-1 would reduce affects to sage-grouse resulting in a net conservation gain. These measures include design and mitigation measures for general wildlife (1-16) and special status wildlife (1-4) and those described in BLM (2015c):

- Avoid development in sage-grouse habitat as identified in Appendix H *Disturbances and Fragmentation of Wildlife Habitat* of the Vernal Field Office RMP, BLM IM 2012-43, and following accepted protocols described in BLM (2015) and in consultation with the FWS and/or state agencies.
- Minimization actions (e.g., design features and BMPs) already included in laws, regulations, policies, land use plans, and land use authorizations.
- Compensation using mitigation options including (but not limited to) 1) utilizing certified mitigation/conservation bank or credit exchanges; 2) contributing to an existing mitigation/conservation fund; and 3) authorized user conducted mitigation projects.

Project activities combined with impacts from past and other present projects and RFFAs (including the South Project) have potential to result in cumulative loss of sage-grouse habitat outside of the GHMA. However, implementation of ACEPMs and mitigation measures described would reduce effects to sage-grouse.

Black-footed Ferret

Cumulative impacts on black-footed ferret PMZ would occur as a result of the Proposed Action of approving the Utility Project. In addition to the Utility Project, past and other present projects and RFFAs (including the South Project) identified within the CIAA for the black-footed ferret include oil and gas development, mining, and land management activities. Direct impacts would include habitat loss (by conversion) and impacts to prairie dog colonies, which could impact the ferret's primary food source. The addition of transmission lines would provide perching opportunities for raptors which would increase potential predation on ferrets and prairie dogs.

Implementation of mitigation measures (BLM 2008f) described in Table 4-1would reduce indirect effects of land disturbing activities significantly. Mitigation measures for black-footed ferret include:

- To avoid disturbance to black-footed ferrets, construction activities in the black-footed ferret PMZ should be conducted outside the period between breeding and emergence of young (March 1 to July 15). If ferrets are discovered in the Project area additional stipulation detailed in Appendix K of the BLM Vernal Field Office RMP – Appendix K would apply.
- Avoid surface-disturbing activities within 660 feet of prairie dog colonies identified within prairie dog habitat. No permanent above ground facilities are allowed within the 660 foot buffer. Burrowing owl timing restrictions will still apply and additional surveys may be required. See Appendix K of the BLM Vernal Field Office RMP for exceptions, modifications, and waivers to this stipulation that may be granted by the BLM field manager.

- Conduct predisturbance surveys in all areas proposed for development following accepted protocols and in consultation with the FWS and/or state agencies. If the two phases of the utility corridor construction occur in separate years, a pre-disturbance survey will be needed each year.

The additional habitat loss associated with future projects may have a substantial effect on the availability of suitable habitat for ferrets. The Utility Project would contribute incrementally to cumulative effects on black-footed ferret.

Golden Eagle

The types of potential cumulative effects on golden eagles would be similar to those analyzed in Section 4.2.9.1.1.2. In addition to the Utility Project, past and other present actions and RFFAs (including the South Project) identified within the CIAA for golden eagle include energy extraction (mining and oil and gas) and transmission projects.

Direct impacts to golden eagles would include displacement caused by increased human activity, nest desertions and/or reproductive failure caused by project-related disturbances, increased public access and subsequent human disturbance resulting from new road construction, and temporary reductions in prey populations due to habitat fragmentation and alteration. Additionally, the addition of transmission lines would provide perching opportunities for raptors which would increase potential risks for electrocution and collision. Because the Proposed Action involves many of these elements, direct impacts to golden eagles can be anticipated. In addition, indirect impacts on golden eagles from the construction of the Utility Project could include an increase in automobile traffic, which would increase the potential for collisions.

Impacts would generally be temporary in nature (i.e., associated with construction) and mitigated by implementation of ACEPMs and mitigation measures described in Table 4-1. These include general wildlife measures 1, 2, 3,7, 8, 10, 12, 13. Implementation of the Utility Project would contribute incrementally to cumulative effects on golden eagle, taken together with past and other present actions and RFFAs (including the South Project).

Short-eared Owl

No direct effects from the Utility Project on short-eared owls would be anticipated. Indirect impacts would be temporary in nature and further mitigated by implementation of ACEPMs described in Table 4-1. Taken together, the Proposed Action of approving the Utility Project, past and other present actions, and RFFAs (including the South Project) would not contribute incrementally to cumulative effects on short-eared owls.

Burrowing Owl

Habitat for the burrowing owl occurs in the Utility Project area within the CIAA. In addition to the Utility Project, past and other present projects and RFFAs (including the South Project) identified within the CIAA for burrowing owl are the same as other special status species. Implementation of the Utility Project would have both direct and indirect adverse impacts on burrowing owls in the CIAA. The adverse impacts would include a direct loss of nesting and foraging habitat; loss of prey and prey habitat; an increased risk of vehicle-related mortality; increased displacement due to increased noise and human presence; and increased habitat fragmentation and habitat modification. No active prairie dog colonies or burrowing owls were observed by surveys conducted in 2013.

Implementation of ACEPMs and mitigation measures described in Table 4-1 would reduce effects of land disturbing activities significantly. Mitigation measures relevant to burrowing owls would include:

- Measures 1-16 identified for general wildlife (Table 4-1)
- Spatial or season avoidance measures. The approved Vernal RMP (BLM 2008f) has established a seasonal and spatial restriction for burrowing owls of 0.25 mile during the active breeding season (i.e., March 1 to August 31). If burrowing owls are documented within a 0.25 mile of any proposed project activities, surface disturbing activities would not commence until after August 31. Thus, indirect impacts on active burrowing owl nests would be avoided. Indirect, negative impacts could include displacement from foraging areas and reduction of prey species; and,
- Conduct pre-disturbance surveys in areas of development

Implementation of the Utility Project would result in minor incremental cumulative effects on burrowing owl taken together with past and other present projects and RFFAs (including the South Project).

Ferruginous Hawk

Cumulative impacts to ferruginous hawks would be similar to those described for other raptors, including golden eagles. Indirect impacts would be similar to those described for all raptors.

Data from past raptor inventories conducted in the Utility Project study area between 2012 and 2013 were used to evaluate the level of nesting activity for raptor species in the CIAA (SWCA 2013j; CH2M Hill 2012). No direct effects from the Utility Project and the South Project on ferruginous hawks would be anticipated based on the data. Indirect effects would be temporary in nature and mitigated by implementation of ACEPMs described in Table 4-1. The Utility Project would not contribute incrementally to cumulative effects on ferruginous hawks.

Bald Eagle

Data from past raptor inventories conducted in the Utility Project study area between 2012 and 2013 were used to evaluate the level of nesting activity for raptor species in the CIAA (SWCA 2013j; CH2M Hill 2012). Since no bald eagle nests were identified in the Project area, no direct effects from the Utility Project would be anticipated. Indirect effects would be temporary in nature and mitigated by implementation of ACEPMs described in Table 4-1 and the installation of raptor deterrents and measures according to the MLEA Avian Protection Plan.

The Utility Project would not contribute incrementally to cumulative effects on bald eagles taken together with past and other present projects and RFFAs (including the South Project).

Lewis's Woodpecker

Data from special status species inventories conducted in the Utility Project study area between 2012 and 2013 were used to evaluate the presence or Lewis's woodpecker or habitat in the CIAA (SWCA 2013d; CH2M Hill 2012). Since no individual woodpeckers or habitat were identified, no direct or indirect effects from the Utility Project on Lewis's woodpecker would be anticipated. The Project would not contribute incrementally to cumulative effects on this species.

Long-billed Curlew

Data from special status species inventories conducted in the Utility Project study area between 2012 and 2013 were used to evaluate the presence of the long-billed curlew in the CIAA (SWCA 2013d; CH2M Hill 2012). The data did not indicate that this species or habitat occurred in the Utility Project study area. Since no individual curlews or habitat were identified in the Utility Project area, no direct or indirect effects from the Utility Project on the long-billed curlew would be anticipated. Therefore, the Utility

Project would not contribute incrementally to cumulative effects on the long-billed curlew taken together with past and other present projects and RFFAs (including the South Project).

White-tailed Prairie Dog

Within the CIAA, both active and inactive white-tailed prairie dog colonies occur. Data from special status species inventories conducted in the Utility Project study area between 2012 and 2013 were used to evaluate the presence of the white-tailed prairie dog in the CIAA (SWCA 2013d; CH2M Hill 2012).

In addition to the Utility Project, past and other present actions and RFFAs (including the South Project) identified within the CIAA for white-tailed prairie dog include energy extraction projects, transmission lines, and land-management activities. There is potential for cumulative effects on white-tailed prairie dogs related to the Utility Project when added to past and other present projects and RFFAs (including the South Project).

Within the CIAA, direct impacts from implementation of the Proposed Action of approving the Utility Project would be estimated to incrementally affect 16 acres, or 16 percent of the estimated cumulative development with the CIAA (Table 4-39). In the short-term, cumulative effects would be attributed to degrading the quality of habitat by removal of vegetation or disturbance by human activity. Indirect effects from the installation of transmission lines would increase predation and improvements to access roads and Dragon Road would increase the potential for collisions with automobiles.

Table 4-39
Cumulative Effects Summary for White-tailed Prairie Dog Habitat in Acres

Habitat Type	Total Available Resource (Acres)	Incremental Project Development (acres of disturbance)	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
White-tailed Prairie Dog habitat	617	16	97	520	16

However, impacts would be mitigated by the implementation of BLM stipulations and mitigation measures described in Table 4-1 for general wildlife and special status species. These include protection measures 1, 8, 10, 11, 12, 13, 14, and 15. Measures described for special status wildlife species relevant to white-tailed prairie dog include:

- Avoid surface-disturbing activities within 660 feet of prairie dog colonies identified within prairie dog habitat. No permanent above ground facilities are allowed within the 660 foot buffer. Burrowing owl timing restrictions will still apply and additional surveys may be required. See Appendix K of the BLM Vernal Field Office RMP for exceptions, modifications, and waivers to this stipulation that may be granted by the BLM field manager.
- Conduct pre-disturbance surveys in all areas proposed for development.

Further, it is assumed that past and other present projects and RFFAs (including the South Project) also would be required to comply with federal and state policies for the protection of white-tailed prairie dog habitat (refer to Section 3.2.9). Implementation of the Proposed Action of approving the Utility Project would result in minor incremental cumulative effects on white-tailed prairie dogs.

Spotted Bat, Fringed Myotis, Big Free-tailed Bat, and Townsend's Big-eared Bat

Data from special status species inventories conducted in the Utility Project study area between 2012 and 2013 were used to evaluate habitat and presence of bats in the CIAA (SWCA 2013d; CH2M Hill 2012). Since no individual bats or specific habitat were identified in the Utility Project study area, no incremental or cumulative impacts from the Proposed Action of approving the Utility Project are anticipated. The impact of the South Project would also be minor, considered either alone under the No Action Alternative or with the past and other present projects and RFFAs.

Mountain Plover

Data from special status species inventories conducted in the Utility Project study area between 2012 and 2013 were used to evaluate habitat and presence of mountain plover in the CIAA (SWCA 2013i; CH2M Hill 2012). No individual mountain plover were identified in the Utility Project study area, although they could occur during migration. No direct or indirect effects from the Utility Project on the mountain plover would be anticipated. Therefore, the Utility Project would not contribute incrementally to cumulative effects on the mountain plover.

4.3.3.10 Special Status Fish

4.3.3.10.1 Issues Identified for Analysis

Issues identified for analysis relate to the need for analysis of potential cumulative impacts on critical habitats or known locations of special status fish species from the Utility Project, past and other present actions, and RFFAs (including the South Project).

4.3.3.10.2 Existing Conditions

The CIAA for fish and aquatics accounts for the extent of a species' habitat crossed by the proposed rights-of-way for the Utility Project and South Project boundary.

4.3.3.10.3 Results

In general, the listed Colorado River fish species (i.e., Colorado pikeminnow, razorback sucker, humpback chub, and bonytail chub) and BLM sensitive fish species (i.e., bluehead sucker, flannelmouth sucker, and roundtail chub) are indirectly impacted by activities that introduce erosion or sediment into aquatic habitats of the White River. Portions of the White River that occur within the CIAA provide specific habitat attributes required by the Colorado River endangered fish. Impacts associated with the Utility Project (construction), in addition to effects from other energy development, recreational activities, wildlife habitat management, and other land uses within the CIAA, would cumulatively reduce the quality and quantity of aquatic habitat for Colorado River endangered and sensitive fish species, although the increment of these impacts associated with development of the Utility Project would be minor.

Implementation of the Utility Project combined with past and other present projects and RFFAs (including the South Project) in the CIAA could result in minor but adverse modification of designated critical habitat for the Colorado River fish by increasing erosion and sediment loads in the White River. Increased sediment intrusion from surface disturbing activities, such as realignment and improvements to Dragon Road where it currently crosses Evacuation Creek, related to development could lead to increased water temperatures which could have an adverse effect on fisheries and other aquatic species. Sediment deposition may bury and suffocate fish eggs and larvae that may affect spawning and rearing. In addition, reduced visibility could impact feeding behavior. Due to existing surface disturbance, ongoing projects, and poor reclamation success of disturbed areas within the study area and surrounding region, increased erosion and subsequent sediment yield would likely occur.

It is anticipated that water depletions within the Colorado River system, including the Green and White Rivers, would affect Colorado River fish and their habitat. Depletions from these river systems or water return to the rivers would create impacts on the listed fish. Water requirements for utility area activities would be acquired from permitted sources.

Depletion from other energy and mining development projects, ranching, commercial, and residential water use has the potential to substantially reduce flow in the Upper Colorado River Basin. In addition to reducing the quantity of water with sufficient quality in a specific location, water depletions can also reduce a river's ability to create and maintain the physical habitat for fish. These could include spawning, nursery, feeding, and rearing, or access to these habitats and the biological environment (food supply, predation, and competition). Section 2.2.1.1 describes the water right and point of diversion for water use for the project. The Green River was selected for water withdrawal for the South Project since it has a significantly larger base flow year round than does the White River, therefore, it can more easily accommodate the 15 cfs water right. The maximum amount of water that can be used for industrial purposes is 10,739.75 acre-feet/year.

Impacts associated with the Utility Project would generally be temporary in nature (i.e., associated with construction) minor, and mitigated by implementation of ACEPMs and mitigation measures described in Table 4-1. These include general wildlife measures 1-6 for special status fish resources as described below:

- Apply spill prevention technology to all pipelines that cross or are in proximity to rivers or streams with threatened or endangered aquatic species.
- The Applicant and its contractors would locate, handle, and store hazardous substances in locations that would prevent accidental spill or delivery to the White River or its tributaries. Transferring of liquids and refueling shall only occur in pre-designated locations at least 100 feet from all waterbodies and 200 feet from any water well as described in the Applicant's Plan of Operation.
- Pipelines crossing mapped 100-year floodplain, mapped riparian, or wetland areas would be routinely pigged and would have emergency shutoff valves.
- Natural gas pipelines that cross perennial, intermittent, and ephemeral stream channels would be buried below the predicted scour depth for an equivalent flood event. The construction requirements for each type of crossing would be determined on a site-specific basis and would consider the technical guidance of the document entitled, "Hydraulic Considerations for Pipeline Crossings of Stream Crossings," which is found in Appendix B of the Vernal RMP (BLM 2008).
- Natural gas pipelines that cross perennial, intermittent, and ephemeral stream channels would be buried at least 5 feet below the channel bottom.
- Implement the Spill Prevention, Control, Countermeasures and Reporting Plan (POD-Appendix F)
- Pay a water depletion fee or determine other measures necessary to offset negative effects of additional depletions in coordination with the Colorado River Recovery Program if water use exceeds the existing water right.
- Construction activities in designated critical habitat Colorado pikeminnow and razorback sucker will not occur during active flooding events (when the water level rises more than 6 inches above the normal wetted channel). If construction materials are displaced by high flow the applicant will contact the FWS, Utah Field Office as soon as possible to coordinate the least intrusive retrieval methods.

4.3.3.11 Cultural Resources

4.3.3.11.1 Issues Identified for Analysis

Issues identified for analysis relate to the potential for cumulative effects on cultural resources, including the potential for effective mitigation in an area that is experiencing increased trends in industrial activity, energy production, transportation fuel consumption, total use of fossil fuels, and population growth.

4.3.3.11.2 Existing Conditions

The geographic scope of analysis for cultural resources is defined as a 2-mile-wide study area centered on the reference centerlines (similar to the methodology identified in Section 3.2.11.3).

Over time, cultural resources are subject to attrition as cultures change and sites weather and erode. In addition, prior development in the region has either degraded or resulted in the loss or discovery of some cultural resources. The addition of the Project to past and present actions and RFFAs would result in the greater potential for effects on cultural resources throughout the Project area.

4.3.3.11.3 Results

Direct impacts associated with the construction and operation phase of the Utility Project, considered with past and other present projects and RFFAs (including the South Project), are likely to result in cumulative impacts to cultural resources. Cultural resources could be destroyed by construction activities and ancillary facilities development. Disturbances from future developments and ground-disturbing activities could uncover or destroy unrecorded cultural resource sites. Future actions proposed on federal and/or state lands would require cultural resource evaluations and mitigation of affected significant historic properties prior to implementation. The resulting cultural resource documentation would increase the cultural resources knowledge base for the overall region; however, developments solely on private land are largely exempt from this requirement.

RFFAs, such as development of additional access corridors and rights-of-way, could increase access to previously inaccessible areas, leading to potential vandalism of cultural resource sites. There also could be cumulative effects from indirect impacts in the form of introduced visual, atmospheric, and audible elements that could detract from the cultural significance of potential TCPs, or other significant cultural resources. These indirect impacts also could adversely impact historic properties, or sites that have the potential to be listed in the NRHP. The introduction of additional development could alter the setting and feeling of historic properties (e.g., habitation structures, open architectural sites, roads, and rock art).

As a result of the presence of existing development projects and proposed future actions, cultural resources and potentially significant cultural resources that may be encountered could be negatively affected throughout the Utility Project study area, specifically, and the CIAA in general.

Overall, the addition of the Utility Project to past and other present projects and RFFAs (including the South Project) would result in a greater potential for adverse effects on historic properties and other potentially significant cultural resources. Some of these are:

- Prehistoric rock art, historic mining sites, and the White River Stage Station site;
- Archaeological and historic cultural resources (especially those located along the White River, Evacuation Creek, Coyote Wash, and Dragon Road);
- Historic roads and trails (GLO features);
- Native American concerns and potential TCPs.

The extent of potential effects on cultural resources could be reduced significantly through avoidance and implementation of mitigation measures. The effects on cultural resources, as a result of increased public access associated with the Utility Project, past and other present projects, and RFFAs (including the South Project), would be expected to be low.

Under the No Action Alternative, the Utility Project would not be built and the required utilities would be secured by alternative means; the South Project area would be developed to full build-out on private lands owned by the Applicant. The types of potential adverse effects on cultural resources associated with the No Action Alternative – Non-federal Connected Action South Project would be similar to the types of potential effects described for the South Project; however, without the construction associated with the Utility Project, the extent of the adverse effects on cultural resources would be lessened.

4.3.3.12 Paleontological Resources

4.3.3.12.1 Issues Identified for Analysis

Issues identified for analysis relate to the potential for impacts to paleontological resources from surface disturbance in Potential Fossil Yield Classes 4 and 5 throughout the CIAA.

4.3.3.12.2 Existing Conditions

The cumulative effects analysis for paleontological resources is geological units, and their PFYCs, within the Uinta Basin, an area known historically for its paleontological importance. This analysis includes the impacts from the Utility Project in conjunction with past and other present projects and RFFAs (including the South Project).

4.3.3.12.3 Results

Paleontological resources can be affected directly by disturbance or destruction of buried, in situ fossils as a result of ground-disturbing activities including construction of new access roads, improvement of existing access roads, excavation of tower sites, pipeline trenching, or mine excavation. Indirect impacts on paleontological resources include loss of a paleontological resource due to increased erosion, and increased potential for illegal collecting of fossils due to increased public access into previously difficult to access areas.

Within the CIAA there are 15 different geologic units seven of which have moderate to very high potential to contain paleontological resources. Most notable are the Uinta Formation and Green River Formation, which have produced paleontological resources in the past. The Utility Project's cumulative effects on paleontological resources could be reduced significantly through avoidance and implementation of mitigation measures, and the potential to reduce adverse impacts to these resources associated with ground-disturbing activities, and increased access is good.

The types of impacts on paleontological resources in the CIAA related to the South Project under the No Action Alternative would be similar to those discussed for the Utility Project and South Project under the Proposed Action (Table 4-40). The incremental Project development (estimated disturbance based on the Project description) that the Project could have on geological units with a high or very high sensitivity for paleontological resources is low. In addition, the Applicant may elect to implement avoidance and mitigation measures at the South Project.

Table 4-40
Cumulative Effects Summary for Potential Fossil Yield Classification Units in Acres

Potential Fossil Yield Classification	Total Available Resource	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
5	21,431	231	5,923	15,508	<1 percent
4	95	0	0	95	0

4.3.3.13 Visual Resources

4.3.3.13.1 Issues Identified for Analysis

Issues identified for analysis relate to the potential for effects on scenery including landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modification. In addition, concern was raised related to the potential for cumulative impacts to the viewers visiting KOPs.

4.3.3.13.2 Existing Conditions

The geographic scope for analysis of potential cumulative effects on visual resource was defined differently to assess effects on scenery and viewing locations. For assessing cumulative effects on scenery, the geographic scope is defined by the SQRUs located within two miles of the Utility Project and five miles of the South Project. To assess cumulative effects on viewing locations, the area viewed from the nine KOP locations, identified in Section 3.2.13, comprise the geographic scope. The temporal scope for the analysis was defined as: (1) five years for construction and stabilization and (2) the life of the Utility Project (30 years or longer) for operation and maintenance.

4.3.3.13.3 Results

4.3.3.13.3.1 Scenery

The area north of the White River, associated with the Red Wash/Kennedy Wash/Devil's Playground, Deadman's Bench, and Bonanza SQRUs, has become increasingly visually dominated by industrial development including oil and gas extraction operations, the BPP, transmission lines, gilsonite mining, and pipelines. The introduction of the Utility Project and RFFAs (RFFAs in the analysis include projects listed in Table 4-33) would lead to increasing industrialization of these landscapes. For each SQRU, the level of incremental effect introduced by the Utility Project, as well as the influence of past and other present projects, and RFFAs (including the South Project), are described in Table 4-41.

Table 4-41
Cumulative Effects Summary for Scenery in Acres

Scenic Quality Rating Unit		Total Available Resource (Acres)	Incremental Project Development (acres of disturbance)	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
Name	**Class**					
White River	Class A	40,869	1,291	36,302	4,567	3
Hell's Hole	Class B	16,957	0	16,437	520	0
Long Draw	Class B	64,680	0	58,224	6,456	0
Park Canyon	Class B	36,005	0	23,246	12,759	0
Red Wash/ Kennedy Wash/ Devil's Playground	Class B	81,784	0	81,784	0	0
Southam	Class B	63,317	0	54,932	8,385	0
Weaver Canyon	Class B	1,199	0	1,199	0	0
Bonanza	Class C	69,873	489	69,381	492	1
Deadman's Bench	Class C	78,693	0	76,397	2,296	0

The White River SQRU (Class A) is becoming increasingly developed on the plateau lands associated with this scenery unit, including oil and gas extraction operations. In contrast, the lands along the river have few visible modifications except at the Utility Project proposed crossing, where an existing pipeline (above-ground at the river crossing) and small transmission line cross the river. The introduction of the Utility Project and RFFAs would lead to this portion of the White River being viewed as a utility corridor due to the presence of several linear utilities crossing the river in the same location.

The area south of the White River, associated with the Southam, Hell's Hole, Long Draw, Park Canyon, and Weaver Canyon SQRUs, is increasingly being influenced by industrial development including oil and gas extraction operations, pipelines, and gilsonite mining. This level of modification is not to the extent described north of the White River. The introduction of the Utility Project and RFFAs would lead to increasing industrialization of the portion of the landscapes located in proximity to these projects and in particular the South Project as described in Section 4.2.13.

4.3.3.13.3.2 Viewing Locations

Views from KOP #1 – Atchees Wash Road are minimally affected by existing development. Due to topographic screening limiting visibility of the Utility Project, there would be minimal incremental Project cumulative effects. RFFAs, including the South Project, would begin to dominate views from this location due to the geometric landforms associated with the proposed mine and change in soil color resulting from excavation.

Views from KOP #5 – Highway 45/Dragon Road are generally intact except for intermittent views of an existing pipeline corridor. The addition of the Utility Project and RFFAs would lead to increase visibility of industrial development. In particular, the full build-out of the South Project would begin to dominate views from this location.

Views from KOPs #7 – Fidlar/Little Bonanza and #8 – Kennedy Wash, both located north of White River, are becoming increasingly visually dominated by industrial development including oil and gas extraction operations, the BPP, transmission lines, gilsonite mining, and pipelines. The introduction of the Utility Project and RFFAs (including the Energy Gateway South Transmission Project) would intensify the industrialization of these views.

Views from KOP #9 – Duck Rock are visually influenced by existing development include an existing pipeline (above-ground at the river crossing) and smaller transmission line. The introduction of the Utility Project and RFFAs would lead to further industrialization of these views and the expansion of the area viewed as a utility corridor.

Due to the limited visibility of the Utility Project from the other identified KOP locations (#2 – Rainbow Ghost Road, #3 – Former IOP, #4 – White River, and #6 – Goblin City), cumulative effects on their viewsheds are primarily associated with past and present projects including oil and gas extraction operations, gilsonite mining, and pipelines.

Effects associated with the No Action Alternative, where no Utility Project would be developed but the South Project would go forward, would be less intense than those effects described for the Utility Project, on the White River SQRU and KOP #9 – Duck Rock, where the introduction of the Utility Project would have led to increasing industrialization of these areas. In the areas north and south of the White River, effects on scenery and views would be similar to those described for the Utility Project and South Project considered together.

4.3.3.14 Lands and Access

4.3.3.14.1 Issues Identified for Analysis

Potential impacts on grazing allotments include crossing the allotments, which may not be compatible with future utility projects. These impacts would be intensified where other existing actions have already affected the grazing allotment or an RFFA is proposed in the same area. No analysis was conducted for general developed land uses or future land uses as these projects are being use in the analysis as the past and other present actions, and RFFAs.

4.3.3.14.2 Existing Condition

A predominant land use in the CIAA is grazing and rangeland. For general developed land uses (e.g., residential, oil and gas projects, etc.) and future land use, no cumulative effects analysis was completed because these resources are considered as part of the existing past and other present projects and RFFAs (including the South Project). However, grazing allotments were analyzed for cumulative effects. Impacts on general developed land uses are discussed in Section 4.2.14.

4.3.3.14.3 Results

The incremental effects of the Utility Project taken with past and other present projects and RFFAs (including the South Project) on lands and access are discussed based on data for the current condition, the existing past and other present actions, and the RFFAs.

Table 4-42 discusses results of the cumulative effects analysis on grazing allotments. A percentage of the Utility Project impact is provided. This percentage was calculated using the acreage of Utility Project disturbance, divided by the total available resource acreage, resulting in a percentage of Utility Project impact. As discussed previously, no analysis was conducted for general developed land uses or future land uses as these projects are being used in the analysis as the past and other present projects and RFFAs.

Table 4-42
Cumulative Effects Summary for Grazing Allotments in Acres

Grazing Allotment Name	Total Available Resource	Incremental Project Development	Estimated Cumulative Development	Remaining Available Resource	Percent of Project Impact
Antelope Draw	62	0	6	56	None
Bonanza	4,509	38	728	3,781	5
Coyote Wash	23,981	257	5,772	18,208	4.5
Hell's Hole	8,570	206	493	8,078	2.5
Watson-BC	15,074	59	7,181	7,892	<1 percent
White River Bottoms	280	3	50	230	1.3

Other reasonably foreseeable future actions that may affect grazing allotments are the Enefit Resources Inc. land holdings and leases. There are no projects planned for these leases, but development of these areas may potentially increase disturbance of grazing allotments in the area. Overall, the effects on cultural resources, as a result of increased public access associated with the Utility Project, past and other present projects, and RFFAs (including the South Project), would be expected to be low.

4.3.3.15 Travel Management

The Utility Project would use existing roads within the CIAA. The construction and operation of the Utility Project would not incrementally result in long-term impacts to access within the CIAA. Short-term incremental impacts to the existing transportation network may occur from the increase in heavy truck traffic associated with the construction of the project. No long term impacts are anticipated from the operation, periodic maintenance activity, or employee use of these roadways. Impacts on travel management are discussed in Section 4.2.15.

Potential for impacts throughout the CIAA would be greater under the No Action Alternative due to the potential for trucking utilities in to the South Project and trucking product out to market. This increase in trucking would result in an increase in large trucks and heavy equipment along existing roads. This increase would increase the potential damage to roads and increase wear from heavy equipment and tanker trucks.

4.3.3.16 Recreation

Recreation resources as discussed in Section 4.2.16 are minimal but include OHV use and the Duck Rock recreation site (overlook to the White River). Prior projects, such as oil and gas development and other mining operations, have already resulted in the build-out of an existing road network throughout the area, which has reduced the character of primitive recreational activities. The Proposed Action is anticipated to have no cumulative effect on recreational activities. No direct physical impact would occur to the OHV use or the Duck Rock recreation site, nor would access to these areas be restricted.

4.3.3.17 Socioeconomics

4.3.3.17.1 Issues Identified for Analysis

Issues identified for analysis are related to possible cumulative effects to available workforce, employment, population, housing, and property values within the CIAA.

4.3.3.17.2 Existing Conditions

4.3.3.17.2.1 Economic Conditions

Oil shale development would expand regional economic development through increased employment and income in the region. As construction and operations workers spend their money in the local area, revenues would likely increase for local businesses (e.g., hotels, restaurants, gas stations, and grocery stores), supporting jobs, and incomes for these businesses and their employees. In remote areas across the study area, it is likely that construction workers would live temporarily in nearby communities during construction while operations workers would permanently relocate. The potential for cumulative socioeconomic impacts on population, employment, and housing exist where there are multiple projects proposed in an area that have overlapping construction schedules and/or project operations that could affect similar resources. Concurrent and similar projects could result in a demand for labor that cannot be met by the region’s labor pool, which could lead to an influx of nonlocal workers. Socioeconomic resources potentially affected could include the availability of housing and accommodations as well as the availability of public and social services to accommodate the temporary and permanent workers.

4.3.3.17.2.2 Social Conditions

Oil shale development may incur impacts from construction workers temporarily residing in the communities near the project site. In addition, indirect impacts may occur with an influx of workers supporting operations at the South Project. Social conditions potentially affected include the availability of housing and accommodations as well as public and social services to accommodate the increased workforce and population. Significant in-migration to support both construction and permanent operations could place additional demands on public and educational services in the study area. This is compounded if multiple projects proposed in an area have overlapping construction schedules and/or project operations that could affect similar resources. In addition, rapid population growth resulting from in-migration of construction and operations workers could lead to the undermining of local community social structures as beliefs and value systems among the local population and in-migrants contrast, and consequently could lead to a range of changes in social and community life (BLM 2012d).

4.3.3.17.2.3 Environmental Justice

Potential environmental justice populations of concern residing in proximity to the oil shale development projects could be affected cumulatively and adversely by the construction and/or development of other nearby projects with impacts from increased traffic, declining air quality, and reduced visual resources.

However, given the small number of individuals that are living near the proposed Utility Project, it is not anticipated that there will be any disproportionate cumulative impacts on low income or minority populations. Minority and low income populations may also be impacted by disruptions in social conditions that could occur with a rapid increase in population due to in-migration of construction and operation workers from multiple projects in the study area. While these impacts may affect low income and minority populations, they are not expected to represent disproportionate impacts.

4.3.3.17.3 Results

In general, there are two types of effects that could have implications for cumulative effects on socioeconomic resources. Any construction activity has the potential to affect temporarily socioeconomic resources, economic activity, construction workforce effects on housing and public services, and social conditions. Cumulative impacts associated with the Utility Project would be most likely to occur where there are multiple projects proposed in an area that have overlapping construction schedules and/or project operations that could affect similar resources. Further, concurrent and similar projects could result in a demand for labor that cannot be met by the region’s labor pool, which could lead to an influx of nonlocal workers. Socioeconomic resources potentially affected could include the availability of housing and accommodations as well as the availability of public and social services to accommodate the temporary workers. However, there is no way to quantify the potential for impacts to socioeconomic conditions if this overlap were to occur in the CIAA.

Impacts could also occur over a longer time period as in-migration of operations workforce impacts population trends in the area. Because population increases due to oil shale development and other similar projects can be quite rapid, local government entities often do not have proper time to plan for these changes. Rapid population growth resulting from in-migration of construction and operations workers could lead to the undermining of local community social structures as beliefs and value systems among the local population and in-migrants contrast, and consequently could lead to a range of changes in social and community life leading to social issues including increases in crime, alcoholism and drug use (BLM 2012d). Over the longer term, communities and individuals will be able to adjust to changes in population trends and address additional demands on housing, public services, and other social conditions. These impacts are likely to be short-term for the Utility Project, as they would be primarily associated with the Utility Project's construction.

Environmental justice populations are expected to benefit from increased development through jobs, income, and fiscal receipts to local governments. These populations are not anticipated to be disproportionately and adversely affected by the utility Project or the South Project due the remote location of these facilities. Therefore, the Utility Project is not anticipated to cumulatively affect these populations. However, minority and low income populations may be impacted by disruptions in social conditions that could occur with a rapid increase in population growth due to in-migration of construction and operation workers due to multiple projects in the study area.

4.3.3.18 Public Health and Safety

4.3.3.18.1 Issues Identified for Analysis

Issues identified for analysis are related to the potential for increase in solid and/or hazardous waste in the CIAA as well as potential for spills during transport.

4.3.3.18.2 Existing Conditions for Hazardous Materials and Solid Waste

The primary access for the Uinta Basin oil shale and tar sands resources from the north is via U.S. Highways 40 and 191, and from the south via I-70. The major routes into the basin from U.S. Highways 40 and 191 are local roads 45 and 88 south from U.S. 40. U.S. Highway 6 parallels the southwest side of the Uinta Basin, and Road 123 links this highway with the interior of the basin in the vicinity of the Sunnyside STSA. Access to the San Rafael STSA is from I-70, which traverses that area.

4.3.3.18.3 Results

4.3.3.18.3.1 Solid Waste and Hazardous Waste

There are no cumulative effects to Public Health and Safety as a result of solid waste or hazardous waste management associated with the Proposed Action. The current conditions within the geographic scope of the analysis do not exhibit significant effects that are the result of past activities. The Utility Project construction activities and the future construction and operation of the South Project occur over defined and controlled areas. The defined temporal and geographic nature of this activity will promote proper management of waste generation and proper transport and disposal in compliance with applicable regulations, which will mitigate contributions to cumulative effects.

Potential for impacts throughout the CIAA would be greater under the No Action Alternative due to the potential for trucking utilities in to the South Project and trucking product out to market. This increase in trucking would result in an increase in large trucks and heavy equipment along existing roads. This increase would increase the potential for spills and accidents, and may result in spill or solid and/or hazardous waste.

Appendix 5
Consultation and Coordination

CHAPTER 5 – CONSULTATION AND COORDINATION

5.1 Introduction

Integrated with the planning, analysis, and review activities of EIS preparation, the BLM is conducting a comprehensive program of agency coordination and public participation, commencing with scoping early on and continuing throughout the NEPA process. The intent of the program is to proactively encourage interaction between the BLM and other federal and state agencies, local governments, American Indian tribes, and the public to keep them informed about the Utility Project through dissemination of information and to solicit information that assists in analysis and decision-making.

Throughout the preparation of this document, formal and informal efforts have been implemented by the BLM to involve, consult, and coordinate with other federal and state agencies and local governments, American Indian tribes, and the public. Such communication is important (1) to ensure the most appropriate data have been gathered and employed for analysis and (2) to ensure agency policy and public sentiment and values are considered and incorporated into informed decision-making.

This chapter provides a brief description of the methods employed for communication and interaction that includes consultation and coordination with agencies, tribes, and stakeholders; the scoping process; and public review of the Draft EIS.

5.2 Consultation and Coordination

Agencies and organizations having jurisdiction and/or specific interest in the Utility Project were contacted at the beginning of scoping, during the resource inventory, and prior to the publication of the EIS to inform them of the Utility Project, verify the status and availability of existing environmental data, request data and comments, and solicit their input about the Utility Project. Additional contacts were made throughout the process to clarify or update information, see Appendix H. This section describes the consultation and coordination activities that have taken place so far.

5.2.1 Cooperating Agencies

In March 2013, the BLM sent formal letters inviting all agencies, and the Northern Ute Tribe, whose jurisdiction and/or expertise are relevant to the Utility Project to participate as cooperating agencies in the preparation of the EIS. The agencies that accepted the invitation to participate as cooperating agencies are listed below.

Federal

- EPA
- USACE
- FWS

State

- Utah Public Lands Policy Coordination Office

Local

- Uintah County

Meetings of the Agency Interdisciplinary Team, including the cooperating agencies, have been conducted two times to discuss the status of the Utility Project and EIS. The date and the purpose of each meeting are as follows:

- **August 5, 2014.** BLM introducing the Utility Project to the Agency ID Team, including outlining the purpose of and need for the Utility Project, the Utility Project description, scoping results, the EIS schedule, future coordination, agency actions and decisions, alternatives to be considered and the non-federal connected action, and issues to be addressed in the EIS.
- **June 2, 2015.** Reviewing and discussing comments on the administrative Draft EIS prior to its completion and release for public review.

Additional coordination efforts occurred through internal reviews that did not consist of formal cooperator meetings. Coordination with the Agency Interdisciplinary Team will continue through the completion of the EIS.

5.2.2 Consultation

The BLM is required to prepare EISs in coordination with any studies or analyses required by the Fish and Wildlife Conservation Act[1], ESA[2], and the NHPA[3], as amended. Also, in accordance with Executive Order 13175, BLM must consult, government-to-government, with American Indians to ensure the tribes are informed about actions that may affect them.

5.2.2.1 Scope of Analysis

In December 2014, BLM finalized coordination efforts, both internally and externally with cooperating agencies, regarding the scope of analysis for the EIS effort. The BLM decided that although the South Project could proceed regardless of the BLM's Utility Project decision, the detailed design and engineering of the South Project is pending and would be affected by the BLM's decision. Therefore, it was decided to analyze the South Project as a non-federal connected action to the Utility Project in the EIS. A detailed explanation of this analysis effort and conclusions is described in Section 1.2.1.

5.2.2.2 Biological Resources

The FWS has been involved in review of the document including preparation of the analysis. Under the provisions of Section 7(a)(2) of the ESA, a federal agency that carries out, permits, licenses, funds, or otherwise authorizes an activity must consult with the FWS as appropriate to ensure the action is not likely to jeopardize the continued existence of any species listed under the ESA or result in the destruction or adverse modification of designated critical habitat.

Coordination with FWS as a cooperating agency is ongoing. Section 7 compliance will be completed prior to issuance of the Final EIS.

5.2.2.3 Cultural Resources

Section 106[4] of the NHPA requires federal agencies to take into account the effect of their undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP. Regulations for the implementation of Section 106 are defined in 36 CFR Part 800 – *Protection of Historic Properties*. These regulations define how federal agencies meet their statutory responsibilities. The Section 106 process seeks to accommodate historic preservation concerns with the needs of federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties[5]. These parties include the ACHP, SHPOs, American Indian tribes, Tribal Historic Preservation Officers, state and other federal agencies, and individuals or

[1] 16 U.S.C. 661 et seq.
[2] 16 U.S.C. 1531 et seq.
[3] 16 U.S.C. 470 et seq.
[4] 16 U.S.C. 470(f)
[5] 36 CFR 800.1 and 36 CFR 800.2

organizations with a demonstrated interest in the undertaking due to their legal or economic relation to the undertaking or affected properties, or their concern with the effects of undertakings on historic properties.

As lead federal agency for compliance with Section 106 of the NHPA for the Proposed Action, the BLM will conclude Section 106 consultation with the SHPO, PLPCO, SITLA, and others pursuant to 36 CFR Part 800.6 and 800.14(b) of the ACHP's regulations implementing Section 106 of the NHPA prior to issuance of the Final EIS. The Section 106 process is separate from, but often conducted in coordination with, the preparation of an EIS. Consultation under Section 106 of the NHPA is ongoing.

5.2.2.4 Government-to-Government Consultation

The United States has a unique legal relationship with American Indian tribal governments as set forth in the Constitution of the United States, treaties, Executive Orders (e.g., Executive Order 13175), federal statutes, federal policy, and tribal requirements, which establish the interaction that must take place between federal and tribal governments. An important basis for this relationship is the trust responsibility of the United States to protect tribal sovereignty, self-determination, tribal lands, tribal assets and resources, and treaty and other federally recognized and reserved rights. Government-to-government consultation is the process of seeking, discussing, and considering views on policy, and/or, in the case of this Utility Project, environmental and cultural resource management issues. For efficiency, government-to-government consultation activities often are combined with Section 106 tribal consultation activities.

Pursuant to 36 CFR Part 800.2, the lead federal agency must consult with American Indian tribes that attach religious and cultural significance to historic properties that may be affected by an undertaking. This requirement applies regardless of the location of the historic property. In such cases, the federal agency must notify the tribes potentially affected by the undertaking and give those tribes the opportunity to participate in the Utility Project as a concurring party should they wish to do so.

Federal legislation applicable to tribal consultation in the Utility Project area includes:

- NHPA, 16 U.S.C. 470; 36 CFR 800, specifically Section 106, directs federal agencies to take into account the effects of their actions on historic properties and provide the tribes a reasonable opportunity to comment.
- ARPA, 16 U.S.C. 470aa to 470ee, authorizes federal land-management agencies to manage through a permit process the excavation and/or removal of archaeological resources on federal lands. The land-management agencies must consult with American Indian tribes with interests in resources prior to issuance of permits.
- American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996, requires federal lead agencies and/or federal land-management agencies to consult with affected American Indian tribes regarding federal actions that would pose potential conflicts with freedom to practice traditional American Indian religions.
- NAGPRA, 25 U.S.C. 3001-3002, provides a process through which federal agencies consult with affected Native Americans regarding the treatment and return of human remains, funerary objects, sacred objects, and items of cultural patrimony identified on federal lands as a result of a federal action.
- Executive Order 13007, issued in 1996, directs federal land-management agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of sacred sites. Where appropriate, agencies will maintain the confidentiality of these sites.
- Government-to-Government Relations with Native American Tribal Governments Memorandum, 59 *Federal Register* 22951 (May 4, 1994) directs federal agencies to consult, to the greatest

extent practicable and to the extent permitted by law, with tribal governments prior to taking actions that affect federally recognized tribal governments. Federal agencies must assess the impact of federal government plans, projects, programs, and activities on tribal trust resources and ensure that tribal government rights and concerns are considered during such development.

- BLM Instruction Memorandum No. 2010-037: Tribal Consultation and Cultural Resource Authorities—provides an update on the BLM's tribal outreach initiative, emphasizes the importance of tribal relations and partnerships for the BLM, and discusses revision of the national Programmatic Agreement the BLM maintains with the ACHP and National Conference of SHPOs. In addition, the SHPO for Utah is responsible for ensuring that laws applicable to tribal consultation are followed on lands under the jurisdiction of the state.

State of Utah statutes and guidelines include the following:

- UAC Section 9-9-403 provides a process for the ownership and disposition of Native American human remains discovered on non-federal lands not state owned.
- UAC Section 76-9-704 provides the definitions and penalties for the abuse or desecration of a dead human body.
- UAC Section R212-4 requires that, if human remains are discovered in conjunction with a project subject to Section 106, the project proponent is responsible for all efforts associated with the excavation, analysis, curation, or repatriation of the human remains and for notifying the Utah SHPO.
- UAC Section 9-8-309 provides a process through which landowners or land-management agencies consult with the state regarding the treatment of human remains discovered on non-federal lands not state owned.

Consultation will be completed prior to issuance of the Final EIS, and will be conducted in conjunction with Section 106 Consultation process.

5.3 Summary of Agency and Public Scoping

Agency and public scoping is initiated early in the EIS process and is open to all interested agencies and the public. The intent is to solicit comments and identify issues that help direct the approach and depth of the environmental studies and analysis needed to prepare the EIS. Objectives to meet this goal include the following:

- Identify and invite agencies with jurisdiction and/or special expertise relevant to the Utility Project to participate in the preparation of the EIS as cooperating agencies
- Identify other interested parties and invite them to participate in the NEPA process
- Identify other environmental review and consultation requirements
- Identify the relevant and substantive issues that need to be addressed during the studies and in the EIS
- Determine the range of alternatives to be evaluated
- Develop the environmental analysis criteria and systematic process, allocating EIS assignments among agencies, as appropriate.

The scoping process is summarized in this section and documented in the *Enefit American Oil Utility Corridor Project Environmental Impact Statement Scoping Report* (BLM 2013c), which is available for viewing at the BLM Vernal Field Office and on the BLM website (refer to the following section for its address). The issues derived from scoping comments are listed in Table 1-1.

5.3.1 Approach

The range of issues summarized in this document was derived from the scoping process and ongoing public participation. Some of the activities implemented early in the Utility Project are listed below.

Announcements to inform the public of the Utility Project, the EIS preparation, and of the public scoping meetings were published in the *Federal Register*; in media releases to local newspapers and radio stations; and as legal notices where applicable.

A newsletter was distributed to interested parties on the Utility Project mailing list, which includes federal, state, and local government agencies, special interest groups, and individuals. The newsletter introduced the Utility Project, solicited input for the environmental analysis, and announced upcoming public scoping meetings.

The BLM published the newsletter on the Vernal Field Office website and the Environmental Notification Bulletin Board (ENBB) during the scoping period. The Utility Project was then removed from the ENBB and added to the BLM NEPA Register, which can be found at https://www.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do. A link was provided for the public to submit comments via email at blm_ut_vernal_comments@blm.gov.

Two formal scoping meetings were held in July 2013 to introduce the Utility Project, explain the purpose of and need for the Utility Project, describe the Utility Project, explain the planning and permitting process, and solicit comments useful for the environmental analysis.

5.3.1.1 Information Dissemination and Notification

A mailing list was created using data from the Vernal BLM Field Office, lists of federal, state, and local agency representatives, community leaders, and potential stakeholders. Ranchers with grazing allotments on lands administered by the BLM and current BLM right-of-way holders, whose contact information was extracted from the Rangeland Administration System and LR 2000 database, were also added to the Utility Project mailing list. Other additions included interested organizations and individuals who commented on the Utility Project or requested information. The mailing list is used to distribute scoping announcements and subsequent updates on the status of the Utility Project.

The BLM disseminated information about the Utility Project early in the NEPA process through the *Federal Register*, a newsletter, media releases, legal notices, and website postings.

An NOI was published in the *Federal Register* on July 1, 2013[6], announcing (1) the preparation of the EIS for the proposed Utility Project and (2) the opportunity for the public input through scoping. The publication of the NOI in the *Federal Register* marked the beginning of EIS preparation and the scoping process.

The first in a series of newsletters was mailed by the BLM on July 1, 2013, to approximately 294 individuals, agencies, and interested organizations on the Utility Project mailing list. Media releases and newspaper notices were placed in regional and local newspapers (Table 5-1). Also, the BLM posted Utility Project information and announcement of the meetings on the BLM public website and on the ENBB in July 2013.

[6] *Federal Register* Vol. 78, No. 126, pages 39313 to 39314

Table 5-1 Press Releases and Legal Notices	
Newspaper	**Publication Dates**
The Vernal Express	July 2, 9, 16, 23, and 30, 2013
The Uinta Basin Standard	July 2, 9, 16, 23, and 30, 2013
The Salt Lake Tribune	July 2 through 28, 2013
The Deseret News	July 2 through 28, 2013

5.3.1.1.1 Scoping Meetings

Two scoping meetings were held in July 2013 to inform the public about the Utility Project and the NEPA process and to solicit input on the scope of the Utility Project and potential issues. The scoping meetings were held from 6:30 to 8:30 p.m. at the locations and dates listed below.

Vernal City Hall, Vernal, Utah
Tuesday, July 16, 2013

Salt Lake City Public Library, Salt Lake City, Utah
Wednesday, July 17, 2013

An open-house format was used for the meetings. A Utility Project map, newsletter, and comment form were provided. Several informational display stations were positioned around the meeting room to help explain the purpose of and need for the Utility Project; introduce the Utility Project applicant, Enefit; provide a description of the Utility Project; outline the EIS process and timeline; list the cooperating agencies participating in the EIS process; and identify a preliminary list of issues to be addressed in the EIS. One station in the meeting room was equipped with a PowerPoint slideshow presenting this information. Representatives from the BLM, the Applicant, and the BLM's third-party EIS consultant (EPG) were present and available to explain Utility Project information and answer questions. Written comments were submitted on comment forms or letters. The BLM received a total of 39 comment submittals during the two open houses.

Written comments were accepted at the public scoping meetings, via email, and via U.S. mail at the BLM Vernal Field Office.

5.4 Preparers and Contributors

Preparers, contributors, and consultants involved throughout the Utility Project (including BLM staff), are listed in Tables 5-2 and 5-3.

Table 5-2 Bureau of Land Management Preparers and Contributors		
Name	**Title**	**Involvement**
Stephanie Howard	Environmental Coordinator	Project management, NEPA, and planning
Richard Rymerson	District Manager	Decision Maker
Mike Stiewig	Field Office Manager	Project management
Jerry Kenczka	Assistant Field Manager Minerals	Project management
Margo Roberts	Realty Specialist	Right-of-way and lands and realty
Leonard Herr	Air Quality Specialist	Air quality
Bill Civish	Natural Resource Specialist	Recreation
Blaine Tarbell	Natural Resource Specialist	Fire management
Rick Goshen	Geologist	Geology/Minerals
Jessi Brunson	Botanist	Vegetation
Craig Newman	Range Management Specialist	Livestock, grazing
Elizabeth Gamber	Geologist	Paleontology
James Hereford	Natural Resource Specialist	Water resources

Table 5-2
Bureau of Land Management Preparers and Contributors

Name	Title	Involvement
Dusty Carpenter	NRS/Range and Wild Horse and Burro Specialist	Wild Horses
Brandon McDonald	Wildlife Biologist	Wildlife, T&E Species
Erin Goslin	Archaeologist	Cultural Resources

Table 5-3
Consultant Preparers and Contributors

Name	Education	Involvement
Environmental Planning Group, LLC (EPG)		
Louise Brown	BS, Administrative Systems	Technical editing, document production
Jennifer Burns	BA, English, American Studies Minor	Technical editing, document production
John Curl	BS, Public Lands Policy, Utah State University	Wildlife, special status species
Michael Doyle	MLA, Landscape Architecture BA, Environmental Design	Project management, senior technical review
Megan Dunford	MLA, Landscape Architecture and Environmental Planning BA, Advertising and Interpersonal Communications	Project coordination, land use and recreation, transportation
Sandra Fairchild	BS, Physical Geography AA, Hydrologic Technician Program	Water resources
Naia George	M.S., Anthropology (concentration in Archaeology/Physical Anthropology) B.S., 1998, Anthropology (concentration in Archaeology)	Cultural resources
Dana Holmes	MA, Environmental Policy and Natural Resource Management BA, Environmental Planning and Urban Studies	Project coordination, transportation
Matthew Martin	M.S., Urban and Regional Planning B.A., Geography	Geographic Information Systems
Sarah Nelson	MLA, Landscape Architecture and Environmental Planning BA, Anthropology	Geographic Information Systems
Amanda O'Connor	MS, Conservation Studies BA, Environmental Biology	Senior technical review, NEPA and planning coordination
Mike Pasenko	MS, Quaternary Sciences Program BA, Anthropology	Earth resources, paleontology
Kevin Rauhe	BLA, Landscape Architecture	Visual resources
Ron Spears	MS, Ecology BA, Biology/Ecology	Wildlife, vegetation, and special status species
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Heather Weymouth	MS, American Studies (Anthropology) BS, Anthropology	Cultural and historical resources

Table 5-3 Consultant Preparers and Contributors		
Name	**Education**	**Involvement**
Subconsultants		
Louis Berger Group		
Lisa McDonald	PhD, Mineral Economics MS, Mineral Economics BS, Earth Science	Socioeconomics and environmental justice
Environmental Resources Management (ERM)		
Robert Farmer	PhD, Chemical Engineering MS, Chemical Engineering BS, Chemical Engineering	Air quality, greenhouse gas emissions
Mary Parke	PhD, Civil Engineering MS, Civil Engineering BSc, Biology/Chemistry	Hazardous materials, public health and safety

References

References

A

Ackerfield, J. 2012. The Flora of Colorado. Colorado State University Herbarium. 433 pp.

AECOM. 2014. Utah Resource Management Strategy Modeling Project Assessment Report. Prepared for Bureau of Land Management, Utah State Office, October 2014.

Aikens, C. Melvin. 1994. Adaptive Strategies and Environmental Change in the Great Basin and Its Peripheries as Determinants in the Migrations of Numic-Speaking Peoples. In *Across the West: Human Population Movement and the Expansion of the Numa*, edited by David Rhode and David Madsen, pp. 44–55. University of Utah Press, Salt Lake City.

Ashley Regional Medical Center. 2015. Available at: http://www.avmc-hospital.org/services.aspx. Accessed on: April 10, 2015.

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington D.C. and Sacramento, CA.

APLIC. 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington D.C.

B

Barton, John D. 1998. *A History of Duchesne County*. Utah State Historical Society, Salt Lake City.

Bearnson, Margaret S. 2012. John Wesley Powell. In *Utah History Encyclopedia*. Online ed. University Press, Salt Lake City, Utah. Available online at: http://www.uen.org/utah_history_encyclopedia/p/POWELL_JOHN.html. Accessed April 27, 2015.

Belnap, J., J. H. Kaltenecker, R. Rosentreter, J. Williams, S. Leonard, and D. Eldridge. 2001. Biological Soil Crusts: Ecology and Management. Technical Reference 1730-2. United States Department of the Interior, Bureau of Land Management and U.S. Geological Survey

Bender, Jr., Henry. 1970. *Uintah Railway: The Gilsonite Route*. Heimburger House, Forest Park, Illinois.

Benton, R.M. 1987. The Yellow-Billed Cuckoo. Utah Birds 3:7-11.

Bettinger, Robert L. 1994. How, When, and Why Numic Spread. In *Across the West: Human Population Movement and the Expansion of the Numa*, edited by D. B. Madsen and D. Rhode, pp. 44–55. University of Utah Press, Salt Lake City.

Biggs, Robert W. 1970. Burnt House Village, 42UN1118. In *Archaeological Investigations in Dinosaur National Monument, 1964-1965*, edited by David Breternitz, pp. 55–73. University of Colorado, Boulder.

Birkeland, P.W. 1999. Soils and Geomorphology. Oxford University Press, New York, 3rd Edition.

Bradley, W.H. 1964. Geology of Green River Formation and associated Eocene rocks in southwestern Wyoming and adjacent parts of Colorado and Utah. U.S. Geological Survey Professional Paper 496-A, 84 pages.

Bringhurst, Newell G. 2012. Brigham Young. In *Utah History Encyclopedia*. Online ed. University Press, Salt Lake City, Utah. Available online at: http://www.uen.org/utah_history_encyclopedia /y/YOUNG_BRIGHAM.html. Accessed April 27, 2015.

Brown, Bryan T. 1993. Winter Foraging Ecology of Bald Eagles in Arizona. *The Condor* Vol. 95, No. 1 (Feb., 1993), pp. 132-138 Published by: University of California Press Article Stable. Available at: URL:http://www.jstor.org/stable/1369394.

Bureau of Economic Analysis. 2015. Average Earnings by Industry for Duchesne, Uintah, and Rio Blanco Counties.

Bureau of Land Management (BLM). 1986a. BLM Manual H-8410-1: Visual Resource Inventory.

_____. 1986b. BLM Manual 8431: Visual Resource Contrast Rating.

_____. 1992. BLM Solid Minerals Reclamation Handbook H-3042-1. Available at http://www.ntc.blm.gov/krc/uploads/239/Solid%20Minerals%20Reclamation%20Handbook%20 H-3042-1.pdf

_____. 1998. BLM General Procedural Guidance for Paleontological Resource Management Handbook H-8270-1.

_____.2001. BLM. A Cooperative Plan for Black-footed Ferret Reintroduction and Management. Located at: http://www.blm.gov/pgdata/etc/medialib/blm/co/programs/oil_and_gas/Lease_Sale.Par.11136.File.dat/Wolf_Creek_Black-footed_Ferret_Management_Plan.pdf. Accessed on September 25, 2015.

_____. *2005a. Final Environmental Impact Statement and Record of Decision for Castle Peak and Eight Mile Flat Oil and Gas Expansion Project: Newfield Rocky Mountains Inc. BLM/UT- 080-2002-168. BLM Vernal Field Office, Vernal, Utah. Fall 2005.*

_____. 2005b. The BLM Land Use Planning Handbook (BLM Handbook H-1601-1).

_____.2005c. Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic EIS.

_____. 2006a. Best Management Practices for Raptors and Their Associated Habits in Utah.

_____. 2006b. Vernal Field Office Raptor Nest GIS Layer. Unpublished Data. BLM Vernal Field Office, Vernal, Utah.

_____.2006c. JMH CAP FACTS – Big Game. Located at: http://www.blm.gov/style/medialib/ blm/wy/field-offices/rock_springs/jmhcap/rod/factsheets.Par.26468.File.dat/big_game.pdf. Accessed on September 25, 2015.

BLM. 2007. Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, The Gold Book. BLM/WO/ST-06/021+3071/REV 07. Denver, Colorado.

_____. 2008a. Approved Resource Management Plan Amendments/Record of Decision (ROD) for Oil Shale and Tar Sands Resources to Address Land Use Allocations in Colorado, Utah, and Wyoming and Final Programmatic Environmental impact Statement. BLM-WO-GI-09-001-3900. November 2008.

_____. 2008b. Bureau of Land Management Handbook H-1790-1: Bureau of Land Management National Environmental Policy Act. Bureau of Land Management National Environmental Policy Act Program. Office of the Assistant Director, Renewable Resources Planning, Washington, D.C.

_____.2008c. Chapita Wells-Stagecoach Area Natural Gas Development Final EIS http://www.blm.gov/ut/st/en/fo/vernal/planning/nepa_/Chapita_Wells.html

_____. 2008d. Greater Deadman Bench Final EIS. Prepared January 2008. Available at http://www.blm.gov/ut/st/en/fo/vernal/planning/nepa_/greater_deadman_bench.html

_____. 2008e. Programmatic Environmental Impact Statement, Designation of Energy Corridors on Federal Land in the 11 Western States DOE/EIS-0386.

_____. 2008f. Record of Decision and Approved Resource Management Plan. Vernal Field Office, Vernal, Utah.

_____. 2008g. Scientific Inventory of Onshore Federal Lands' Oil and Gas Resources and Reserves and the Extent and Nature of Restriction or Impediments to Their Development: Phase II Inventory – Onshore United States.

_____. 2009. Green River District Reclamation Guidelines. BLM National Science and Technology Center.

_____. 2011a. Greater Sage-grouse Interim Management Policies and Procedures. Available at: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2012/IM_2012-043.html. Accessed on: April 28, 2015

_____. 2011b. Vernal Field Office Visual Resource Inventory. Vernal Field Office, Vernal, Utah.

_____. 2012a. Fact Sheet on the Bureau of Land Management's Management of Livestock Grazing. Available at: http://www.blm.gov/wo/st/en/prog/grazing.html. Accessed on: November 19, 2012.

_____. 2012b. Gasco Energy Inc. Uinta Basin Natural Gas Development Project, Final Environmental Impact Statement. UT-080-06-253 FES 12-5. United States Department of the Interior, Bureau of Land Management, Vernal Field Office. Vernal, Utah. Dated March 2012.

_____.2012c. Greater Natural Buttes Final EIS. Prepared March 2012. Available at: http://www.blm.gov/ut/st/en/fo/vernal/planning/nepa_.html

_____.2012d. Greater Sage-Grouse Interim management Policies and Procedures. Located at: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2012/IM_2012-043.html. Accessed on September 10, 2015.

BLM.2012e. Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, prepared March 2012. Available at: http://www.blm.gov/style/medialib/blm/ut/vernal_fo.Par.57849.File.dat/GCW%20Cums%20TSD%2003-22-12%20final.pdf

_____. 2012f. National Greater-Sage Grouse Land Use Planning Strategy, Instruction Memorandum No. 2012-044.

_____. 2012g. Proposed Land Use Plan Amendments for Allocation of Oil Shale and Tar Sands Resources on Lands Administered by the BLM in Colorado, Utah, and Wyoming and Final Programmatic Environmental Impact Statement, BLM Document FES 12-41, Section 4.6, November 2012.

_____. 2012h.Proposed Land Use Plan Amendments for Allocation of Oil Shale and Tar Sands Resources on Land Administered by the BLM in Colorado, Utah and Wyoming and Final Environmental Impact Statement, Appendix G, November 2012.

_____.2012i. Utah State Office. GIS data.

_____.2012j. White River Draft Resource Management Plan/EIS for Oil and Gas Development. Available at: http://www.blm.gov/co/st/en/BLM_Programs/land_use_planning/rmp/white_river/ogdraftrmpa.html. _____. 2013a. Approved Resource Management Plan Amendments/Record of Decision (ROD) for Oil Shale and Tar Sands Resources to Address Land Use Allocations in Colorado, Utah, and Wyoming and Final Programmatic Environmental impact Statement. BLM-WO-GI-09-001-3900.

_____. 2013b. BLM's Strategic Plan for Migratory Bird Conservation. Available at: http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/im_attachments/2013.Par.65352.File.dat/IM2013-119_att1.pdf. Accessed on: July 17, 2015.

_____. 2013c. Enefit American Oil Utility Corridor Project Environmental Impact Statement Scoping Report. Prepared for BLM Vernal Field Office by Environmental Planning Group (EPG).

_____. 2014. Ecology of the Colorado Plateau. Available at: http://www.blm.gov/ut/st/en/prog/more/CPNPP/Ecology_of_the_Colorado_Plateau.html. Accessed on: April 26, 2015.

_____. 2015a. Final Environmental Impact Statement and Record of Decision for Castle Peak and Eight Mile Flat Oil and Gas Expansion Project: Newfield Rocky Mountains Inc. BLM/UT-080-2002-168. BLM Vernal Field Office, Vernal, Utah.

_____. 2015b. Manual 9113: Roads Manual (Public). Bureau of Land Management Manual Transmittal Sheet. Washington, D.C.

_____.2015c. Utah Greater Sage-Grouse Approved Resource Management Plan.BLM and USFS. 2015. Utah Greater Sage-Grouse: Proposed Land Use Plan Amendment and Final Environmental Impact Statement. Available at: http://www.blm.gov/ut/st/en/prog/planning/SG_RMP_rev/FEIS.html. Accessed on: July 14, 2015.

Burton, Doris Karren. 1996. *A History of Uintah County: Scratching the Surface*. Utah Centennial County History Series. Utah State Historical Society, Salt Lake City.

C

CH2M Hill 2012. Technical Memorandum, 25-year and 100-year Peak Flow Rates at the Enefit Site, Utah. Prepared for Enefit American Oil. November 5, 2012.

California Environmental Protection Agency, Air Resources Board (CARB) 2013. Mobile Source Emissions Inventory, EMFAC2011 On-Line Motor Vehicle Emissions Model, Available at: http://www.arb.ca.gov/msei/modeling.htm. Updated January 2013.

Call, M.W. and C. Maser. 1985. Wildlife habitats in managed rangeland—the Great Basin of southeastern Oregon—Sage Grouse. U.S. Forest Service Technical Report PNW-187. 30 pp.

Cashion, W.B. 1974. Geologic map of the Southam Canyon quadrangle, Uintah County, Utah. U.S. Geological Survey, Miscellaneous Field Studies Map MF-579, scale 1:24,000.

_____. 1977. Geologic map of the Weaver Ridge quadrangle, Uintah County, Utah and Rio Blanco County, Colorado. U.S. Geological Survey, Miscellaneous Field Studies Map MF-824, scale 1:24,000.

_____. 1978. Geologic map of the Walsh Knolls quadrangle, Uintah County, Utah and Rio Blanco County, Colorado. U.S. Geological Survey, Miscellaneous Field Studies Map MF-1013, scale 1:24,000.

_____. 1986. Geologic map of the Bonanza quadrangle, Uintah County, Utah. U.S. Geological Survey, Miscellaneous Field Studies Map MF-1865, scale 1:24,000.

Carlson, C.A., C.G. Prewitt, D.E. Snyder, E.J. Wick, E.L. Ames, and W.D. Fronk. 1979. Fishes and macroinvertebrates of the White and Yampa Rivers, Colorado. Final Report prepared for The Bureau of Land Management. Colorado State University, Fort Collins, CO.

Center for Climate Strategies (CCS). 2007. Utah Greenhouse Gas Inventory and Reference Case Projections, 1990 – 2020. UDEQ Center for Climate Strategies, Spring 2007.

Center for Native Ecosystems. 2006. Black-tailed Prairie Dog. Available at: http://www.nativeecosystems.org/species/black-tailed-prairie-dog/index_html/. Accessed on: August 11, 2006 and April 24, 2015.

City of Meeker. 2015. Police Department Statistics. Available at http://www.townofmeeker.org/meeker-police-department/

Colorado Natural Heritage Program (CNHP). 2005. Viewable List of Ecological System Documents. Available at http://www.cnhp.colostate.edu/download/projects/eco_systems/eco_systems.asp

_____. 2007. Rocky Mountain Lower Montane Foothill Shrubland Ecological System *Ecological Integrity Assessment.* Available at http://www.cnhp.colostate.edu/download/documents/2007/RM_Lower_Montane-Foothill_Shrubland_EIA.pdf

Colorado River Fish and Wildlife Council. 2004. Rangewide conservation agreement for roundtail chub *Gila robusta*, bluehead sucker *Catostomus discobolus*, and flannelmouth sucker *Catostomus latipinnis*. Utah Department of Natural Resources, Salt Lake City.

Cordell, K. H. et al. 2008 Off-Highway Vehicle Recreation in the United States and its Regions and States: An Update National Report from the National Survey on Recreation and the Environment (NSRE). Available at: http://www.fs.fed.us/recreation/programs/ohv/IrisRec1rpt.pdf, Accessed on: October 30, 2013.

Cornell 2013. Birds of North America, Cornell Lab of Ornithology. Available at http://www.birds.cornell.edu/Page.aspx?pid=1478

Council of Environmental Quality, Environmental Justice: Guidance Under the National Environmental Policy Act, December 1997.

Council of Environmental Quality. 2014. Revised Guidance on Consideration of Greenhouse Gas Emissions and Climate Change in NEPA Reviews. U.S. Department of Energy, Office of NEPA Policy and Compliance. December 18, 2014.

Covington, Robert E. 1964. A Brief History of Early Mineral Exploration in the Uinta Basin. In Guidebook to the Geology and Mineral Resources of the Uinta Basin: Utah's Hydrocarbon Storehouse: Thirteenth Annual Field Conference, edited by Edward F. Sabatka, pp. 1–16. Intermountain Association of Petroleum Geologists, Salt Lake City, Utah. Available online at: http://content.lib.utah.edu/utils/getfile/collection/ir-eua/id/2872/filename/2775.pdf. Accessed April 27, 2015.

D

Day, Kent C. 1964. Thorne Cave, Northeastern Utah: Archaeology. *American Antiquity* 30(1):50–59.

Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, P. A. Rabie, and B. R. Euliss. 1999 (revised 2002). Effects of management practices on grassland birds: burrowing owl. Northern Prairie Wildlife Research Center, Jamestown, ND.

Dillehay, Tom D. 2000. *The Settlement of the Americas: A New Prehistory*. Basic Books, New York.

Dodge, R., and W. Yates. 2009. *2009 Status Report Demographic Monitoring and Pollination Biology for* Penstemon scariosus *var.* albifluvis *and* Penstemon grahamii *in Uintah County, Utah*. Prepared for Bureau of Land Management, Utah State Office, Salt Lake City.

_____ . 2010. *2010 Status Report Demographic Monitoring and Survey for* Penstemon scariosus *var.* albifluvis *and* Penstemon grahamii *in Uintah County, Utah.* Prepared for Bureau of Land Management, Utah State Office, Salt Lake City.

Dunrud, C.R. and F.W. Osterwald. 1980. Effects of coal mine subsidence in the Sheridan, Wyoming, Area. U.S. Geological Survey Professional Paper 1164, 49 pages.

Dynamac Corporation. 2002. Final well sampling and ana lysis report, Bird's-Nest Aquifer, White River Oil Shale Reserve, Uintah County, Utah. Prepared for U.S. Department of Interior, Bureau of Land Management, Utah State Office, BLM Contract No. 1422-N660-C98-3003. 32 pp.

E

Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1988. The Birder's Handbook: A Field Guide to the Natural History of North American Birds. New York: Simon and Schuster, Inc.

Elliot, A.H. and K.M. Harty. 2010. Landslide maps of Utah, Seep Ridge 30’ x 60’ Quadrangle. Utah Geological Survey Map 246DM.

Embry, Jessie L. 1996. *A History of Wasatch County*. Utah Centennial County History Series. Utah State Historical Society, Salt Lake City, Utah.

Enefit American Oil. 2014a. Detailed Plan of Development for Enefit American Oil’s Utility Corridor Project. Sub`mitted to BLM in April, 2014.

_____. 2014b. White River Crossing Technical Pre-Feasibility Study. Prepared by Bowen Collins & Associates Inc for Enefit American Oil. Job No. 393-14-01 September 2014.

_____. 2015a. Response to Data Gaps, March 22, 2015a.

_____. 2015b. Response to Data Gaps, April 16, 2015b.

Environmental Protection Agency (EPA). 1995. Compilation of Air Pollutant Emission Factors, Vol. 1: Stationary Point and Area Sources. Office of Air Quality Planning and Standards, EPA Document AP-42, January 1995. Recent updates provided on U.S. EPA, Technology Transfer NetworkClearinghouse for Inventories & Emissions Factors Database. Available at: http://www.epa.gov/ttn/chief/.

_____. 2008. Notice of Data Availability on Spent Oil Shale from Above Ground Retorting Operations. 73 Fed. Reg. 79,089, December 24, 2008.

_____. 2009. Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act. Available at http://www3.epa.gov/climatechange/endangerment/comments/volume9.html

_____. 2010. Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule. 75 Fed. Reg. 31,514, June 3, 2010.

_____. 2014a. Memorandum: Next Steps for Addressing EPA-Issued Step 2 PSD Greenhouse Gas Permits and Associated Requirements. EPA Office of Air and Radiation, December 19, 2014.

_____. 2014b. Memorandum: No Action assurance regarding EPA-Issued Step2 PSD Permits and Related Title V Requirements Following Utility Air Regulatory Group v. Environmental Protection Agency. EPA Enforcement and Compliance, December 19, 2014.

_____. 2014c. Fact Sheet - Final Rule: 40 CFR part 98,Addition of Global Warming Potentials to the general Provisions and Amendments and Confidentiality Determinations for Fluorinated Gas Production. November 2014. Available at: http://www.epa.gov/ghgreporting/index.html.

_____. 2015a. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2013. EPA Document EPA-R-15-04. April 15, 2015.

EPA. 2015b. Facility Level Information on Greenhouse Gases Tool (FLIGHT) Available at. http://ghgdata.epa.gov/ghgp/main.do. Accessed on: April 2015.

_____. 2015c. AirData Monitor Values Report website, locations selected in Vernal Utah and Uinta Basin. Available at: http://www.epa.gov/airdata/ad_rep_mon.html. Accessed on: April 2015.

Environmental Planning Group (EPG) 2015a. Memorandum of Conversation. Phone call on July 9, 2015.

_____. 2015b. Memorandum of Conversation. Emails on July 16, 2015.

_____. 2015c. Memorandum of Conversation. Emails on July 15, 2015.

F

Fagan, Brian M. 1991. Ancient North America: the Archaeology of a Continent. Thames & Hudson, New York.

Federal Energy Regulatory Commission. 2013. Wetland and Waterbody Construction and Mitigation Procedures. May 2013

Fiedel, Stuart J. 1992. *Prehistory of the Americas*. Cambridge University Press, New York.

Finch, D . M. 1991. Population ecology habitat requirements, and conservation of Neotropical migratory birds. U.S. Forest Service General Technical Report RM-205, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.

Frison, George C. 1991. *Prehistoric Hunters of the High Plains*. Second Edition. Academic Press, New York.

G

Gasco Energy, Inc. 2011. Ambient Air Quality Impact Analysis, Uinta Basin Natural Gas Development Project Environmental Impact Analysis, Appendix R, September 2011.

Glisson, B. 2012. Initial Assessment and Field Studies: *Townsendia strigosa* var. *prolixa* (M. E. Jones) S.

Goodrich, S., and E. Neese. 1986. Uinta Basin Flora. U.S. Forest Service, Intermountain Region, Ogden.

Grayson, Donald K. 1993. *The Desert's Past: A Natural Prehistory of the Great Basin*. Smithsonian Institution Press, Washington, D.C.

GSBS Richman Consulting, “Baseline Community Analysis Enefit American Oil”, April 4, 2014.

H

Hamblin, A.H., W.A.S. Sarjeant, D.A.E. Spalding. 1999. Pp. 443-454 *In* Gillette, D.D. (Ed.) Vertebrate Paleontology in Utah. Utah Geological Survey Miscellaneous Publication 99-1.

Hampshire, David, Martha Sonntag Bradley and Allen D. Roberts. 1998. *A History of Summit County*. Utah Centennial County History Series. Utah State Historical Society, Salt Lake City, Utah.

Hayward, C. L., Cottam, C., Woodbury, A. M., and Frost, H. H. 1976. Birds of Utah. Great Basin Naturalist Memoirs 1: 1-229.

Henry JA. 1998. Composition and Toxicity of Petroleum Products and Their Additives. Feb; 17(2):111-23. PMID: 9506262

Hilton, George W. 1990. *American* Narrow *Gauge Railroads*. Stanford University Press, Stanford, California.

I

Institute of Education Sciences. 2015. Education Data Analysis Tool, Search for Schools and Colleges. Available at: http://nces.ed.gov/globallocator/. Accessed on: April 10, 2015.

Institute of Electrical and Electronics Engineers. 2012. National Electrical Safety Code ANSI C2. Available at https://standards.ieee.org

J

Janetski, Joel C. 1994. Recent Transitions in the Eastern Great Basin: The Archaeological Record. In *Across the West: Human Population Movement and the Expansion of the Numa*, edited by David B. Madsen and D. Rhode, pp. 157−178. University of Utah Press, Salt Lake City.

Jennings, Jesse D., Alan R. Schroedl and R. N. Holmer. 1980. *Sudden Shelter*. University of Utah Anthropological Papers No. 103. University of Utah Press, Salt Lake City.

Johnsgard, P. 1981. The Plovers, Sandpipers, and Snipes of the World. Univ. Nebraska Press, Lincoln, Nebraska

Johnson, Clay and Byron Loosle. 2002. *Prehistoric Uinta Mountain Occupations*. Heritage Report 2-02/2002, Ashley National Forest, Intermountain Region, USDA Forest Service, Vernal, Utah.

Johnson, T. C., J. D. Halfman and William J. Showers. 1991. Paleoclimate of the Past 4000 Years at Lake Turkana, Kenya, Based on the Isotopic Composition of Authigenic Calcite. *Palaeogeography, Palaeoclimatology, Palaeoecology* 85:189–198.

K

Kaufman, K. 1996. Lives of North American Birds. Boston: Houghton Mifflin.

Keyser and Lantz, “Economic Development from New Generation and Transmission Development in Colorado and Wyoming”, National Renewable Energy Lab, NREL/TP-6A20-57411, March 2013.

Kihm, A.J. 1984. Early Eocene mammalian faunas of the Piceance Creek Basin, northwestern Colorado. University of Colorado, Ph.D dissertation.

Kimball, B.A. 1981. Geochemistry of spring water, southeastern Uinta Basin, Utah and Colorado. U.S. Geological Survey Water-Supply Paper 2074, 30 p.

Kimball and Holmes 1987. Ground Water in the Southeastern Uinta Basin, Utah and Colorado. U.S. Geological Survey Water-Supply Paper 2248. 55 p.

Kingery, H. E. 1996. American Dipper (Cinclus mexicanus). In The birds of North America, No. 229 (A. Poole and F. Gill, editors). The Academy of Natural Sciences, Philadelphia, Pennsylvania, and the American Ornithologists' Union, Washington, D.C.

Kruger. 2002. Analysis of nest occupancy and nest reproduction in two sympatric raptors: common buzzard *Buteo buteo* and goshawk *Accipiter gentilis*

Kufeld, R.C. 1973. Foods eaten by the Rocky Mountain elk. Journal of Range Management 26:106–113.

L

Lamb, Sydney. 1958. Linguistic Prehistory in the Great Basin. *International Journal of American Linguistics* 24(2):95–100.

Lanigan, S. H. and C. R. Berry. 1981. Distribution of fishes in the White River, Utah. The Southwestern Naturalist 26(4): 389-393.

Leach, Larry L. 1970. Archaeological Investigations at Deluge Shelter in Dinosaur National Monument. Ph.D. dissertation, Anthropology Department, University of Colorado, Boulder.

Lechert, Stephanie; Gillian Edwards, Jesse Kisman, Sahra Jones, Erik Martin, Sara Meess, Kristine Kisman, and Lisa Benson. 2013. *Class III Cultural Resources Inventory of the Utah Oil Shale project, in Uintah County, Utah*. Utah State Project No. U-013-ST-0140b,p,s. Prepared by SWCA Environmental Consultants., Salt Lake City. Submitted to Bureau of Land Management, Vernal Field Office, Vernal. Copies available from the Division of State History, Utah State Historic Preservation Office, Salt Lake City.

Lewinsohn, J., and V. J. Tepedino. 2007. Breeding Biology and Flower Visitors of the Rare White River Penstemon, *Penstemon scariosus* var. *albifluvis* (Scrophulariaceae). *Western North American Naturalist* 67:232–237.

Lindskov K.L. and B.A. Kimball, 1984. Water Resources and Potential Hydrologic Effects of Oil-Shale Development in the Southeastern Uinta Basin, Utah and Colorado. U.S. Geological Survey Professional Paper 1307.

Loosle, Byron, Clay Johnson, L. Ingram, D. Pugh and K. Wilson. 2000. *Dutch John Excavations: Seasonal Occupations on the North Slope of the Uinta Mountains*. Heritage Report 1-01, United States Department of Agriculture, Forest Service, Intermountain Region-Ashley National Forest, Washington, D.C. Copies available from Utah Division of State History.

Lucas, S.G. and A.J. Kihm. 1982. Paleontological resource study and inventory of part of the White River Resource Area and Vicinity, Piceance Creek Basin, northwestern Colorado. ESCA-Tech Corporation.

Luce, R. L., M. A. Bogan, M. J. O'Farrell, and D. A. Keinath. 2004. Species assessment for spotted bat (Euderma maculatum) in Wyoming. Prepared for the BLM Wyoming State Office, Cheyenne, Wyoming. January 2004.

M

Madsen, David B. and Steven R. Simms. 1998. The Fremont Complex: A Behavioral Perspective. *Journal of World Prehistory* 12(3):255–336.

Maffly, Brian. 2014. Better Pollution controls coming to Bonanza Power Plant in rural Utah. Salt Lake Tribune.

Manning, A.E. E., and C.M. White. 2001. Breeding biology of mountain plovers (*Charadrius montanus*) in the Uinta Basin. Western North American Naturalist 61(2):223–228.

Manville, A.M., II. 2009. Towers, turbines, power lines, and buildings – steps being taken by the U.S. Fish and Wildlife Service to avoid or minimize take of migratory birds at these structures. *In* C.J. Ralph and T.D. Rich (editors). Proceedings 4th International Partners in Flight Conference, February 2008, McAllen, TX.

Marwitt, John P. 1986. Fremont Cultures. In *Great Basin*, edited by W. L. d'Azevedo, pp. 161−172. Handbook of North American Indians, Vol. 11.

May, Dean L. 1987. *Utah: A People's History*. University of Utah Press, Salt Lake City.

Moussa, M.T. 1968. Fossil Tracks from the Green River Formation (Eocene) near Soldier Summit, Utah. Journal of Paleontology 42(6):1433-1438.

Murphey, P.C. and D. Daitch. 2007. Paleontological overview of oil shale and tar sands areas in Colorado, Utah, and Wyoming. Argonne National Laboratory, 142 pages plus Appendices. Prepared for the Bureau of Land Management.

N

Naples City. Naples City Police Department Website. Available at: http://www.naplescityut.gov/index.php?option=com_content&view=category&id=52&Itemid=51. Accessed on: July 2, 2015.

National Agriculture Imagery Program (NAIP). 2011a. Gilsonite Mines in Utah.

NAIP. 2011b. Roads and Railroads.

NatureServe. 2007. Encyclopedia of life. Available at: http://www.natureserve.org/explorer.

Neese & Welsh 1986. *Yucca harrimaniae* Trelease var. *sterili.* Great Basin Naturalist 45(4): 789-790.

Newton, Virginia. 2001. The Questar, Williams, and Kern River Pipeline Project: Native American Consultation and Identification of Traditional Cultural Places. SWCA Cultural Resources Report No. 00-206. Prepared by SWCA, Environmental Consultants, Salt Lake City, Utah. Submitted to Bureau of Land Management. Copies available from Utah State Historic Preservation Office, Salt Lake City.

NRCS. 2003. Soil survey of Uintah Area, Utah-parts of Daggett, Grand, and Uintah counties. United States Department of Agriculture, 1412 pages.

O

Office of Legislative Research and General Counsel. 2012. Utah's Population Growth: State, County, and City Changes 2000-2010. Available at: http://le.utah.gov/lrgc/briefings/2012.Jan. CensusPopulationFinal.pdf. Accessed April 11, 2015.

Oliver, G.V. 2000. The Bats of Utah, A Literature Review. Publication Number 00–14. Prepared for Utah Reclamation Mitigation and Conservation Commission and the U. S. Department of the Interior. Department of Natural Resources, Division of Wildlife Resources—Utah Natural Heritage Program.

Omernik, J.M. 1987. Ecoregions of the conterminous United State. Map (scale 1:7,500,000). Annals of the Associats of American Geographers 77(1):118-125.

P

Papanikolas, Helen Z. (editor). 1976. *The Peoples of Utah*. Utah State Historical Society, Salt Lake City.

Parrish, J. R., F. P. Howe, and R. E. Norvell. 2002. Utah Partners in Flight Avian Conservation Strategy Version 2.0. Utah Division of Wildlife Resources Publication Number 02-27. Salt Lake City, Utah.

Patterson, Jody J., Adam Thomas, Roger Stash and John Fritz. 2011. *Gasco Energy's Uinta Basin Natural Gas Development Project Class I Cultural Resource Literature Review*. Prepared by Montgomery Archaeological Consultants, Inc. Moab, Utah. Prepared for Bureau of Land Management, Vernal Field Office Copies available from Bureau of Land Management, Vernal Field Office

Patterson, Roger, Utah State Tax Commission, Personal Communication, December 7, 2009.

Peterson, M.D., A.D. Frankel, S.C. Harmsen, C.S. Mueller, K.M. Haller, R.L. Wheeler, R.L. Wesson, Y. Zeng, O.S. Boyd, D.M. Perkins, N. Luco, E.H. Field, C.J. Wills, and K.S. Rukstales. 2008. Documentation for the 2008 Update of the United States National Seismic Hazard Maps: U.S. Geological Survey Open-File Report 2008-1128, 61 pages.

Pipeline and Hazardous Materials Safety Administration. Pipeline Incident Report for 1994-2014. Located http://www.phmsa.dot.gov/pipeline/library/data-stats Accessed July 31, 2015

Pioneers Medical Center. 2015. Pioneers Medical Center Website. Available at: http://pioneershospital.org/services. Accessed on: April 10, 2015.Poll, Richard D., Thomas G. Alexander, Eugene E. Campbell and David E. Miller. 1989. *Utah's History*. Utah State University Press, Logan.

POWER Engineers. 2013. Personal communication to EPG from Rocky Mountain power regarding the Energy Gateway South Project Manpower Schedule, Project Duration Schedule, and Alternative Route Estimates. February 27, 2013, and March 12, 2013.

POWERmap Platts. 2009. GIS shapefile depicting transmission lines and substations throughout the project area boundary.

Ptacek, J.A., D.E. Rees, and W.J. Miller. 2005. Bluehead Sucker (*Catostomus discobolus*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available at: http://www.fs.fed.us/r2/projects/scp/assessments/blueheadsucker.pdf. Accessed on: April 28, 2015.

R

Radbruch-Hall, D.H., R.B. Colton, W.E. Davies, I. Lucchitta, B.A. Skipp, and D.J. Varnes. 1982. Landslide overview map of the conterminous Unites States. U.S. Geological Survey Professional Paper 1183 Available at: http://pubs.usgs.gov/pp/p1183/pp1183.html#northernr.

Rasmussen, D.T., G.C. Conroy, A.R. Friscia, K.E. Townsend, and M.D. Kinkel. 1999. Pp. 401-420 *In* Gillette, D.D. (Ed.) Vertebrate Paleontology in Utah. Utah Geological Survey Miscellaneous Publication 99-1.

Rangely District Hospital. 2015. Rangely District Hospital Webiste. Available at: http://www.rangelyhospital.com/getpage.php?name=services&sub=Static. Accessed on: April 10, 2015.

City of Rangely. 2015. City of Rangely Website. Available at: http://www.rangely.com/police.htm. Accessed on: April 10, 2015.

Reisor, R., and W. Yates. 2011. *2011 Status report demographic monitoring and survey for* Penstemon scariosus *var.* albifluvis *and* Pentemon grahamii *in Uintah County, Utah*. Prepared for Bureau of Land Management, Utah State Office, Salt Lake City, Utah.

Robinson, P., G.F. Gunnell, S.L. Walsh, W.C. Clyde, J.E. Storer, R.K. Stucky, D.J. Froehlich, I.F. Villafranca, and M.C. McKenna. 2004. Wasatchian through Duchesnean Biochronology. Pp. 106-155. *In* Woodburne, M.O. (Ed.) Late Cretaceous and Cenozoic Mammals of North America. Columbia University Press.

Roehler, H.W. 1991. Revised stratigraphic nomenclature for the Wasatch and Green River Formations of Eocene age, Wyoming, Utah, and Colorado. U.S. Geological Survey Professional Paper 1506-B, 38 pages.

Romin and Muck. 2002. Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances. Prepared for U.S. Fish and Wildlife Service, Utah State Field Office. Available at http://www.fws.gov/utahfieldoffice/Documents/MigBirds/Raptor%20Guidelines%20(v%20March%2020,%202002).pdf

Rowland, M. M. 2004. Effects of management practices on grassland birds: Greater Sage-Grouse. Northern Prairie Wildlife Research Center, Jamestown, ND.

Rowley, P.D., W.R. Hansen, O. Tweto, and P.E. Carrara. 1985. Geological map of the Vernal 1 degree by 2 degrees quadrangle, Colorado, Utah, and Wyoming. U.S. Geological Survey Miscellaneous Investigations Series I-1526, I sheet (scale 1:250,000).

Ryser, Jr., Fred A. 1985. Birds of the Great Basin. University of Nevada Press, Reno.

S

South Coast Air Quality Management District (SCAQMD). 1993 [2008]. CEQA Handbook, Tables A9-8, Off-road Mobile Source Emission Factors. Available at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/off-road-mobile-source-emission-factors. Accessed on: April 2015.

_____. 2007. CEQA Handbook, Tables A9-5, EMFAC Model (v2.3) Emission Factors for On-Road Passenger Vehicles and Delivery Trucks. Available at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/emfac-2007-(v2-3)-emission-factors-(on-road). Accessed on: April 2015.

_____. 2011. On-road vehicle emission factor model (EMFAC). Available at http://www.arb.ca.gov/msei/workshop-meetings.htm

Spangler, Jerry D. 1995. Paradigms and Perspectives: A Class I Overview of Cultural Resources in the Uinta Basin and Tavaputs Plateau Vol. 2. 3 vols. Uinta Research, Salt Lake City.

_____. 2002. Paradigms and Perspectives Revisited: A Class I Overview of Cultural Resources in the *Uinta Basin and Tavaputs Plateau.* Prepared by Jerry D. Spangler, Uinta Research, Salt Lake City, Utah. Prepared for Bureau of Land Management, Vernal Field Office. Submitted to Bureau of Land Management, Vernal District, Vernal, Utah. Copies available from Uinta Research, Ogden, Utah.

Stantec Consulting Services Inc. 2012. Water supply pipeline alignment alternatives study – Bonanza Power Plant to Enefit Plant. Prepared by Stantec for Enefit American Oil in September 2012.

State of Colorado. 2015. Department of Local Affairs. Geographies: Rio Blanco County, Colorado. Available at: http://www.colorado.gov/cs/. Accessed on: April 8, 2015.

State of Utah. 2011. Use of Off-Highway Vehicles within State Highway Rights of Way. Available at http://www.udot.utah.gov/main/uconowner.gf?n=10465505180314324

_____. 2013. Utah Automated Geographic Reference Center (ARGC). Utah Department of Oil, Gas, and Mining map found at this website: http://mapserv.utah.gov/oilgasmining//

State of Utah. 2015a. Duchesne County Sherriff's Department website. Available at: http://duchesne.utah.gov/government/public-safety/sheriffs-office.html?start=1. Accessed on: April 10, 2015.

_____. 2015b. Governor's Office of Management and Budget. Geographies: Uintah County, Duchesne County, Utah. Available at: http://gomb.utah.gov/budget-policy/demographic-economic-analysis/ . Accessed on: April 8, 2015.

_____. 2015c. Website. Available at: http://duchesne.utah.gov/government/emergency-management/volunteer-fire-fighter-service.html. Accessed on: April 10, 2015.

State of Utah School and Institutional Trust Lands Administration, et al (SITLA). 2014. Conservation Agreement and Strategy for Graham's Beardtongue (Penstemon Grahamii) and White River Beardtongue (P. scariosus var. albifluvis). Prepared by SWCA in April 2014.

_____. 2013. GIS information.

Steward, Julian H. 1940. Native Cultures of the Intermontane (Great Basin) Area. In *Essays in Historic Anthropology of North America, published in honor of John R. Swanton*, pp. 445–502. Smithsonian Miscellaneous Collections No. 100, Washington D.C.

SWCA. 2013a. Soils and Geology Technical Report, Prepared for Enefit American Oil.

_____. 2013b. Paleontological Technical Report for the Enefit Utah Shale Project, Bureau of Land Management Lands, Uintah County, Utah, Prepared for Enefit American Oil.

_____. 2013c. Revised Visual and Noise Resources Technical Report. Salt Lake City, Utah.

_____. 2013d. Delineation of Waters of the U.S. and State of Utah for Enefit Oil Shale Mining and Production Complex, Uintah County, Utah.

_____. 2013e General vegetation characterization and noxious weeds inventory technical report. Prepared for Enefit American Oil. July 2013 110 pp.

_____. 2013f. Special Status Plant Species Technical Report. Prepared for Enefit American Oil.

_____. 2013g. Class III Cultural resources inventory of the Utah Oil Shale Project in Uintah County, Utah. Prepared for Enefit American Oil in July 2013.

_____. 2013h. Paleontological technical report for the Enefit Utah Oil Shale Project. Bureau of Land Management Lands, Uintah County, Utah. Prepared for Enefit American Oil in July 2013.

_____. 2013i Special status wildlife species technical report. Prepared for Enefit American Oil in July 2013.

_____. 2013j. Wildlife habitat characterization technical report. Prepared for Enefit American Oil in July 2013. 42pp.

_____. 2015. Conservation Agreement and Strategy for Graham's Beardtongue (Penstemon grahamii) and White River Beardtongue (P. scariosus var. albifluvis)

Swedlund, Alan and Duane Anderson. 1999. Gordan Creek Woman Meets Kennewick Man: New Interpretations and Protocols Regarding the Peopling of the Americas. *American Antiquity* (64):569–576.

T

Tepedino, V.J., T.L. Griswold, and W.R. Bowlin. 2010. Reproductive biology, hybridization, and flower visitors of rare *Sclerocactus* taxas in Utah's Uinta Basin. Western North American Naturalist 70(3):377–386.

Town of Meeker. 2015. Town of Meeker Website. Available at: http://www.townofmeeker.org/meeker-police-department/. Accessed on: April 10, 2015.

U

Uinta Basin Winter Ozone Study (UBWOS). 2013. 2012 Uinta Basin Winter Ozone & Air Quality Study. Utah State University. February 1, 2013.

_____. 2014. 2013 Uinta Basin Winter Ozone Study. UDEQ Division of Air Quality. March 2014.

_____. 2015. 2014 Uinta Basin Winter Ozone Study. UDEQ Division of Air Quality. February 2015.

Uintah Basin Healthcare. 2015. Uintah Basin Healthcare Website. Available at: http://www.ubmc.org/getpage.php?name=services&child=Services. Accessed: April 10, 2015.

Uintah County. 2005. Uintah County, Utah General Plan. Uintah County Commission, Vernal, Utah.

_____. 2010. Uintah County Land Use Plan. Uintah County Commission, Vernal, Utah.

Uintah County, Utah. 2015. Uintah County Emergency Management Website. Available at: http://www.co.uintah.ut.us/em/firedepts.php. Accessed on: April 10, 2015.

Uintah County Weed Department. 2010. Noxious Weed Identification Website. Available at: http://uintahweeds.org/weedID.html. Accessed on: April 28, 2015.

United States Supreme Court. 2014. Utility Air Regulatory Group v. Environmental Protection Agency, et al. Syllabus and Opinion of the Court, No. 12-1146. June 23, 2014.U.S. Army Corps of Engineers, Sacramento District. Jurisdictional Determination, Enefit Oil Shale Mining and Production Complex, SPK-2013-00678-UO, Non-RPW. Dated March 6, 2014.

U.S. Bureau of Economic Analysis (BEA). 2013a. Regional Data, Local Area Personal Income Statistics. Table: Total full and part-time employment by industry (CA25, CA25N). For Geographies: Uintah County, UT, Duchesne County, UT, Rio Blanco County, CO. Available at: http://www.bea.gov. Accessed on: April 8, 2015.

BEA. 2013b. Regional Data, Local Area Personal Income Statistics. Table: Local Area Personal Income and Employment (CA34). For Geographies: Uintah County, UT, Duchesne County, UT, Rio Blanco County, CO, Utah, Colorado. Available at: http://www.bea.gov. Accessed on: April 9, 2015.

_____. 2015. Personal Income by Major Component and Earnings by NAICS Industry, Table SA5N for Utah, 2014. Available at: http://www.bea.gov/. Accessed on: April 26, 2015.

_____. 2015. Bureau of Economic Analysis Regional Data. Personal Income and Employment Data http://www.bea.gov/regional/bearfacts/action.cfm?geoType=4&fips=08081&areatype=08081

U.S. Census Bureau. 2013. 2009 – 2013 American Community Survey 5-Year Estimates. For Geographies: Duchesne County, UT, Uintah County, UT, Rio Blanco County, CO, State of Utah, State of Colorado. Available at: http://factfinder2.census.gov. Accessed on: April 8, 2015.

U.S. Department of Labor. 2013. Bureau of Labor Statistics. Local Area Unemployment Statistics. Available at: http://data.bls.gov/pdq/SurveyOutputServlet. Accessed on: April 9, 2015.

Utah Department of Transportation (UDOT). 2006. Administrative Rule R930-6: Accommodation of Utilities and the Control and Protection of State Highway Rights of Way. Division of Project Development, Railroads and Utilities Section. Available at: http://le.utah.gov/UtahCode/ chapter.jsp?code=72. Accessed on: July 18, 2013.

_____. 2012. Standards and Specifications. Available at http://www.udot.utah.gov/main/f?p= 100:pg::::1:T,V:302

_____. 2012. Standards and Specifications. Available at: http://www.udot.utah.gov/main/f?p= 100:pg:0:::1:T,V:3686. Accessed on: November 12, 2013.

_____. 2013. Uintah Basin Energy Corridor Study. Available at: http://www.udot.utah.gov/projects/ f?p=250:2010:0::NO::P2010_EPM_PROJ_XREF_NO,P2010_PROJECT_TYPE_IND_FLAG:8539,A. Accessed on: May 1, 2015.

U.S. Environmental Protection Agency. 1994. Executive Order 12898 of February 11, 1994. Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations. Available at: http://www.archives.gov/federal-register/executive-orders/pdf/12898.pdf, Accessed on: September 1, 2014.

U.S. Environmental Protection Agency. 2010. Watershed Assessment, Tracking & Environmental Results. 2010 Waterbody Report for Evacuation Creek. Available at: http://ofmpub.epa.gov/ tmdl_waters10/attains_waterbody.control?p_list_id=UT14050007-003_00&p_state= UT&p_cycle=2010#causes. Accessed on: July 28, 2015.

U.S. Fish and Wildlife Service (FWS). 1983. Northern States Bald Eagle Recovery Plan. U.S. Fish and Wildlife Service, Denver, Colorado

_____. 2002a. Birds of Conservation Concern 2002. U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. Available at http://www.fws.gov/pacific /migratorybirds/pdf/BCC2002.pdf. Accessed on: April 28, 2015

_____. 2002b. Colorado Pikeminnow (*Ptychocheilus lucius*) Recovery goals: Amendment and Supplement to the Colorado Squawfish Recovery Plan. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado. August 1, 2002.

FWS. 2002c. Humpback chub (*Gila cypha*) Recovery goals: Amendment and Supplement to the Humpback Chub Recovery Plan. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado. August 1, 2002.

_____. 2002d. *Razorback Sucker (*Xyrauchen texanus*) Recovery Goals: Amendment and Supplement to the Razorback Sucker Recovery Plan*. Prepared for U.S. Fish and Wildlife Service, Region 6, Denver, Colorado.

_____. 2004. Species Profilefor Graham beardtongue. Available at http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q1DIUnited States White House. 2014. Fact Sheet: What Climate Change Means for Regions Across America and Major Sectors of the Economy – Utah and the Southwest. White House Office of the Press Secretary, May 6, 2014.

_____. 2007a. Critical Habitat Portal. Available at: http://criticalhabitat.fws.gov/crithab.

_____. 2007b. Removing the Bald Eagle in the Lower 48 States from the List of Endangered and Threatened Wildlife; Final Rule. Federal Register, 72: 37345-37372. July 9, 2007.

_____. 2008. Birds of Conservation Concern 2008. Arlington, Virginia: U.S. Fish and Wildlife Service

_____. 2009a. Available at: http://www.fws.gov/utahfieldoffice/Documents/Plants/Handouts/White%20River%20Beardtongue%20Fact%20Sheet.pdf. Accessed on: April 28, 2015.

_____. 2009b. Recovery Outline for the *Sclerocactus wetlandicus* (Uinta Basin Hookless Cactus). Utah Ecological Services Field Office. Available at: http://www.fws.gov/ecos/ajax/docs/recovery_plan/Sclerocactus%20wetlandicus%20recovery%20outline_final_Apr%202010.pdf. Accessed on: July 11, 2015.

_____. 2010. Black-footed Ferret (*Maustela nigripes*). Mountain Prairie Region. Available at: http://www.fws.gov/mountain-prairie/factsheets/Black-Footed-Ferret.pdf. Accessed on: July 14, 2015.

_____. 2011. Fish and Wildlife Service Determines the Mountain Plover Does Not Warrant Protection Under the Endangered Species Act. Located at: http://www.fws.gov/mountain-prairie/es/species/birds/mountainplover/PressRelease05112011.pdf. Acessed on September 25, 2015.

_____. 2013a. Descriptions of individual Utah sage-grouse populations emailed to Reid Persing, EPG Biologist, by Renee Chi, Bureau of Land Management Utah State Office Wildlife Biologist, regarding greater sage-grouse. April 23, 2013.

_____.2013b. Draft Recovery Plan for the Black-Footed Ferret. Second Revision. Available at http://www.fws.gov/mountain-prairie/species/mammals/blackfootedferret/2013DraftRevisedRecoveryPlan.pdf

_____. 2013c. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Graham's Beadrtongue (*Penstemon grahamii*) and White River Beardtongue (*Penstemon scariosus* var. *albifluvis*); Proposed Rule. *Federal Register* 7 (151):47832–47858.

FWS. 2014a. Ecological Restoration Mitigation Calculation Guidelines for Impacts to *Sclerocactus wetlandicus* and *Sclerocactus brevispinus* Habitat. Utah Ecological Field Office.

_____. 2014b. Humpback chub (*Gila cypha*). Nevade Fish and Wildlife Office Pacific Southwest Region. Available at: http://www.fws.gov/nevada/protected_species/fish/species/humpback_chub.html. Accessed on: July 15, 2015.

_____. 2015. Endangered Species Mountain-Prairie Region. Available at: http://www.fws.gov/mountain-prairie/species/plants/UintaBasinHooklessCactus/index.html. Accessed on: April 28, 2015.

U.S. Geologic Survey. 2005. Southwest Regional GAP Analysis Project—Land Cover Descriptions. RS/GIS Laboratory, College of Natural Resources, Utah State University

_____. 2006. The Mineral Industry of Utah. In *2006 Minerals Yearbook*. Pp. 47.3. Available at: http://minerals.er.usgs.gov/minerals/pubs/state/2006/myb2-2006-ut.pdf. Accessed April 27, 2015.

_____. 2015. Surface Water Monthly Statistics for USGS Site No. 09272400, Green River at Ouray, Utah. Monthly mean in cubic feet per second for June 1, 2009 through February 28, 2015. Available at: http://waterdata.usgs.gov/ut/nwis/dvstat/?site_no=09272400&por_09272400_2=2512893,00060,2. Accessed on: April 8, 2015

Utah Department of Administrative Services, Division of Administrative Rules. UAC R920-051: Federal Railroad Administration. Available at: http://www.rules.utah.gov/publicat/code/r920/r920-051.htm#T1. Accessed on: May 17, 2013.

_____. 2015 Executive Order Implementing the Utah Conservation Plan for Greater Sage Grouse. EO/2015/002. Available at:http://www.rules.utah.gov/execdocs/2015/ExecDoc156016.htm, Accessed on: June 23, 2015.

Utah Department of Environmental Quality (UDEQ). 2010. Rural Air Quality and Oil/Gas Development in Utah Fact Sheet. UDEQ Division of Air Quality, June 2010.

UDEQ. 2011. Statewide Emission Inventories: 2011 County Detail and State Summary, UDEQ Division of Air Quality, updated July, 15, 2014.

UDEQ. 2012. Oil and Gas Emission Inventory Workbook. Available at: www.airquality.utah.gov/Oil_and_Gas/Oil_Gas_EI_Workbook_Final_ Document.pdf.

_____. 2014 Draft Integrated Report, Chapter 5 303(d) List: Rivers and Streams. Available at: http://www.deq.utah.gov/ProgramsServices/programs/water/wqmanagement/assessment/currentIRoct.htm. Accessed on: July 28, 2015

_____. 2015. Utah Division of Air Quality 2014 Annual Report. UDEQ Division of Air Quality, March 2015.

Utah Division of Water Quality (UDWQ). 2014. 2012-2014 Integrated Report to EPA, 2014.

Utah Division of Water Resources 2015. Uintah Basin Planning for the Future, Draft. Prepared February 2015. Available at www.water.utah.gov

_____. 2008. Utah Water Quality Standards. Available at http://water.epa.gov/lawsregs/

UDWR. 1998. Inventory of Sensitive Species and Ecosystems in Utah. Inventory of Sensitive Vertebrate and Invertebrate Species: A Progress Report – Revised August 18, 1998. Prepared for Utah Reclamation Mitigation and Conservation Commission and the U.S. Department of the Interior, Cooperative Agreement UC-95-0015. Salt Lake City, Utah.

____. 2000. The Bats of Utah: A Literature Review by George V. Oliver. Prepared for the Utah Reclamation Mitigation and Conservation Commission and the U. S. Department of the Interior.UDWR Salt Lake City, Utah. Publication Number 00-14. April 28, 2000.

_____. 2002a. Strategic Management Plan for Sage-Grouse. Publication 02-20. State of Utah Department of Natural Resources, UDWR Salt Lake City, Utah.

_____. 2002b. Utah Conservation Data Center. UDWR Salt Lake City, Utah. Available at: http://dwrcdc.nr.utah.gov/ucdc.

_____. 2003. Vertebrate information compiled by the Utah Natural Heritage Program: A Progress Report. Publication number 03-45. State of Utah Department of Natural Resources, UDWR Salt Lake City, Utah. 336 pp.

_____. 2005. Utah Division of Wildlife Resources, Statewide Management Plan for Elk. Available at: http://ulpeis.anl.gov/documents/dpeis/references/pdfs/UDWR_2005.pdf. Accessed on: April 28, 2015.

_____. 2006. Utah Sensitive Species List. State of Utah Department of Natural Resources, UDWR Salt Lake City, Utah.

_____. 2007. Bison Herd Unit Management Plan. Book Cliffs, Bitter Creek and Little Creek. Herd Unit #10A AND #10C. Wildlife Board Approval November 29, 2007.

_____. 2008. Statewide Management Plan for Mule Deer. Available at: http://wildlife.utah.gov/hunting/biggame/pdf/mule_deer_plan.pdf. Accessed on: April 23, 2015.

_____. 2009. Utah Pronghorn Statewide Management Plan. Utah Division of Wildlife Resources, Department Of Natural Resources. Available at: http://wildlife.utah.gov/hunting/biggame/pdf/Statewide_prong_mgmt_2009.pdf.

_____. 2010. Utah Elk Statewide Management Plan. Utah Division of Wildlife Resources, Department of Natural Resources.

_____. 2011a. Utah Conservation Data Center-Utah Sensitive Species: List and Appendices March 29, 2011. Available at: http://dwrcdc.nr.utah.gov/ucdc/ViewReports/sslist.htm. Accessed on: April 27, 2015.

_____. 2011b. Utah Sensitive Species List. Located at: http://dwrcdc.nr.utah.gov/ucdc/ViewReports/SSL_20110329.pdf. Accessed on September 11, 2015.

_____. 2012. Deer Herd Unit Management Plan Deer Herd Unit # 10 (Book Cliffs) March 2012. Available at: http://wildlife.utah.gov/public_meetings/info/2012-05_deerplan_SERO.pdf. Accessed on: June 26, 2013 and July 26, 2015.

UDWR. 2013. Utah Greater Sage-grouse Management Plan. Publication 09-17. Salt Lake City, Utah.

_____. 2013. Utah Mule Deer Statewide Management Plan. Available at: http://wildlife.utah.gov/hunting/biggame/pdf/mule_deer_plan.pdf. Accessed on: July 12, 2015.

Utah Division of Water Rights 2015. Uintah Basin Planning for the Future. Draft 2015.

Utah Native Plant Society (UNPS). 2007. Utah Rare Plant Guide. Salt Lake City, Utah.

Utah Natural Heritage Program. (UNHP). 2002. Utah Rare Plant Guide. Located at: http://www.utahrareplants.org/rpg_species.html. Accessed on September 25, 2015

UNPS. 2009. Rare Plants List. Salt Lake City, UT. Last accessed October 24, 2012. Available at http://www.unps.org/index.html?PAGES/rare.html.

_____. 2015. Uinta County Chapter. Available at http://www.unps.org/index.html?PAGES/rare.html

Utah State Tax Commission, Property Tax Division, "2013 Annual Statistical Report", August 1, 2014. Available at: http://www.propertytax.utah.gov/library/pdf/statistics/yearendreports/2013annual.pdf. Accessed on: April 26, 2015.

_____, 2015. Property Tax Division, "Capitalization Rate Study for Centrally Assessed Properties," January 1, 2015. V

Vernal City, Utah. 2015. Vernal City Website. Available at: http://www.vernalcity.org/Dept/Police/. Accessed on: April 10, 2015.

W

Walsh 2014. Enefit American Oil Hydrology Baseline Field Sampling Program, Year One, Fourth Quarter 2013.

Walters, R.E. 1983. Utah bird distribution: latilong study 1983. Utah Division of Wildlife Resources, Salt Lake City, UT.

Welsh, L. 2012. In Grand and Uintah Counties, Utah. Unpublished report to BLM Vernal Field Office. July 16, 2012.

Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins. (Eds.) 1993. A Utah Flora. 2nd edition. Brigham Young Univ., Provo, Utah. 986 pp.

Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins. 2003. A Utah Flora. Third Edition, revised. Brigham Young University, Provo, UT.

Welsh, S. L., N. D. Atwood, and L. C. Higgins. 2008. *A Utah Flora, Fourth Edition, revised ed.* Provo, Utah: Brigham Young University Print Services.

Western Region Air Partnership (WRAP), Mansell G. 2006. Summary of the WRAP Fugitive Dust Emissions Inventories. Technical Memorandum prepared for the Western Governors Association by ENVIRON International Corporation, September 22, 2006.

Western Regional Climate Center (WRCC). 2012. Bonanza, Utah climate summary, available at http://www.wrcc.dri.edu

WRCC 2015. Climatological Summary February 1998 to December 2008, Vernal Utah Airport. Available at: http://www.wrcc.dri.edu/summary/vel.ut.html. Accessed on: April 2015. Wheeler, B.K., C.M. White and J.M. Economidy. 2003. Raptors of Western North America: The Wheeler Guide.

Z

Zonneveld, J.P., G.F. Gunnell, and W.S. Bartels. 2000. Early Eocene fossil vertebrates from the southwestern Green river basin, Lincoln and Uinta counties. Journal of vertebrate Paleontology 20(2):369-386.

Glossary

Glossary

Activity plan – A type of implementation plan (see *implementation plan*); an activity plan usually describes multiple projects and applies best management practices to meet land use plan objectives. Examples of activity plans include interdisciplinary management plans, habitat management plans, recreation area management plans, and allotment management plans.

Access (road) – Road used for passage to and along transmission line for purposes of construction and maintenance.

Affected environment – (1) A geographic area and the associated natural, human, and cultural resources that could be influenced by a proposed action. (2) The chapter in an environmental impact statement that describes the existing condition of the environment.

Air pollutant – Any substance in the air that could, if in high enough concentration, harm humans, animals, vegetation, or material. Air pollutants may include almost any natural or artificial matter capable of being airborne, in the form of solid particles, liquid droplets, gases, or a combination of these.

Air quality – The composition of air with respect to quantities of pollution therein; used most frequently in connection with "standards" of maximum acceptable pollutant concentrations.

All-terrain vehicle – A wheeled or tracked vehicle, other than a snowmobile or work vehicle, designed primarily for recreational use or for the transportation of property or equipment exclusively on undeveloped road rights of way, marshland, open country or other unprepared surfaces.

Allotment – An area of land where one or more individuals graze their livestock. Generally consists of public land, state land, and private land. Livestock grazing is regulated by BLM who determines the number of livestock, class of livestock, and season of use for each allotment through the land use planning process.

Alluvium – General term for clay, silt, sand, or gravel deposited in the bed of a stream during relatively recent geologic time, as a result of stream action.

Alternative – In an EIS, one of a number of possible options for responding to the purpose and need for action.

Alternative (action) – An option for meeting the stated need.

Ambient air – Any unconfined portion of the atmosphere: open air, surrounding air.

Amendment – The process for considering or making changes in the terms, conditions, and decisions of approved RMPs or MFPs. Usually only one or two issues are considered that involve only a portion of the planning area.

American Indian tribe – A legal term meaning an American Indian or Alaska Native tribal entity that is recognized as having a government-to-government relationship with the United States, with the responsibilities, powers, limitations, and obligations attached to that designation. A federally recognized tribe is eligible for funding and services from the Bureau of Indian Affairs, is given certain inherent rights of self-government (i.e., tribal sovereignty), and is entitled to receive certain federal benefits, services, and protections because of their special relationship with the United States.

Animals – Any member of the animal kingdom, including without limitation any mammal, fish, bird, amphibian, reptile, mollusk, crustacean, arthropod, or other invertebrate, and includes any part, product, egg, or offspring thereof, or the dead body or parts thereof. As used here, the words "animals," "fish or wildlife," and "wildlife" are interchangeable.

Annual (plant) – A plant whose life cycle is completed in 1 year or season.

Aquifer – Rock or rock formations (often sand, gravel, sandstone, or limestone) that contain or carry groundwater and act as water reservoirs.

Archaeology – The science that investigates the history of peoples by studying the material remains of past societies.

Areas of Critical Environmental Concern (ACEC) – Means areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.

Arid – A term applied to regions or climates where lack of sufficient moisture severely limits growth and production of vegetation. The limits of precipitation vary considerably according to temperature conditions.

Artifact – Any object showing human workmanship or modification, especially from a prehistoric or historic culture.

Assessment – The act of evaluating and interpreting data and information for a defined purpose.

Assessment (environment) – An evaluation of existing resources and potential impacts to those resources from a proposed act or change to the environment.

Authorized Officer – The federal employee who has the delegated authority to make a specific decision.

Attainment area – An area considered to have air quality as good as or better than the National Ambient Air Quality Standards, as defined in the Clean Air Act. An area may be an attainment area for one pollutant and a nonattainment area for others.

Avoidance Areas – Areas with sensitive resource values where rights-of-way and Section 302 permits, leases, and easements would be strongly discouraged. Authorization made in avoidance areas would have to be compatible with the purpose for which the area was designated and not is otherwise feasible on lands outside the avoidance area.

Background – The portion of the visual landscape lying from the outer limit of the middleground to infinity. Color and texture are subdued in this area, and visual sensitivity analysis is primarily concerned with the two-dimensional shape of landforms against the sky.

Back country byways – These roads generally do not meet full federal safety standards, meaning they are not wide enough, or graded enough, or level enough to be safe year-round, for passenger cars. They do, however, meet the highest standard of scenic, recreational and historical criteria.

Best Management Practices (BMPs) – A suite of techniques that guide, or may be applied to, management actions to aid in achieving desired outcomes. BMPs are often developed in conjunction with land use plans, but they are not considered a land use plan decision unless the land use plan specifies that they are mandatory. They may be updated or modified without a plan amendment if they are not mandatory.

Big game – Any species of hoofed wildlife that are hunted, such as elk, deer, desert bighorn sheep, Rocky Mountain bighorn sheep, moose, bison, mountain goats and pronghorn antelope.

Biological assessment – The document prepared by or under the direction of BLM concerning listed and proposed species and designated and proposed critical habitat that may be present in the action area and contains the BLM's determination of potential effects of the action on such species and habitat. Biological assessments are required for formal consultations and conferences on “major construction projects.” They are recommended for all formal consultations and formal conferences and many informal consultations where a written evaluation of the effects of an action on listed or proposed species and on designated or proposed critical habitat is needed. Also referred to as a BA.

Biological opinion – The document which includes (1) the opinion of the FWS and/or the NOAA-Fisheries as to whether or not a federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat; (2) a summary of the information on which the opinion is based; and (3) a detailed discussion of the effects of the action on listed species or designated critical habitat. Depending upon the determination of jeopardy or non-jeopardy, the biological opinion may contain reasonable and prudent alternatives, a statement of anticipated take of listed animals and conservation recommendations for listed plants. Also referred to as a BO.

Biological soil crusts (cryptogrammic, crypto biotic, microbiotic or microphytic soil crusts) – Biological Soil Crusts are a complex mosaic of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria. Cyanobacterial and microfungal filaments weave through the top few millimeters of soil, gluing loose particles together and forming a matrix that stabilizes and protects soil surfaces from erosive forces. These crusts occur in all hot, cool, and cold arid and semi-arid regions. They may constitute up to 70 percent of the living cover in some plant communities; however, biological soil crusts have only recently been recognized as having a major influence in terrestrial ecosystems.

Browse – (1) the part of shrubs, half shrubs, woody vines, and trees available for animal consumption; or (2) to search for or consume browse.

Candidate species – Plant and animal taxa for which the U.S. Fish and Wildlife Service has sufficient information on their status and threats to support proposing the species for listing as endangered or threatened under the Endangered Species Act but for which issuance of a proposed rule is currently precluded by higher priority listing actions. Separate lists for plants, vertebrate animals, and invertebrate animals are published periodically in the *Federal Register*.

Carbon cost – The amount of greenhouse gases and specifically carbon dioxide emitted by something (as a person's activities or a product's manufacture and transport) during a given period (also called carbon footprint).

Carbon monoxide (CO) – A colorless, odorless, poisonous gas produced by incomplete fossil fuel combustion. One of the six criteria pollutants.

Carrying capacity – The maximum population of a particular species a particular region can support without hindering future generations' ability to maintain the same population

Centerline – A line along the approximate middle of a right-of-way.

Class I area – Under the 1977 Clean Air Act amendments, all international parks, parks larger than 6,000 acres, and national wilderness areas larger than 5,000 acres that existed on August 7, 1977. This class provides the most protection to pristine lands by severely limiting the amount of additional air pollution that can be added to these areas.

Clean Air Act (CAA) – A federal law defining the Environmental Protection Agency's (EPA's) responsibilities for protecting and improving the nation's air quality and the stratospheric ozone layer. The last major changes in the law, the CAA Amendments of 1990, were enacted by Congress in 1990. Legislation passed since then has made several minor changes. The CAA was incorporated into the United States Code as Title 42, Chapter 85.

Climax plant community (e.g. climax) – The final or stable biotic community in a successional series; it is self-perpetuating and in equilibrium with the physical habitat.

Closed – Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 sets forth the specific meaning of "closed" as it relates to off-highway vehicle use, and 43 CFR 8364 defines "closed" as it relates to closure and restriction orders.

Code of Federal Regulations (CFR) – A codification of the general and permanent rules published in the *Federal Register* by the executive departments and agencies of the federal government.

Collaboration – A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands.

Collaborative partnership and collaborative stewardship – Refers to people working together, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks.

Competition – The interaction between organisms as a result of the removal or reduction of a common, required resource from the environment. Resources may include water, nutrients, light, oxygen, carbon dioxide, food and shelter.

Community recreation-tourism market – A community or communities dependent on public lands recreation and/or related tourism use, growth, and/or development. Major investments in facilities and visitor assistance are authorized within SRMAs where BLM's strategy is to target demonstrated community recreation-tourism market demand. Here, recreation management actions are geared toward meeting primary recreation-tourism market demand for specific activity, experience, and benefit opportunities. These opportunities are produced through maintenance of prescribed natural resource and/or community setting character and by structuring and implementing management, marketing, monitoring, and administrative actions accordingly.

Conditions of approval – Conditions or provisions (requirements) under which an Application for a Permit to Drill or a Sundry Notice is approved.

Conformity or conformance – A resource management action shall be specifically provided for in the plan, or if not specifically mentioned, shall be clearly consistent with the terms, conditions, and decisions of the approved plan or plan amendment. That a proposed action shall be specifically provided for in the land use plan or, if not specifically mentioned, shall be clearly consistent with the goals, objectives, or standards of the approved land use plan.

Connected action – These can be other federal or non-federal actions undertaken by private entities that automatically trigger or are triggered by other actions that may require an environmental impact statement, if the actions cannot or will not proceed unless other actions are taken previously or simultaneously, or, lastly, if the actions are interdependent parts of a larger action and depend on that larger action for their justification.

Conservation agreement – A formal signed agreement between the FWS or NOAA-Fisheries and other parties that implements specific actions, activities, or programs designed to eliminate or reduce threats to, or otherwise improve the status of a species. Conservation agreements can be developed at a state, regional, or national level and generally include multiple agencies at both the state and federal level, as well as tribes. Depending on the types of commitments the BLM makes in a conservation agreement and the level of signatory authority, plan revisions or amendments may be required prior to signing the conservation agreement, or subsequently in order to implement the conservation agreement.

Conservation strategy – A strategy outlining current activities or threats that are contributing to the decline of a species, along with the actions or strategies needed to reverse or eliminate such a decline or threats. Conservation strategies are generally developed for species of plants and animals that are designated as BLM Sensitive species or that have been determined by the FWS or NOAA-Fisheries to be federal candidates under the Endangered Species Act.

Consistency – Means that the proposed land use plan does not conflict with officially approved plans, programs, and policies of tribes, other federal agencies, and state and local governments (to the extent practical with federal law, regulation, and policy).

Consultation – Exchange of information and interactive discussion; when the "C" in consultation is capitalized it refers to consultation mandated by statute or regulation that has prescribed parties, procedures, and timelines (e.g. Consultation under National Environmental Policy Act or Section 7 of the Endangered Species Act).

Contiguous – Lands or legal subdivisions having a common boundary; lands having only a common corner are not contiguous.

Contrast – The effect of a striking difference in the form, line, color, or texture of an area being viewed.

Contrast rating – A method of determining the extent of visual impact for an existing or proposed activity that would modify any landscape feature (land and water form, vegetation, and structures).

Cooperating agency – An eligible governmental entity that has entered into a written agreement with the BLM establishing cooperating agency status in the planning and NEPA processes. BLM and the cooperating agency will work together under the terms of the agreement. Cooperating agencies will participate in the various steps of BLM's planning process as feasible, given the constraints of their resources and expertise. Assists the lead federal agency in developing an Environmental Analysis or Environmental Impact Statement. The Council on Environmental Quality regulations implementing NEPA defines a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA. Any tribe of federal, state, or local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency. Means any federal agency other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major federal action significantly affecting the quality of the human environment. The selection and responsibilities of a cooperating agency are described in §1501.6. A state or local agency of similar qualifications or, when the effects are on a reservation, an American Indian tribe, may by agreement with the lead agency become a cooperating agency.

Corridor – A wide strip of land within which a proposed linear facility could be located.

Council on Environmental Quality (CEQ) – An advisory council to the President of the United States established by the National Environmental Policy Act of 1969. This council reviews federal programs for their effect on the environment, conducts environmental studies, and advises the President on environmental matters.

Criteria – Data and information that are used to examine or establish the relative degrees of desirability of alternatives or the degree to which a course of action meets an intended objective.

Criteria pollutants – Air pollutants designated by the U.S. Environmental Protection Agency as potentially harmful and for which ambient air quality standards have been set to protect the public health and welfare. The criteria pollutants are carbon monoxide, sulfur dioxide, particulate matter, nitrogen dioxide, ozone, hydrocarbons, and lead.

Critical habitat – (1) the specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Endangered Species Act, on which are found those physical or biological features (i) essential to the conservation of the species, and (ii) that may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by a species at the time it is listed upon determination by the FWS and/or the NOAA-Fisheries that such areas are essential for the conservation of the species. Critical habitats are designated in 50 CFR Parts 17 and 226. The constituent elements of critical habitat are those physical and biological features of designated or proposed critical habitat essential to the conservation of the species, including, but not limited to (1) space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and (5) habitats that are protected from disturbance or are representative of the historic geographic and ecological distribution of a species.

Cultural resources – Nonrenewable evidence of human occupation or activity as seen in any area, site, building, structure, artifact, ruin, object, work of art, architecture, or natural feature, which was important in human history at the national, state, or local level.

Cultural site – Any location that includes prehistoric and/or historic evidence of human use, or that has important sociocultural value.

Cumulative effect – The effect on the environment that results from the incremental impact of an action when added to other past, present, or reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508.7).

Cumulative impact – The impact on the environment that results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Designated roads and trails – Specific roads and trails identified by the BLM (or other agencies) where some type of motorized vehicle use is appropriate and allowed either seasonally or year-long.

Design features of the Proposed Action – Standard corporate practices and procedures for environmental protection and design features addressing specific environmental policies and regulatory requirements incorporated by the Proponent as part of the Proposed Action that are applied/used generally to the entire Project to reduce adverse impacts on a non-specific basis.

Desired outcomes – A type of land use plan decision expressed as a goal or objective.

Desired plant community – Of the several plant communities that may occupy a site, the one that has been identified through a management plan to best meet the plan's objectives for the site. It must protect the site as a minimum.

Development well – A well drilled within the known or proven productive area of an oil field with expectation of producing oil or gas from the producing reservoir.

Discretionary closure – Those lands where the BLM has determined that fluid minerals leasing, even with the most restrictive stipulations, would not adequately protect other resources, values, or land uses.

Disturbance zone – Area of influence around a disturbance causing a change in animal behavior such as leaving the area, increased stress, abandoning young, not breeding, and aberrant behavior.

Draft Environmental Impact Statement (Draft EIS) – The draft statement of the environmental effects of a major federal action which is required under the National Environmental Policy Act, and released to the public and other agencies for comment and review.

Easement – A right afforded a person or agency to make limited use of another's real property for access or other purposes.

Ecological balance – The stability of an ecosystem resulting from interacting processes of its components.

Ecological site – A kind of land with a specific potential natural community and specific physical site characteristics, differing from other kinds of land in their ability to produce distinctive kinds and amounts of vegetation and to respond to management. Ecological sites are defined and described with information about soil, species composition, and annual production.

Ecological site inventory – A resource inventory that involves the use of soils information to map ecological sites and plant communities and the collection of natural resource and vegetation attributes. The sampling data from each of these soil-vegetation units, referred to as site write-up areas (SWAs), become the baseline data for natural resource management and planning.

Ecology – The relationship between living organisms and their environment.

Economic base – An area's economic base comprises industries that are primarily responsible for bringing outside income into the local economy. Economic base analysis measures the relative importance of industries for a particular area by comparing employment and income levels to a reference area (e.g., the United States).

Ecosystem – Includes all the organisms of an area, their environment, and the linkages or interactions among all of them; all parts of an ecosystem are interrelated. The fundamental unit in ecology, containing both organisms and abiotic environments, each influencing the properties of the other and both necessary for the maintenance of life.

Effect – Environmental change resulting from a proposed action. Direct effects are caused by the action and occur at the same time and place, while indirect effects are caused by the action but are later in time or further removed in distance, although still reasonably foreseeable. Indirect effects may include growthinducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems. Effect and impact are synonymous as used in this document.

Eligible cooperating agency – A federal agency other than a lead agency that is qualified to participate in the development of environmental impact statements as provided in 40 CFR 1501.6 and 1508.5 or, as necessary, other environmental documents that BLM prepares, by virtue of its jurisdiction by law as defined in 40 CFR 1508.15, or special expertise as defined in 40 CFR 1508.26; or a federally recognized Indian tribe, a state agency, or a local government agency with similar qualifications.

Endangered species – Plant or animal species that are in danger of extinction throughout all or a significant part of their range.

Endemic species – Plants or animals that occur naturally in a certain region and whose distribution is relatively limited to a particular locality.

Environment – The surrounding conditions, influences, or forces that affect or modify an organism or an ecological community and ultimately determine its form and survival.

Environmental Assessment – A concise public document that analyzes the environmental impacts of a proposed federal action and provides sufficient evidence to determine the level of significance of the impacts.

Environmental Impact Statement (EIS) – A detailed written statement required by the National Environmental Policy Act when an agency proposes a major federal action significantly affecting the quality of the human environment.

Environmental justice – The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socio-economic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies (see Executive Order 12898).

Ephemeral stream-flow – A stream that flows only in direct response to precipitation, and whose channel is above the water table at all times.

Erosion – The wearing away of the land/soil by water, wind, ice, or other geological agents. Often categorized into sheet erosion (even, overland flow), rill erosion (numerous but small channels), and gully erosion (less numerous but more major channels). Natural erosion is that which occurs under natural conditions (without the influence of man’s activities).

Evaluation (plan evaluation) – The process of reviewing the land use plan and the periodic plan monitoring reports to determine whether the land use plan decisions and NEPA analysis are still valid and whether the plan is being implemented.

Exclusion area – Areas with sensitive resource values where rights-of –way and 302 permits, leases, and easements would not be authorized.

Exotic species – Includes species introduced into an area that may have adapted to the area and compete with resident native (indigenous) species.

Exploration well – A well drilled in the area where there is no oil or gas production (also known as wildcat well).

Fault – A fracture or fracture zone in the earth's surface along where there has been displacement of the sides, relative to one another and parallel to the fracture.

Fauna – The vertebrate and invertebrate animals of the area or region.

Federal Land Policy and Management Act of 1976 – Public Law 94-579, October 21, 1976, often referred to as the BLM's "Organic Act," which provides the majority of the BLM's legislated authority, direction, policy, and basic management guidance.

***Federal Register* –** A daily publication, which reports Presidential and federal agency documents.

Final Environmental Impact Statement (Final EIS) – A revision of the Draft Environmental Impact Statement based on public and agency comments on the draft.

Fire management plan – A strategic plan that defines a program to manage wild land and prescribed fires and documents the fire management program in the approved land use plan; the plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans, and prevention plans.

Fisheries habitat – Streams, lakes, and reservoirs that support fish populations.

Floodplain – The land area adjacent to a stream which is periodically flooded; an important component of a riparian area.

Floodplain (100-year) – The 100-year floodplain is the land that is predicted to flood during a 100-year storm, which has a 1 percent chance of occurring in any given year.

Fluid minerals – Oil, gas, and geothermal resources.

Forage – (1) All browse and herbaceous growth available and acceptable to grazing/browsing animals. (2) Vegetation eaten by animals, especially grazing and browsing animals.

Formal consultation – A component of the consultation process under Section 7 of the ESA that commences with the BLM's written request for consultation after it has determined that its action may affect and is likely to adversely affect listed species or designated critical habitats.

Fossil – Mineralized or petrified form from a past geologic age, especially from previously living things.

Fragmentation (habitat) – The break-up of a large land area (such as a forest) into smaller patches isolated by areas converted to a different land type.

Fuel (fire) – Dry, dead parts of trees, shrubs, and other vegetation that can burn readily.

Fugitive emissions – Fugitive emissions are air pollutant emissions from facilities or activities that could not reasonably pass through a stack, chimney, vent, or other equivalent opening.

Fugitive dust – Dust put into the atmosphere by the wind blowing over plowed fields, dirt roads, or desert or sandy areas with little or no vegetation. Also caused by mechanically generated particulate matter emissions put into the air by reason of vehicles or equipment moving soil or driving over unpaved roads (or dirty paved roads) and dusty areas.

Generation source – A facility generating electrical power.

Geographic information system – A computer system capable of storing, analyzing, and displaying data and describing places on the earth's surface.

Geologic formations – A rock unit distinguished from adjacent deposits by some common character, such as its composition, origin, or the type of fossil associated with the unit.

Geology – The science that relates to the earth, the rocks of which it is composed, and the changes the earth has undergone or is undergoing.

Goal – A broad statement of a desired outcome. Goals are usually not quantifiable and may not have established time frames for achievement.

Grazing – Consumption of forage from rangelands or pastures by livestock, wild horses and burros, or wildlife.

Groundwater – Subsurface water that is in the zone of saturation. The top surface of the groundwater is the "water table." Source of water for wells, seeps, and springs.

Groundwater depletion – Groundwater depletion, a term often defined as long-term water-level declines caused by sustained groundwater pumping

Guidance – Any type of written communication or instruction that transmits objectives, goals, constraints, or any other direction that helps the Field Managers and staff know how to prepare a specific resource management plan.

Guidelines – Actions or management practices that may be used to achieve desired outcomes, sometimes expressed as best management practices. Guidelines may be identified during the land use planning process, but they are not considered a land use plan decision unless the plan specifies that they are mandatory. Guidelines for grazing administration must conform to 43 CFR 4180.2.

Habitat – (1) The natural abode of a plant or animal that provides food, water, shelter, and other biotic, climatic and soils factors necessary to support life. (2) The natural environment of a plant or animal, including all biotic, climatic, and soil conditions, or other environmental influences affecting living conditions. The place where an organism lives.

Habitat fragmentation – A reduction in area of undisturbed, continuous habitat. Often affects species that depend on unbroken expanses of mature habitat.

Hazardous air pollutants (HAP) – Air pollutants not covered by ambient air quality standards, but that, as defined in the Clean Air Act, may present a threat of adverse human health effects or adverse environmental effects.

Herbaceous – (1) Non-woody plant growth. (2) Green and leaf-like in appearance or texture; includes grasses, grass-like plants, and forbs, with little or no woody component.

Herd area – The geographic area identified as having been used by a herd as its habitat in 1971.

Historic property – Any district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (maintained by the Secretary of the Interior [36 CFR 800]).

Impact – A modification of the existing environment caused by an action (such as construction or operation of facilities).

Impacts (or effects) – Environmental consequences (the scientific and analytical basis for comparison of alternatives) as a result of a proposed action. Effects may be either direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time of farther removed in distance, but are still reasonably foreseeable, or cumulative.

Implementation decisions – Decisions that take action to implement land use plan decisions. They are generally appealable to Interior Board of Land Appeals.

Implementation plan – A site-specific plan written to implement decisions made in a land use plan. An implementation plans usually selects and applies best management practices to meet land use plan objectives. Implementation plans are synonymous with "activity" plans. Examples of implementation plans include interdisciplinary management plans, habitat management plans, and allotment management plans.

Indian tribe – Any Indian group in the conterminous United States that the Secretary of the Interior recognizes as possessing tribal status.

Indigenous – Living or occurring naturally in an area; native, endemic people, flora, or fauna.

Indirect effects – Impacts that are caused by an action, but are later in time or farther removed in distance, although still reasonably foreseeable.

Informal consultation – a component of the consultation process that includes all discussions, correspondence, etc., between the FWS and/or NMFS and the BLM agency or the designated non- federal representative, prior to formal consultation, to determine if a proposed action may affect listed species or critical habitat and to use FWS and/or NMFS expertise, if necessary, to modify the proposed action to avoid potentially adverse effects.

Interdisciplinary team – A group of individuals with different training, representing the physical sciences, social sciences, and environmental design arts, assembles to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions. The number and disciplines of the members preparing the plan vary with circumstances. A member may represent one or more discipline or Bureau program interest.

Intermittent or seasonal stream-flow – A stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas.

Invasive plants – Plants that are not part of (if exotic), or are a minor component of (if native), the original plant community or communities that have the potential to become a dominant or co- dominant species on the site if their future establishment and growth is not actively controlled by management interventions, or are classified as exotic or noxious plants under state or federal law. Species that become dominant for only one to several years (e.g. short-term response to drought or wildfire) are not invasive plants.

Invertebrate – Small animals that lack a backbone or spinal column. Spiders, insects, and worms are examples of invertebrates.

Jurisdiction – The limits or territory within which authority may be exercised.

Land classification – A process for determining the suitability of public lands for certain types of disposal or lease under the public land laws or for retention under multiple use management.

Land use allocation – The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the planning area, based on desired future conditions.

Land use plan – A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of land-use-plan-level decisions developed through the planning process, regardless of the scale at which the decisions were developed. The term includes both RMPs and MFPs.

Land use plan decision – Establishes desired outcomes and actions needed to achieve them. Decisions are reached using the BLM planning process in 43 CFR 1600. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appeal able to Interior Board of Land Appeals.

Landscape – All the natural features such as grasslands, hills, forest, and water, which distinguish one part of the earth's surface from another part; usually that portion of land that the eye can comprehend in a single view, including all of its natural characteristics.

Leaseable minerals – Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920. They include coal, phosphate, asphalt, sulphur, potassium, and sodium minerals, and oil, gas, and geothermal.

Lease – (1) A legal document that conveys to an operator the right to drill for oil, gas. (2) the tract of land, on which a lease has been obtained, where producing wells and production equipment are located.

Lease stipulation – A modification of the terms and conditions on a standard lease form at the time of the lease sale.

Lek – An assembly area where birds, especially sage grouse, carry on display and courtship behavior.

Limited – Generally denotes that an area or roads and trails are available for a particular use or uses. Refer to specific program definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 defines the specific meaning of "limited" as it relates to off-highway vehicle use.

Limited (areas or trails) – Designated areas or trails where the use of off-road vehicles is subject to restrictions, such as limiting the number or types or vehicles allowed, dates and times of use (seasonal restrictions), limiting use to existing roads and trails, or limiting use to designated roads and trails. Under the designated roads and trails designation, use would be allowed only on roads and trails that are signed for use. Combinations of restrictions are possible, such as limiting use to certain types of vehicles during certain times of the year.

Listed species – Species officially listed as threatened or endangered by the Secretary of the Interior under the provisions of the Endangered Species Act. A final rule for the listing has been published in the *Federal Register*.

Local government – Any political subdivision of the state and any general purpose unit of local government with resource planning, resource management, zoning, or land use regulation authority.

Locatable minerals – Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

Major construction activity – A construction project (or other undertaking having similar physical effects) which is a major federal action significantly affecting the quality of the human environment as referred to in the National Environmental Policy Act (NEPA, 42 U.S.C. 4332(2)(C)).

Management decision – A decision made by the BLM to manage public lands. Management decisions include both land use plan decisions and implementation decisions

Management opportunities – A component of the analysis of the management situation; actions or management directions that could be taken to resolve issues or management concerns.

Marsh (land) – Flat, wet, treeless land usually covered by water and dominated by marsh grasses, indigenous rushes, sedges, or other grass-like plants.

Meadow (grassland, pasture, pastureland, rangeland) – A tract of grassland where productivity of indigenous or introduced forage is modified due to characteristics of the landscape position or hydrology. May be characterized as – hay meadow, native meadow, mountain meadow, wet meadow, or other designations.

Memorandum of Understanding (MOU) – Usually documents an agreement reached amongst federal agencies.

Migratory – Birds, animals, or people that migrate or move from one region or country to another.

Mineral – Any solid or fluid inorganic substance that can be extracted from the earth for profit.

Mineral entry – The filing of a claim on public land to obtain the right to any minerals it may contain.

Mineral estate – The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation operations.

Mineral materials – Materials such as common varieties of sand, stone, gravel, pumice, pumicite, and clay, that are no obtainable under the mining or leasing laws but that can be acquired under the Mineral Materials Act of 1947, as amended.

Mineral reserves – Known mineral deposits that is recoverable under present conditions but is as yet undeveloped.

Mineral rights – Mineral rights outstanding are third-party rights, as interest in minerals not owned by the person or party conveying the land to the United States. It is an exception in a deed that is the result of prior conveyance separating title of certain minerals from the surface estate.

Mineral withdrawal – A formal order that withholds federal lands and minerals from entry under the Mining Law of 1872 and closes the area to mineral location (staking mining claims) and development.

Minimize – (1) To reduce the adverse impact of an operation to the lowest practical level. (2) Apply best available technology, management practices, and scientific knowledge to reduce the magnitude, extent, and/or duration of impacts.

Mining claim – A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules. A single mining claim may contain as many adjoining locations as the locator may make or buy. There are four categories of mining claims - lode, placer, mill site, and tunnel site.

Mitigate – To alleviate, reduce, or render less intense or severe.

Mitigation – Steps taken to (1) avoid an impact altogether by not taking a certain action or parts of an action; (2) minimize an impact by limiting the degree or magnitude of the action and its implementation; (3) rectify an impact by repairing, rehabilitating, or restoring the affected environment; (4) reduce or eliminate an impact over time by preserving and maintaining operations during the life of the action; and, (5) compensate for an impact by replacing or providing substitute resources or environments.

Mitigation measures – (1) Methods or procedures that reduce or lessen the impacts of an action. (2) Means taken to avoid, compensate for, rectify, or reduce the potential adverse impact of an action.

Monitoring (plan monitoring) – The process of tracking the implementation of land use plan decisions and collecting and assessing data/information necessary to evaluate the effectiveness of land use planning decisions.

Multiple use – The management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the lands for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some lands for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long term needs of future generations for renewable and nonrenewable resources, including but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the lands and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or greatest unit output.

National Ambient Air Quality Standards (NAAQS) – Standards set by the Environmental Protection Agency for the maximum levels of pollutants that can exist in the outdoor air without unacceptable effects on human health or the public welfare.

National Emissions Standards for Hazardous Air Pollutants – Emission standards set by the EPA for an air pollutant not covered by National Ambient Air Quality Standards.

National Environmental Policy Act of 1969 – An act that encourages productive and enjoyable harmony between man and his environment and promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding or the ecological systems and natural resources important to the Nation, and establishes the Council on Environmental Quality.

National Historic Preservation Act of 1966 (NHPA) – Public Law 89-665; 16 U.S.C. 470 et seq. A law authorizing the Secretary of the Interior to expand and maintain a National Register of Historic Places and directing federal agencies to take into account the effects of their actions on historic properties and provide the ACHP a reasonable opportunity to comment.

Native American – All native peoples of the United States and its territories, including American Indians, Alaska Natives, Native Hawaiians, Chamorros, and American Samoans.

Native species – Species that historically occurred or currently occur in a particular ecosystem and were not introduced.

Native vegetation – Natural vegetation originating in a certain region or country.

Natural community – An assemblage of organisms indigenous to an area that is characterized by distinct combinations of species occupying a common ecological zone and interacting with one another.

Natural resources – Water, soil, plants and animals, nutrients, and other resources produced by the earth's natural processes.

Nitrogen dioxide (NO_2) – The result of nitric oxide (a gas formed by combustion and a precursor of ground-level ozone pollution, also known as smog) combining with oxygen in the atmosphere and a major component of photochemical smog. One of the six criteria pollutants.

Nitrogen oxide (NO_x) – Product of combustion from transportation and stationary sources consisting of a mixture of nitrogen and oxygen compounds, including nitric oxide and nitrogen dioxide.

No action alternative – The most likely condition to exist in the future if current management direction were to continue unchanged.

No surface disturbance – In general, this applies to an area where an activity is allowed so long as it does not disturb the surface.

No surface occupancy – A fluid minerals leasing constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the area.

Nonattainment area – Area that does not meet one or more of the National Ambient Air Quality Standards for the criteria pollutants designated in the Clean Air Act.

Non-federal connected action – A nearby or related project that is not under BLM jurisdiction (such as the South Project) , but should be discussed in the same impact statement.

Noxious weeds – A plant species designated by federal of state law as generally possessing one or more of the following characteristics – aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the United States.

Objective – A description of a desired condition for a resource. Objectives can be quantified and measured and, where possible, have established time frames for achievement.

Off-highway vehicle (off-road vehicle) – Any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: any nonamphibious registered motorboat;\any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; vehicles in official use; and any combat or combat support vehicle when used in times of national defense emergencies.

Oil shale mining operation – The production of oil shale through mining, retorting (heating the shale in a closed system), and possibly upgrading of the raw shale. A production complex could consist of raw material handling, the retorting and oil-recovery unit(s), raw shale-oil upgrading facility, power block, wastewater treatment unit, storage yard, and administration buildings.

One-hundred-year floodplain – The 100-year floodplain is the land that is predicted to flood during a 100-year storm, which has a 1 percent chance of occurring in any given year.

Open – Generally denotes that an area is available for a particular use or uses. Refer to specific program definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 defines the specific meaning of "open" as it relates to off-highway vehicle use.

Open (areas and trails) – Designated areas and trails where off-road vehicles may be operated, subject to operating regulations and vehicle standards or an area where all types of vehicle use is permitted at all times, subject to standards set forth in BLM Manuals 8341 8343

Operator – Any person who has taken formal responsibility for the operations conducted on the leased lands.

Ozone (O_3) – A form of oxygen produced when an electric spark is passed through oxygen or air. One of six criteria pollutants.

Paleontology – The science that deals with the life of past geological ages through the study of the fossil remains of organisms.

Paleontological resources (fossils) – The physical remains of plants and animals preserved in soils and sedimentary rock formations. Paleontological resources are important for understanding past environments, environmental change, and the evolution of life.

Particulate matter (PM) – A complex mixture consisting of varying combinations of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These tiny particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil and dust.

Per capita income – Calculated by dividing total income in a specified area (e.g., county) by the area's population.

Perennial – A plant that lives for at least 2 or more years.

Perennial stream-flow – A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

Period of use – The time of livestock grazing on a range area based on type of vegetation or stage of vegetative growth.

Permanent surface disturbance – This is associated with the proposed rights-of-way and other areas where project components would occupy land over the long-term.

Permit – A revocable authorization to use public land for a specified purpose to for up to 3 years.

Permitted use – The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease; expressed in Animal Unit Months.

Plan of development – A mandatory plan, developed by an applicant of a mining operation or construction project, that specifies the techniques and measures to be used during construction and operation of all project facilities on public land. The plan is submitted for approval to the appropriate federal agency before any construction begins.

Planning analysis – A process using appropriate resource data and NEPA analysis to provide a basis for decisions in areas not yet covered by an RMP.

Planning area – A geographical area for which land use and resource management plans are developed and maintained.

Planning criteria – The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions.

Plant community – A vegetation complex, unique in its combination of plants, which occurs in particular locations under particular influences. A plant community is a reflection of integrated environmental influences on the site, such as soils, temperature, elevation, solar radiation, slope aspect, and precipitation.

Policy – A guiding principle upon which a specific decision or set of decisions is based.

Population – Within a species, a distinct group of individuals that tend to mate only with members of the group. Because of generations of inbreeding, members of a population tend to have similar genetic characteristics.

Potential natural community (PNC) – The biotic community that would become established if all successional sequences were completed without interference by man under the present environmental conditions. Natural disturbances are inherent in development. PNCs can include naturalized non-native species.

Preferred alternative – The alternative identified in an EIS that has been selected by the agency as the most acceptable resolution to the problems identified in the purpose and need.

Prey base – Populations and types of prey species available to predators.

Principal or major uses – Includes, and is limited to, domestic livestock grazing, fish and wildlife development and utilization, mineral exploration and production, rights-of-way, outdoor recreation, and timber production.

Production well – A well drilled in a known field that produces oil or gas.

Project plan – A type of implementation plan (see *implementation plan*). A project plan typically addresses individual projects or several related projects. Examples of project plans include prescribed burn plans, trail plans, and recreation site plans.

Project area – The area of land upon which an operator conducts mining operations, including the area needed for building or maintaining of roads, transmission lines, pipelines, or other means of access.

Properly functioning condition (PFC) – An attribute of a landform that indicates its ability to produce desired natural resources in a sustained way. When used to refer to a riparian area, expresses the ability of the ecosystem to dissipate energy, filter sediment, transfer nutrients, develop ponds and channel characteristics that benefit fish production, waterfowl, and other uses, improve water retention and ground-water recharge, develop root masses that improve streambank stability, and support greater biodiversity. In upland landforms, an indication of the ecosystem' ability to sustain the natural, biotic communities.

Proposed species – Species that have been officially proposed for listing as threatened or endangered by the Secretary of the Interior. A proposed rule for listing has been published in the *Federal Register*.

Public – Affected or interested individuals, including consumer organizations, public land resource users, corporations and other business entities, environmental organizations and other special interest groups and officials of state, local, and Indian tribal governments.

Public involvement – The opportunity for participation by affected citizens in rule making, decision making, and planning with respect to the public lands, including public meetings or hearings held at locations near the affected lands, or advisory mechanisms, or such other procedures as may be necessary to provide public comment in a particular instance.

Public lands – Any lands or interest in land owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management, except lands located on the Outer Continental Shelf, and land held for the benefit of Indians, Aleuts, and Eskimos.

Public scoping – A process whereby the public is given the opportunity to provide oral or written comments about the influence of a project on an individual, the community, and/or the environment.

Quarry – An open or surface working, usually for the extraction of stone, slate, limestone, etc.

Rangeland (or public rangelands) – Deserts, grasslands, shrublands, mountains, canyons, forests, woodlands, and riparian areas, that support an understory or periodic cover of herbaceous and woody vegetation amenable to production of tangible products such as forage, wildlife habitat, water, minerals, energy, plant and animal gene pools, recreational, opportunities, and other vegetative products, Also valuable for the production of intangible products such as open space, natural beauty, ands study of natural ecosystems. Rangeland includes revegetated naturally or artificially to provide a plant community that is managed similarly to natural vegetation.

Rangeland health – The degree to which the integrity of the soil, the vegetation, the water, and air as well as the ecological processes of the rangeland ecosystem is balanced and sustained. Integrity is defined as – Maintenance of the structure and functional attributes characteristic of a particular locale, including normal variability.

Raptor – Bird of prey with sharp talons and strongly curved beaks such as hawks, owls, vultures, and eagles.

Reasonably foreseeable development scenario – The prediction of the type and amount of oil and gas activity that would occur in a given area. The prediction is based on geologic factors, past history of drilling, projected demand for oil and gas, and industry interest.

Reclamation – Returning disturbed lands to a form and productivity that will be ecologically balanced.

Reconnaissance – Preliminary examination or survey of a territory.

Recontouring – Returning a surface to, or near to, its original form through some type of action, such as grading.

Record of decision (ROD) – (1) A document signed by a responsible official recording a decision that was preceded by the preparing of an environmental impact statement. (2) A document separate from, but associated with, an Environmental Impact Statement, which states the decision, identifies alternatives (specifying which were environmentally preferable), and states whether all practicable means to avoid environmental harm from the alternative have been adopted, and, if not, why not.

Recovery plan – Identifies, justifies, and schedules the research and management actions necessary to reverse the decline of a species and ensure its long-term survival.

Recreational river areas – Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Recreation settings – The collective, distinguishing attributes of landscapes that influence, and sometimes actually determine, what kinds of recreation opportunities are produced.

Region – A large tract of land generally recognized as having similar character types and physiographic types.

Relict – A remnant or fragment of the climax plant community that remains from a former period when it was more widely distributed. Synonymous with pristine.

Renewable resource – Any natural resource that can replenish itself naturally over time.

Residual impact – The impact of an action remaining after application of mitigation.

Resource Area or Field Office – A geographic portion of a Bureau of Land Management district. It is the administrative subdivision whose manager has primary responsibility for day-to-day resource management activities and resource use allocations and is, in most instances, the area for which resource management plans are prepared and maintained.

Resource Advisory Council – A council established by the Secretary of the Interior to provide advice or recommendations to BLM management.

Resource inventory – An assessment of the availability or presence of a resource in the study area.

Resource use level – The level of use allowed within an area. It is based on the desired outcomes and land use allocations in the land use plan. Targets or goals for resource use levels are established on an area-wide or broad watershed level in the land use plan. Site-specific resource use levels are normally determined at the implementation level, based on site-specific resource conditions and needs as determined through resource monitoring and assessments.

Resource management plan – A land use plan as described by the Federal Land Policy and Management Act. The resource management plan generally establishes in a written document: Land areas for limited, restricted or exclusive use; designation, including ACEC designation; and transfer from Bureau of Land Management Administration; Allowable resource uses (either singly or in combination) and related levels of production or use to be maintained; Resource condition goals and objectives to be attained; Program constraints and general management practices needed to achieve the above items; Need for an area to be covered by more detailed and specific plans; Support action, including such measures as resource protection, access development, realty action, cadastral survey, etc., as necessary to achieve the above; General implementation sequences, where carrying out a planned action is dependent upon prior accomplishment of another planned action; and Intervals and standards for monitoring and evaluating the plan to determine the effectiveness of the plan and the need for amendment or revision. It is not a final implementation decision on actions which require further specific plans, process steps, or decisions under specific provisions of law and regulations.

Revegetation – Establishing or re-establishing desirable plants on areas where desirable plants are absent or of inadequate density, by management alone (natural revegetation) or by seeding or transplanting (artificial revegetation).

Revision – The process of completely rewriting the land use plan due to changes in the planning area affecting major portions of the plan or the entire plan.

Right-of-way – A permit or an easement which authorizes the use of public lands for certain specified purposes, commonly for pipelines, roads, telephone lines, electric lines, reservoirs, etc.; also, the lands covered by such an easement or permit.

Right-of-way corridor – A parcel of land that has been identified by law, Secretarial order, through a land use plan or by other management decision as being the preferred location for existing and future right-of-way grants and suitable to accommodate one type of right-of-way or one or more rights-of-way which are similar, identical or compatible.

Riparian – (1) Referring to or relating to areas adjacent of water or influenced by free water associated with streams or rivers on geologic surfaces occupying the lowest position on a watershed. (2) Occurring adjacent to streams and rivers and directly influenced by water. A riparian community is characterized by certain types of vegetation, soils, hydrology, and fauna and requires free or unbound water or conditions more moist than that normally found in the area.

Riparian ecosystems – (1) Those assemblages of plants, animals, and aquatic communities whose presences can be either directly or indirectly attributed to factors that are water-influenced or related. (2) Interacting system between aquatic and terrestrial situations identified by soil characteristics, and distinctive vegetation that requires or tolerates free or unbound water.

Riparian (properly functioning condition [PFC] for lotic areas) – Riparian/wetland areas are in PFC when adequate vegetation, landform, or woody debris is present to: dissipate high-energy water flow filter sediment, capture bedload, and aid floodplain development improve floodwater retention and groundwater recharge develop root masses that stabilize streambanks develop diverse fluvial geomorphology (pool and channel complexes) to provide habitat for wildlife support greater biodiversity

Riparian (functioning at risk [FAR]) – Riparian-wetland areas are considered to be in functioning condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

Riparian (non-functioning [NF]) – Riparian-wetland areas that are clearly not providing adequate vegetation, landform, or large wood debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc. *Though a comprehensive assessment of riparian functioning condition has not been conducted, the Vernal Field Office has identified four major invasive plants that are altering riparian communities. The BLM has identified tamarisk, Russian olive, tall whitetop, and Russian knapweed as plants that are changing the vegetation composition of the Green River System. Specifically, Russian olive and tamarisk are out-competing native cottonwoods and willows in the riparian zone. Cottonwood stands along the main river systems (the Green and the White) are becoming decadent with low recruitment of new trees.

Riprap – A layer, facing, or protective mound of rubble or stones randomly placed to prevent erosion, scour, or sloughing of a structure or embankment; also, the stone used for this purpose.

Riverine – A system of wetlands that includes all wetland and deep-water habitats contained within a channel that lacks trees, shrubs, persistent emergents, and emergent mosses or lichens.

Roadless – Refers to the absence of roads, which have been improved and maintained by mechanical means to insure relatively regular and continuous use. A way maintained solely by the passage of vehicles does not constitute a road.

Saleable minerals – Common variety minerals on the public lands, such as sand and gravel, which are used mainly for construction and are disposed of by sales or special permits to local governments.

Scenic byways – Highway routes, which have roadsides or corridors of special aesthetic, cultural, or historic value. An essential part of the highway is its scenic corridor. The corridor may contain outstanding scenic vistas, unusual geologic features, or other natural elements.

Scoping – The process of identifying the range of issues, management concerns, preliminary alternatives, and other components of an environmental impact statement or land-use planning document. It involves both internal and public viewpoints.

Scoping issues – Usually identified from scoping meetings and agency discussion and used to identify, refine, and evaluate alternatives, and to direct the level of effort needed for each of the environmental resource studies. Issues are related to the Applicants' interests and objectives, project description, climate and air quality, soil and water, vegetation, fish and wildlife, cultural resources, Native American concerns, paleontological resources, visual resources, wilderness characteristics, travel management, lands and realty, social and economic conditions, environmental justice, health and safety, solid and hazardous waste management, and indirect and cumulative impacts.

Seasonal grazing – Grazing restricted to one or more specific seasons of the year.

Section 7 – The section of the Endangered Species Act of 1973, as amended, outlining procedures for interagency cooperation to conserve federally listed species and designated critical habitats. Section 7(a)(1) requires federal agencies to use their authorities to further the conservation of listed species. Section 7(a)(2) requires federal agencies to consult with the U.S. Fish and Wildlife Service to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. Other paragraphs of this section establish the requirement to conduct conferences on proposed species and candidate species; allow applicants to initiate early consultation; require the FWS and NOAA-Fisheries to prepare biological opinions and issue incidental take statements. Section 7 also establishes procedures for seeking exemptions from the requirement of section 7(a)(2) from the Endangered Species Committee.

Section 7 consultation – The various section 7 processes, including both consultation and conference if proposed or candidate species are involved.

Section 106 compliance – The requirement of Section 106 of the National Historic Preservation Act that any project funded, licensed, permitted, or assisted by the federal government by reviewed for impacts to significant historic properties and that the State Historic Preservation Officer and the Advisory Council on Historic Preservation be allowed to comment on a project.

Sediment yield – The amount of sediment produced in a watershed, expressed in tons, acre feet, or cubic yards, of sediment per unit of drainage are per year.

Seep – Wet areas, normally not flowing, arising from an underground water source.

Sensitive lands – Any areas recognized in BLM land use or activity plans where BLM has determined that a Plan or Operation to provide detailed review of project effects on unique, irreplaceable, or outstanding historical, cultural, recreational, or natural resource values, such as threatened or endangered species or their critical habitat.

Sensitive species – Plant or animal species susceptible or vulnerable to activity impacts or habitat alterations. Species that have appeared in the *Federal Register* as proposed for classification or are under consideration for official listing as endangered or threatened species.

Seral community – One or a series of biotic communities that follow one another in time on any given area. Seral community is synonymous with successional community.

Seral stage – The development stages of an ecological succession. Seral state is synonymous with successional stage.

Significant – (1) An effect that is analyzed in the context of the proposed action to determine the degree or magnitude of importance of the effect, wither beneficial or adverse. The degree of significance can be related to other actions with individually insignificant but cumulatively significant impacts. (2) The description of an impact that exceeds a certain threshold level. Requires consideration of both context and intensity. The significance of an action must be analyzed in several contexts, such as society as a whole, and the affected region, interests, and locality. Intensity refers to the severity of impacts, which should be weighted along with the likelihood of its occurrence.

Significant (impact) – This term is used to describe the severity of the impact in terms of the type, quality and sensitivity of the resource involved; the location of the proposed project; the duration of the effect (short- or long-term) and other consideration of context. Significance of the impact will vary with the resource type, setting of the proposed action and the surrounding area (including residential, industrial, commercial, and natural sites).

Simulations – The use of a computer to calculate the effect of a given physical process.

Site – In archaeology, any locale showing evidence of human activity.

Shale oil – Produced from oil shale rock fragments by human-driven processes that convert the organic matter within the rock into synthetic oil and gas. The output of these processes can be further refined or used immediately as a fuel in certain applications.

Slope – A slant or incline of the land surface, measured in degrees from the horizontal, or in the percent (defined as the number of feet or meters change in elevation per 100 of the same units of horizontal distance); may be further characterized by direction (exposure or aspect).

Socioeconomic – Pertaining to, or signifying the combination or interaction of social and economic factors.

Soil – (1) The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants. (2) The unconsolidated mineral matter on the surface of the earth that has been subjected to and influenced by genetic and environmental factors of parent material, climate (including moisture and temperature effects), macro-and micro-organisms, and topography, all acting over a period of time and producing a product-soil that differs from the material from which it was derived in many physical, chemical, biological, and morphological properties and characteristics.

South Project – The South Project is a non-federal connected action project planned on private lands to develop oil-shale mining and a shale-oil production complex located in the Uinta Basin. Approximately 28 million tons of raw oil shale ore rock will be produced per year on one of the largest tracts of privately owned oil-shale property in the U.S. The property covers approximately 13,441 acres of oil shale containing approximately 1.2 billion barrels of shale oil.

Special recreation management area (SRMA) – a public lands unit identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific, structured recreation opportunities (i.e., activity, experience, and benefit opportunities). Both land use plan decisions and subsequent implementing actions for recreation in each SRMA are geared to a strategically identified primary market—destination, community, or undeveloped.

Special status species – Include proposed, listed, endangered, threatened, candidate, state-listed, and sensitive species (see proposed species, listed species, endangered species, threatened species, candidate species, state-listed species, and sensitive species for complete definitions).

Species – Any species or subspecies of fish or wildlife or plants (and in the case of plants, any varieties), and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.

Species diversity – The number, different kinds of, and relative abundances of species present in a given area.

Spring – Flowing water originating form an underground source.

Staging area – A designated area where vehicles, supplies, and construction equipment are positioned for use and access to a construction site.

Standard – A description of the physical and biological conditions or degree of function required for healthy, sustainable lands (e.g., Land Health Standards). To be expressed as a desired outcome (goal).

State listed species – Species listed by a state in a category implying but not limited to potential endangerment or extinction. Listing is either by legislation or regulation.

Stipulations – Requirements that are part of the terms of a mineral lease. Some stipulations are standard on all federal leases. Other stipulations may be applied to the lease at the discretion of the surface management agency to protect valuable surface resources and uses.

Stock pond (catchment, guzzler, trick tank) – A water impoundment made by constructing a dam or by excavating a dugout or both, to provide water for livestock and wildlife.

Stocking rate – The relationship between the number of animals and the grazing management unit utilized over a specified time period. May be expressed as animal units per unit of land area (animal units over a described time period/area of land).

Strategic plan – A plan that establishes the overall direction for the BLM. This plan is guided by the requirements of the Government Performance and Results Act or 1993, covers a 5-year period, and is updated every 3 years. It is consistent with FLPMA and other laws affecting the public lands.

Study area – A given geographical area delineated for specific research.

Succession – The progressive replacement of plant communities on a site which leads to the potential natural plant community; i.e., attaining stability. Primary succession entails simultaneous succession of soil from parent material and vegetation. Secondary succession occurs following disturbances on sites that previously supported vegetation, and entails plant succession on a more mature soil.

Sulfur dioxide (SO_2) – A pungent, colorless, gas formed primarily by the combustion of fossil fuels. One of the six criteria pollutants.

Suspended non-use – Temporary withholding of a grazing preference from active use.

Sustainability – The concept that natural processes are functioning in a way that assures the sustained yield or commodities and public values to the extent possible considering the capability of the land to do so.

Sustained yield – The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use.

Take – As defined by the Endangered Species Act, "to harass, harm, pursue, hunt, shoot, wound, kill, capture, or collect, or attempt to engage in any such conduct." The term applies only to fish and wildlife. Incidental take means any taking otherwise prohibited, if such taking is incidental to, and not the purpose of, the carrying out an otherwise lawful activity. Harm as used in the definition of take means to commit an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Harass as used in the definition of take means to commit an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns, which include but are not limited to breeding, feeding, or sheltering.

Temporary surface disturbances – Areas outside of the proposed rights-of-way to facilitate the construction of the project components including pulling and tensioning sites, wire splices sites, structure work areas, laydown areas, access roads, and extra work spaces.

Temporary laydown area – Areas used to facilitate construction and used only during construction for storing pipe and fittings, for equipment parking, and for other temporary usage.

Threatened species – A plant or animal species likely to become an endangered species throughout all or a significant portion of its range within the foreseeable future.

Timing limitation (seasonal restriction) – A fluid minerals leasing constraint that prohibits surface use during specified time periods to protect identified resource values. The constraint does not apply to the operation and maintenance of production facilities unless analysis demonstrates that such constraints are needed and that less stringent, project-specific constraints would be insufficient.

Total preference – The total number of animal units of livestock grazing on public lands, apportioned and attached to base property owned of controlled by a permittee of lessee. The active preference and suspended preference are combined to make up the total grazing preference.

Traditional cultural property (TCP) – Any built or natural locations, areas, or features considered sacred or culturally significant by a group or people because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community.

Trend – The direction of change in ecological status or in resource value ratings observed over time. Trend in ecological status is described as "toward" or "away from" the potential natural community or as “not apparent.” Appropriate terms are used to describe trends in resource value ratings. Trends in resource value ratings for several uses on the same site at a given time may be in different directions, and there is no necessary correlation between trends in resource value ratings and the trend in ecological status.

Tributary – A stream or river that flows into a larger stream or river.

Unallotted lands – Public lands open to grazing which currently have no livestock grazing authorized.

Understory – Plants that grow beneath the canopy of other plants. Usually refers to grasses, forbs, and low shrubs under a tree or shrub canopy.

Undesirable plants – Species classified as undesirable, noxious, harmful, exotic, injurious, or poisonous under state or federal law, but not including species listed as endangered by the Endangered Species Act, or species indigenous to the planning area.

Unemployment – Persons are classified as unemployed if they do not have a job, have actively looked for work in the prior 4 weeks, and are currently available for work. Persons who were not working and were waiting to be recalled to a job from which they had been temporarily laid off are also included as unemployed. The unemployment rate represents the number unemployed as a percent of the labor force.

Uranium – A very hard, heavy, silvery, metallic, chemical element that is crucial to the research and development of atomic energy.

Utility corridor – A land parcel with specific boundaries identified by law, Secretarial Order, the land-use planning process, or other management decision as being a preferred location of existing and future rights-of-way. Some corridors may be suitable to accommodate more than one type of right-of-way or one or more rights-of-way that are similar, identical, or compatible.

Utilization – The proportion or degree of current year's forage production that is consumed or destroyed by animals (including insects). Utilization may refer either to a single plant species, a group of species, or the vegetation as a whole. Utilization is synonymous with use. This process requires a comparison of the amount of herbage left compared with the amount of herbage produced during the year.

Valid existing rights – Locatable mineral development rights that existed when the Federal Land Policy and Management Act were enacted on October 21, 1976. Some areas are segregated from entry and location under the Mining Law to protect certain values or allow certain uses. Mining claims that existed as of the effective date of the segregation may still be valid if they can meet the test of discovery of a valuable mineral required under the Mining Law. Determining the validity of mining claims located in segregated lands requires BLM to conduct a validity examination and is called a “valid existing rights” determination.

Vascular plants – Plants that have specialized tissues which conduct nutrients, water, and sugars along with other specialized parts such as roots, stems, and reproductive structures. Vascular plants include flowering plants, ferns, shrubs, grasses, and trees.

Vegetation communities – A combination of dominant plant species that live together in the same region or on the same landform.

Vegetation manipulation practices – Practices that are directed at changing vegetation production, species composition, and erosion control. These practices include root plowing, seeding, pitting, chaining, prescribed fire, herbicide application, prescribed grazing and livestock exclusion.

Vegetation type – A kind of existing plant community with distinguishable characteristics described in terms of the present vegetation that dominates the aspect or physiognomy of the area.

Vertebrate – An animal with a backbone. Fishes, amphibians, reptiles, birds, and mammals are vertebrates.

Viewshed – Visible portion of the specific landscape seen from a specific viewpoint, normally limited by landform, vegetation, distance, and existing cultural modifications.

Visual resources – The visible physical features of a landscape (topography, water, vegetation, animals, structures, and other features) that constitute the scenery of an area.

Visual resource inventory (VRI) classes – Classification of landscape areas composed of scenic quality, sensitivity level rating units, and distance zones for inventory purposes (BLM).

Visual resource management classes – Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape.

Volatile organic compound (VOC) – Any organic compound that participates in atmospheric photochemical reactions except those designated by the EPA as having negligible photochemical reactivity.

Waiver – Permanent exemption from a lease stipulation. The stipulation no longer applies anywhere within the leasehold.

Waters of the United States – All waters currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including adjacent wetlands and tributaries to waters of the United States, and all waters by which the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce.

Water quality – (1) The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use. (2) The interaction between various parameters that determines the usability or non-usability of water for on-site and downstream uses. Major parameters that affect water quality include – temperature, turbidity, suspended sediment, conductivity, dissolved oxygen, pH, specific ions, discharge, and fecal coliform.

Watershed – (1) A total area of land above a given point on a waterway that contributes runoff water to the flow at that point. (2) A major subdivision of a drainage basin.

Weed – A plant considered undesirable and that interferes with management objectives for a given area at a given point in time.

Wetlands – (1) Areas characterized by soils that are usually saturated or ponded, i.e., hydric soils, that support mostly hydrophytic plants. (2) Those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstance do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include habitats such as swamps, marshes, and bogs.

Wild horses and burros – All unbranded and unclaimed horses and burros using public lands as all or part of their habitat.

Wild, scenic, or recreational river – The three classes of what is traditionally referred to as a "wild and scenic river." Designated river segments are classified as wild, scenic and/or recreational, but the segments cannot overlap.

Wilderness – A congressionally designated area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

Wilderness characteristics – Features of the land associated with the concept of wilderness that specifically deal with naturalness and opportunities for solitude and primitive and unconfined recreation. These characteristics may be considered in land use planning when BLM determines that those characteristics are reasonably present, of sufficient value (condition, uniqueness, relevance, importance), and need (trend, risk), and are practical to manage (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1).

Wilderness study area – A roadless area or island of undeveloped federal land that has been inventoried and found to possess wilderness characteristics described under Title VI, Section 603 of FLPMA and Section 2C of the Wilderness Act of 1964.

Wildfire – Any unwanted wild land fire.

Wildland fire – Any nonstructural fire, other than prescribed fire, that occurs in the wild land.

Winter range – Range that is grazed during the winter months.

Withdrawal – Withholding an area of federal land from settlement, sale, location, or entry, under some or all of the general land laws, for the purpose of limiting activities under those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program; or transferring jurisdiction over an area of federal land, other than "property" governed by the federal Property and Administrative Services Act, as amended (40 U.S.C. 472) from one department, bureau or agency to another department, bureau or agency.

Woodland – A land area occupied by trees; a forest, woods.

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Index

INDEX

A

B

C

D

E

F

G

H

I

J

L

M

N

O

P

R

S

T

U

V

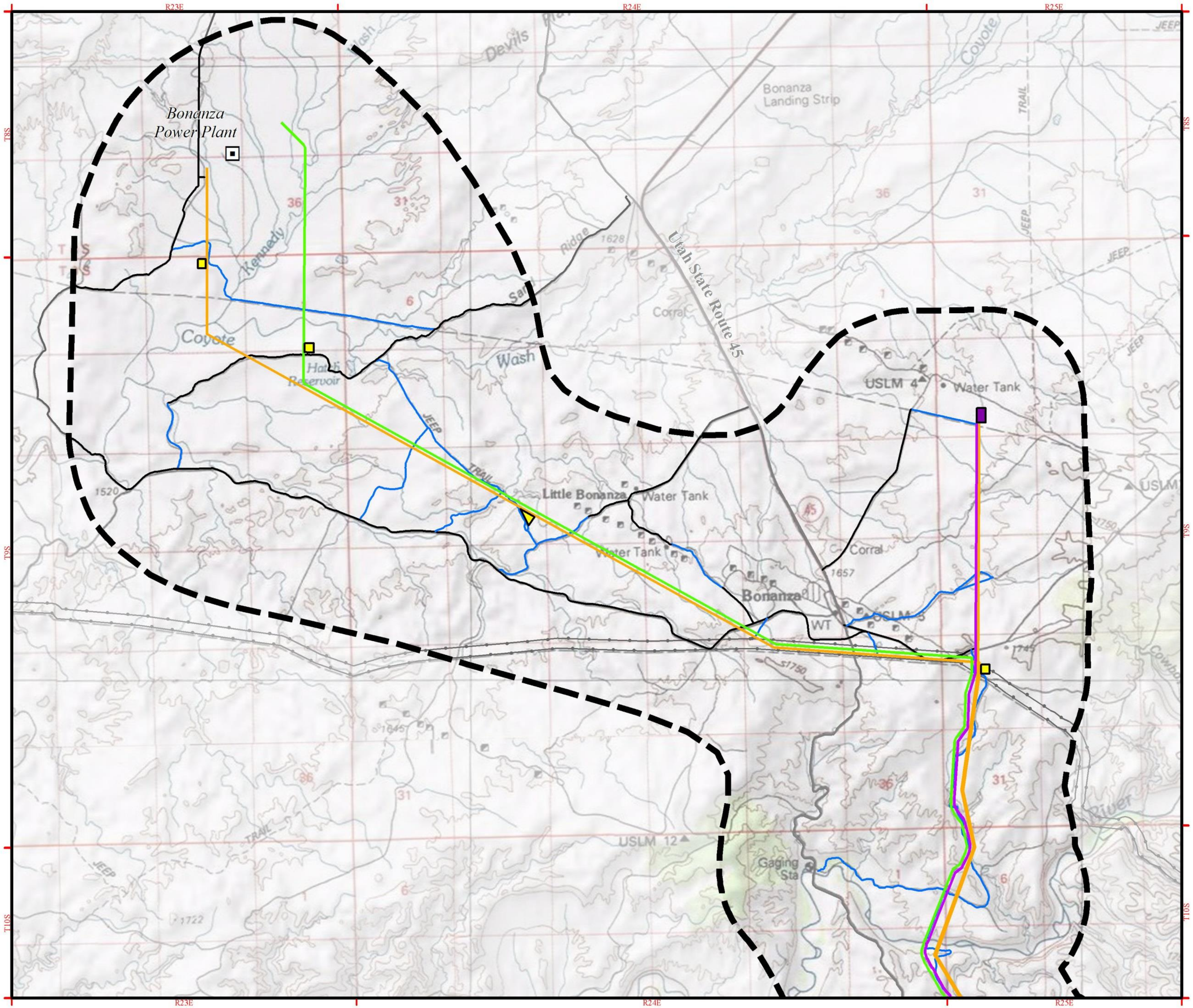
W

Appendix A
Maps

Map A-1a

Construction Access

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS



Resource Inventory

CONSTRUCTION ACCESS

- Existing Access Road (Requires No Improvement)
- Existing Access Road (Requires Improvement)
- New Temporary Access Road

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
- Proposed Construction Laydown Areas
- Proposed Switchyard

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

Access Roads, Enefit 2015;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

NOTES:
Some linear project features are colocated and appear graphically as a single line. Refer to Map 1-1 for more information.

October 2015

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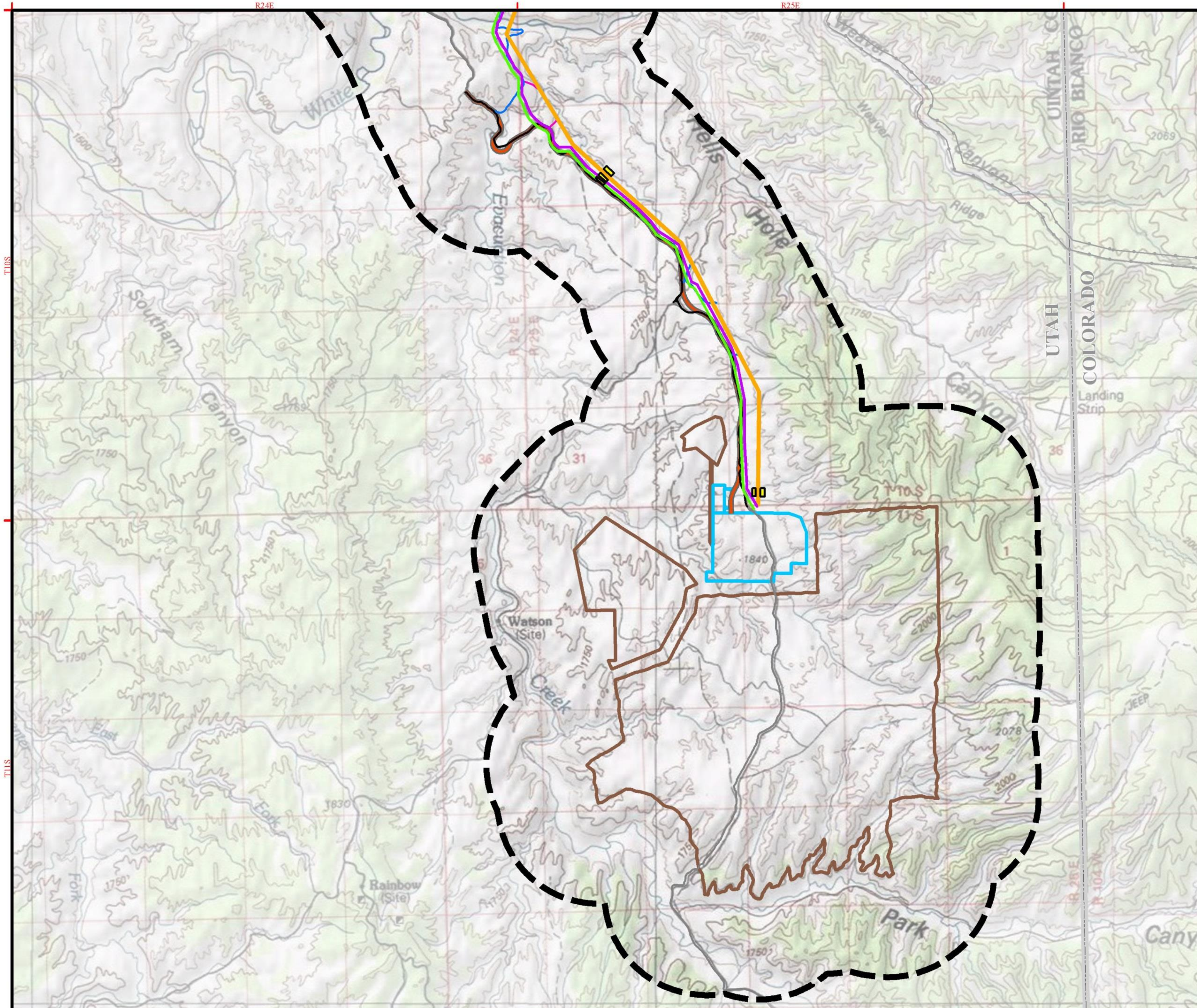

Map A-1b

Construction Access

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

CONSTRUCTION ACCESS

- Existing Access Road (Requires No Improvement)
- Existing Access Road (Requires Improvement)
- New Temporary Access Road

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
- Proposed Construction Laydown Areas
- Proposed Switchyard

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

Access Roads, Enefit 2015;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

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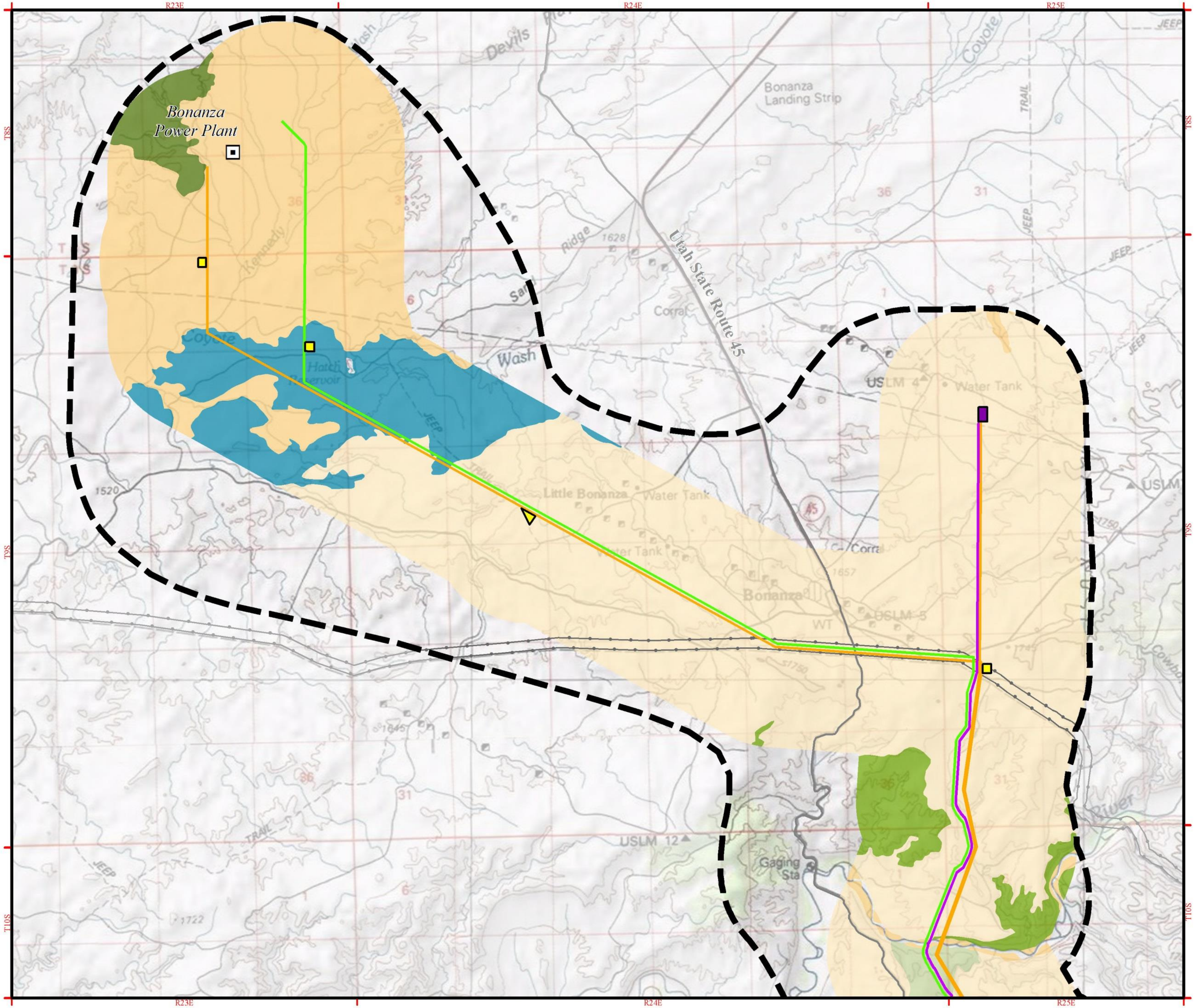

Map A-2a

Soil Resources

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

SOIL EROSION SUSCEPTIBILITY

- Low Water/Low Wind
- Low Water/Moderate Wind
- Moderate Water/Low Wind
- Moderate Water/Moderate Wind
- Moderate Water/High Wind
- High Water/Moderate Wind

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
- Proposed Construction Laydown Areas
- Proposed Switchyard

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

SSURGO Soil Erosion Susceptibility, NRCS 2013;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

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October 2015

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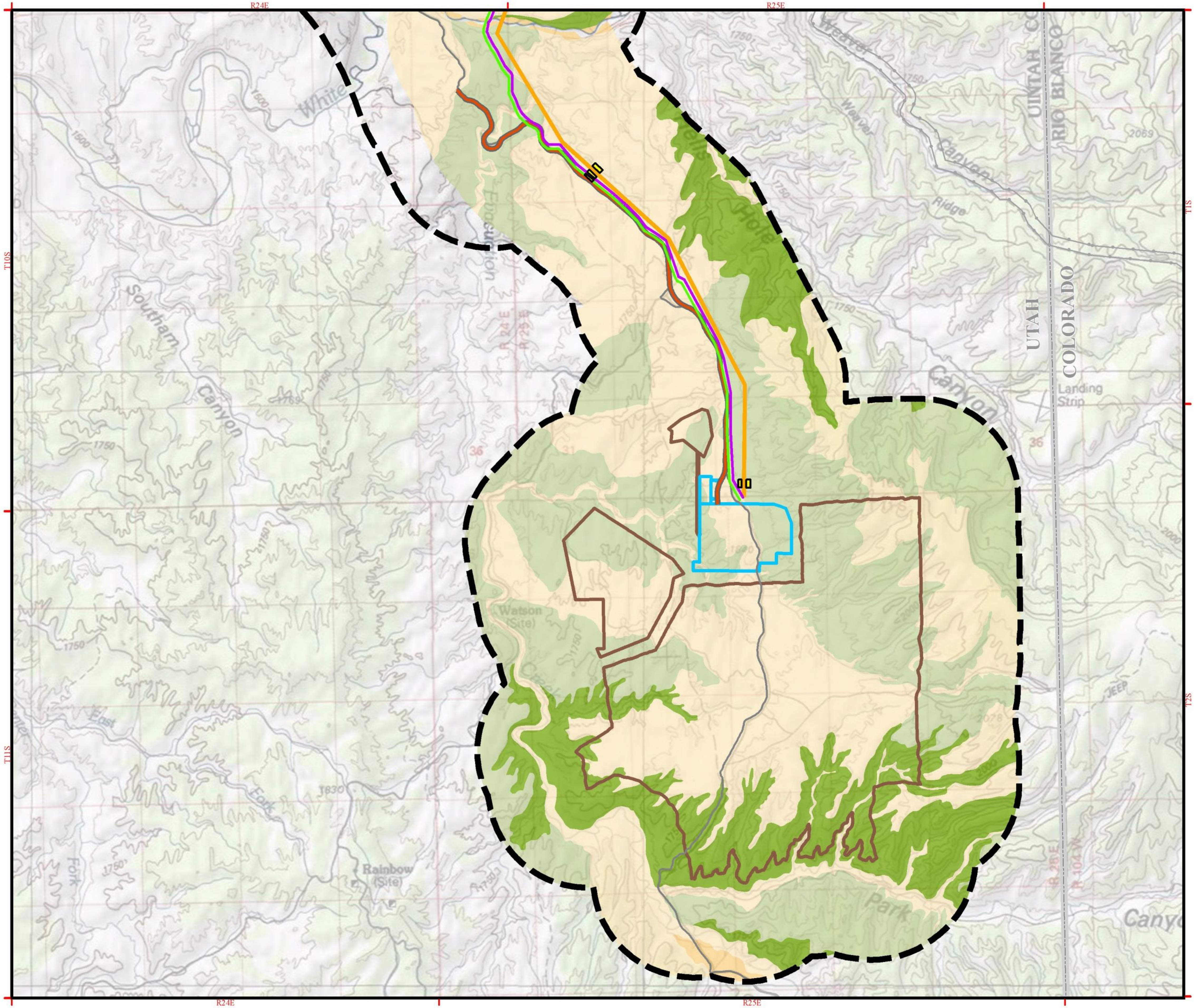

Map A-2b

Soil Resources

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

SOIL EROSION SUSCEPTIBILITY

- Low Water/Low Wind
- Low Water/Moderate Wind
- Moderate Water/Low Wind
- Moderate Water/Moderate Wind
- Moderate Water/High Wind
- High Water/Moderate Wind

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
- Proposed Construction Laydown Areas
- Proposed Switchyard

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

SSURGO Soil Erosion Susceptibility, NRCS 2013;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

NOTES:
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October 2015

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Miles
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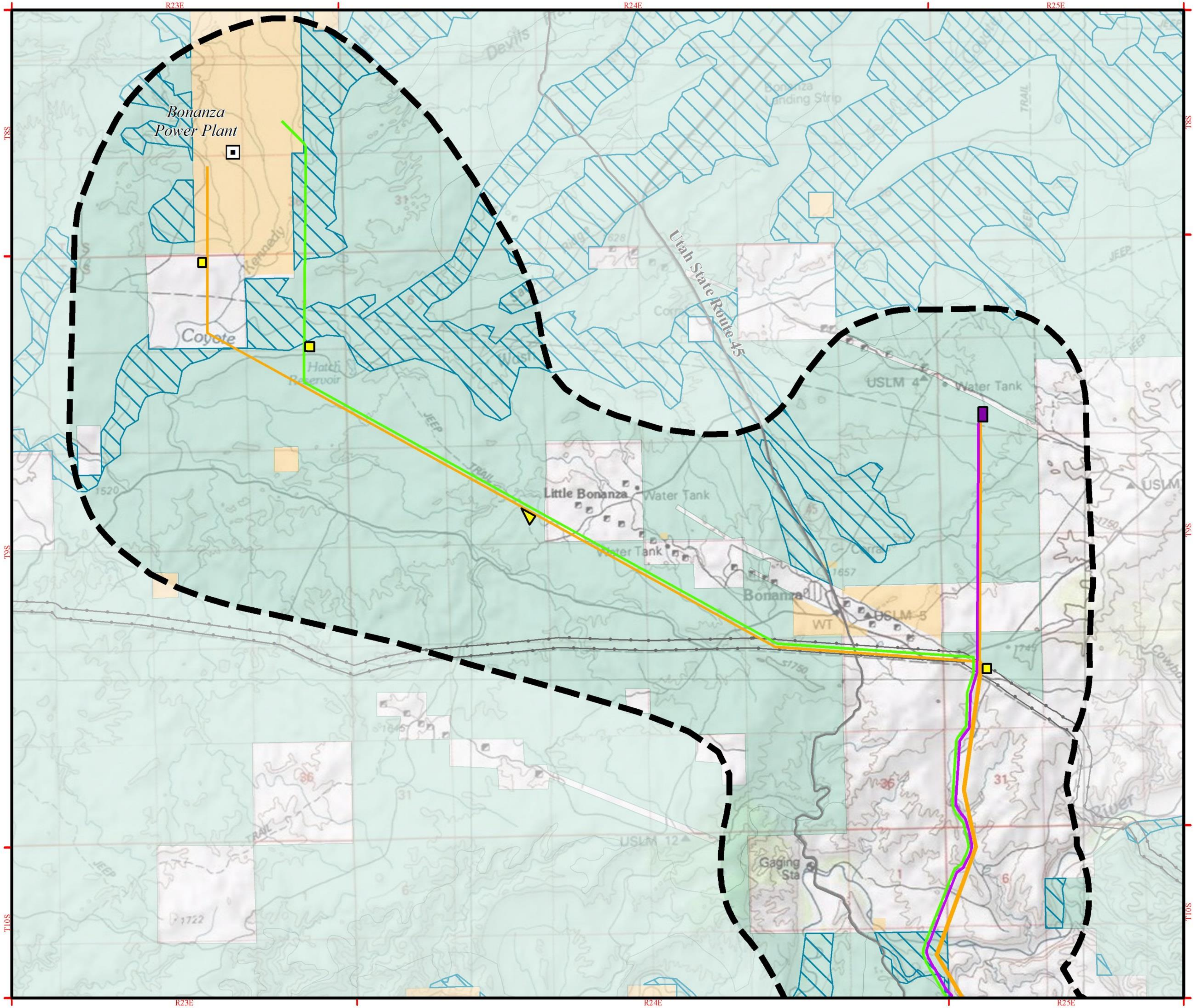

Map A-3a

Mineral Resources

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

MINERAL RESOURCES

- Oil and/or Gas Lease
- Split Estate Mineral Lease
- Other Mineral Lease

Utility Project Features

- Utility Project Study Area
- Dragon Road Improvements
- Proposed Gas Line and Product Pipeline
- Proposed Construction Laydown Areas
- Proposed Water Pipeline
- Proposed Switchyard
- Proposed Powerline(s)

General Reference

- Power Plant
- South Project Plant Site Area
- Utah State Route 45
- South Project Mine Site Area
- Gas Pipeline

Data Sources

Oil and/or Gas Leases, BLM 2013; Other Mineral Leases, BLM 2013;
Split Estate Mineral Leases, BLM 2013;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

NOTES:
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October 2015

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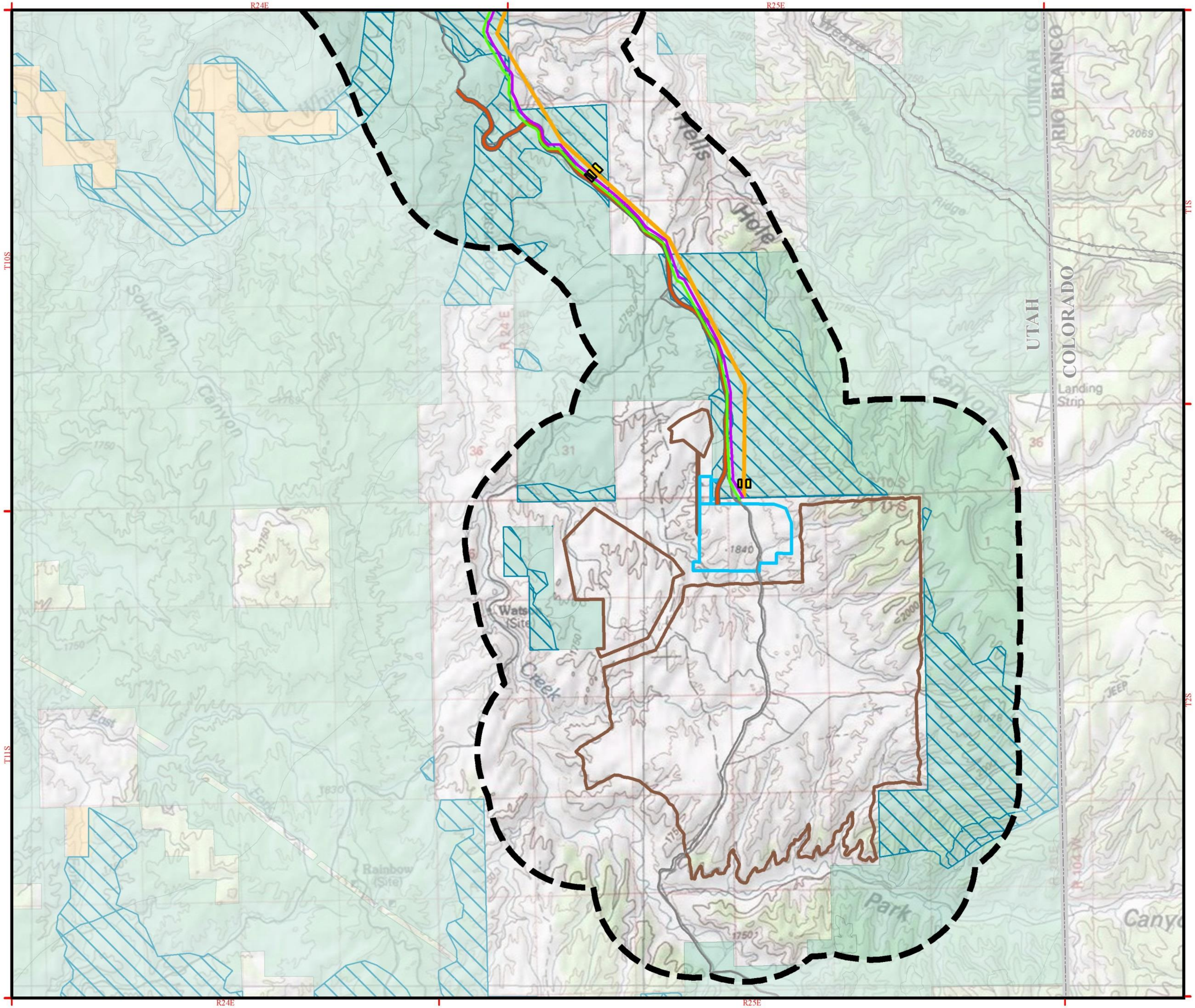

Map A-3b

Mineral Resources

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

MINERAL RESOURCES

- Oil and/or Gas Lease
- Split Estate Mineral Lease
- Other Mineral Lease

Utility Project Features

- Utility Project Study Area
- Dragon Road Improvements
- Proposed Gas Line and Product Pipeline
- Proposed Construction Laydown Areas
- Proposed Water Pipeline
- Proposed Switchyard
- Proposed Powerline(s)

General Reference

- Power Plant
- South Project Plant Site Area
- Utah State Route 45
- South Project Mine Site Area
- Gas Pipeline

Data Sources

Oil and/or Gas Leases, BLM 2013; Other Mineral Leases, BLM 2013;
Split Estate Mineral Leases, BLM 2013;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

NOTES:
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October 2015

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Miles
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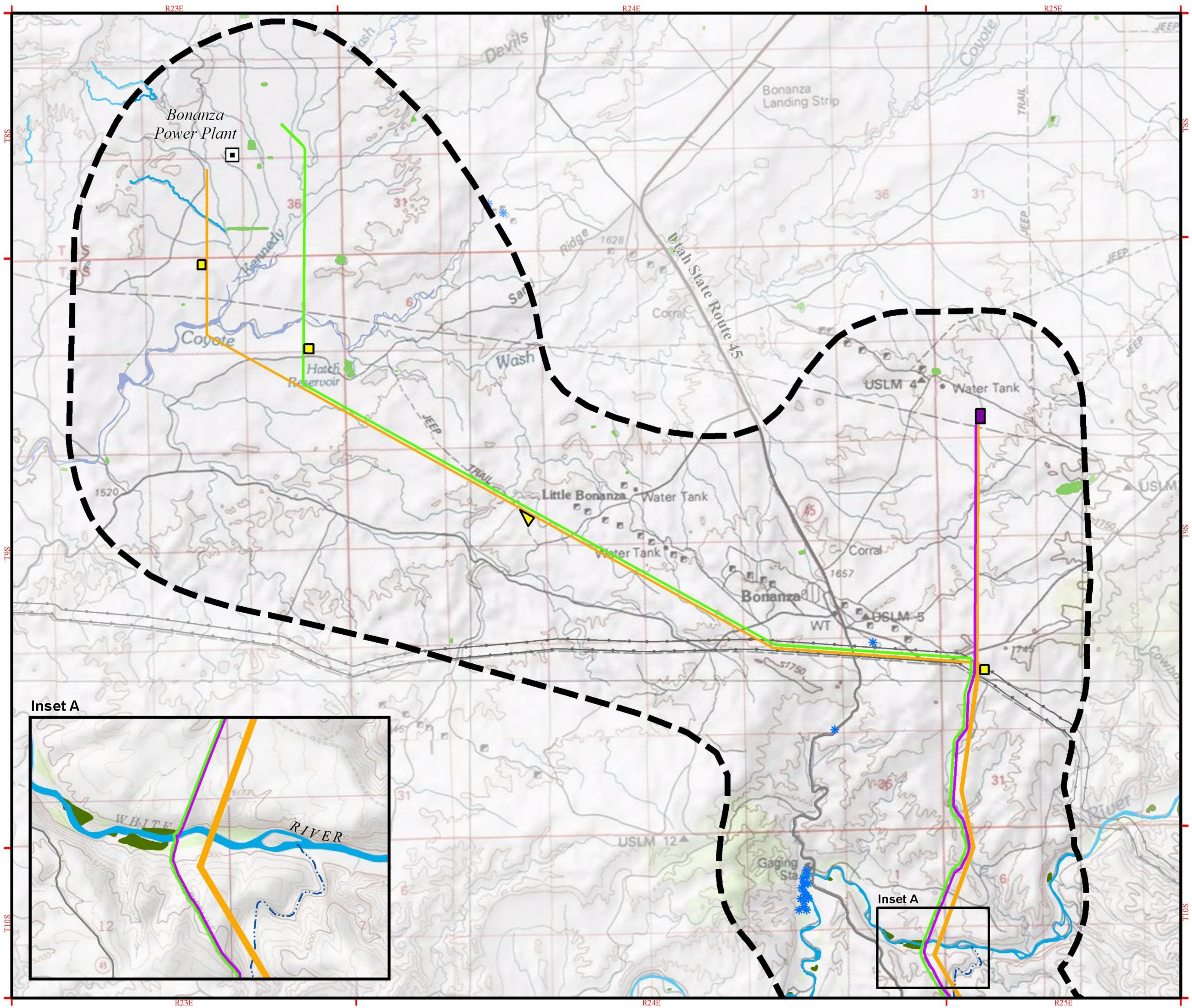

Map A-4a

Water Resources

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

WATER RESOURCES

- Well or Spring
- Perennial Stream
- Intermittent Stream
- Palustrine Scrub/Shrub Wetland
- Palustrine Emergent Wetland
- Impaired Water (303d) - Evacuation Creek

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
- Proposed Construction Laydown Areas
- Proposed Switchyard

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

National Hydrography Dataset, USGS 2015; National Wetland Inventory, FWS 2014;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

NOTES:
The entire project area is within the Lower White Subbasin.
Some linear project features are colocated and appear graphically as a single line. Refer to Map 1-1 for more information.

October 2015

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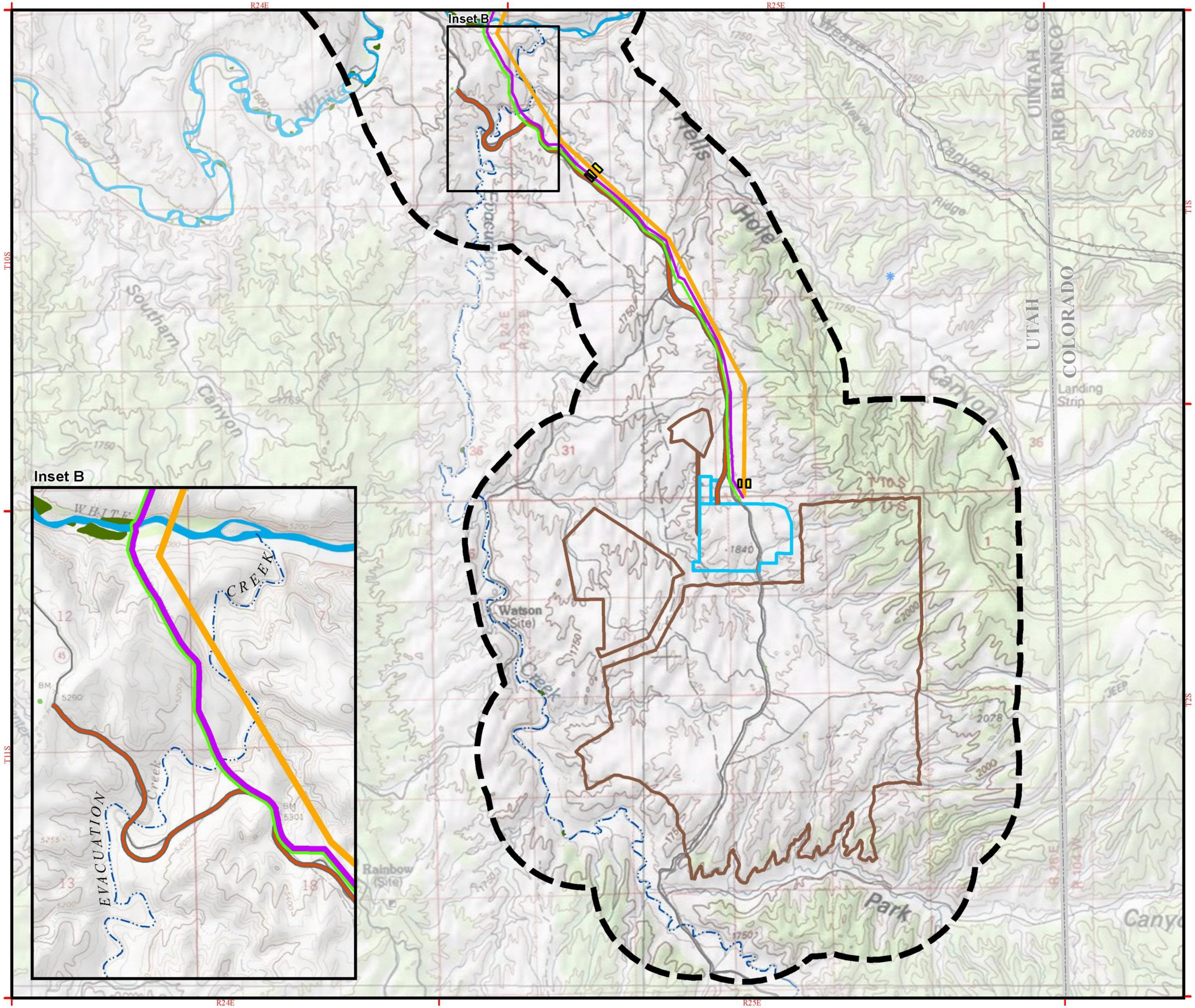

Map A-4b

Water Resources

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

WATER RESOURCES

- Well or Spring
- Perennial Stream
- Intermittent Stream
- Palustrine Scrub/Shrub Wetland
- Palustrine Emergent Wetland
- Impaired Water (303d) - Evacuation Creek

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
- Proposed Construction Laydown Areas
- Proposed Switchyard

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

National Hydrography Dataset, USGS 2015; National Wetland Inventory, FWS 2014;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
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Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

NOTES:
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October 2015

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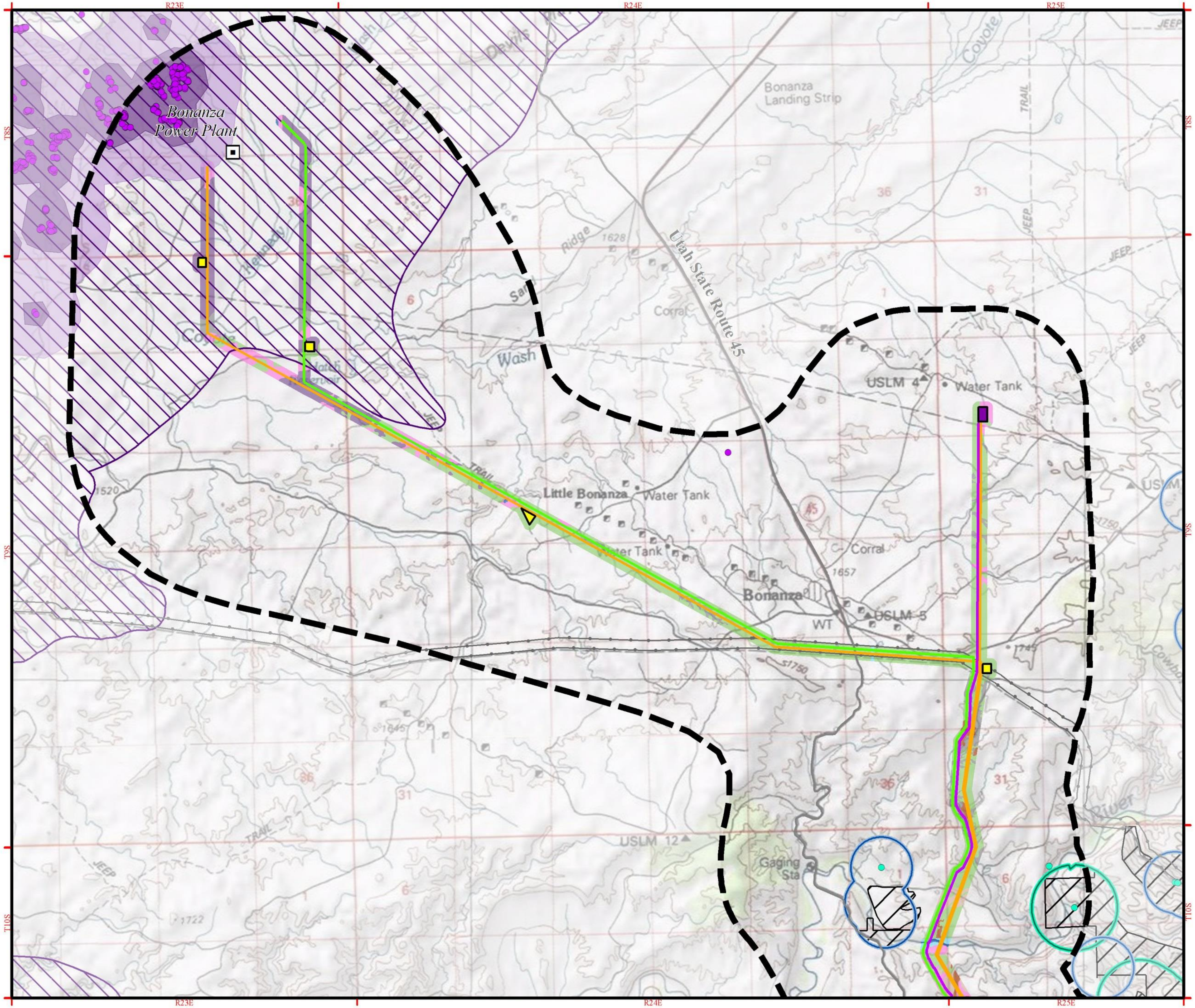

Map A-5a

Vegetation and Threatened and Endangered Plant Species

ENEFIT AMERICAN OIL UTILITY CORRIDOR PROJECT EIS

Resource Inventory

VEGETATION COMMUNITIES

- Badland
- Cliff and Canyon
- Developed/Disturbed
- Greasewood Flat
- Open Water
- Pinyon-Juniper Forest
- Riparian
- Sagebrush Shrubland
- Salt Desert Scrub

THREATENED AND ENDANGERED PLANT OCCURENCES

- Hairy Townsend Daisy
- Barneby Catseye
- Uinta Basin Hookless Cactus
- White River Penstemon
- Grahams Penstemon

THREATENED AND ENDANGERED PLANT HABITAT

- Uinta Basin Hookless Cactus Core 1
- Uinta Basin Hookless Cactus Core 2
- Uinta Basin Hookless Potential Range
- Grahams Penstemon Proposed Critical Habitat
- White River Penstemon Proposed Critical Habitat
- Penstemon Conservation Agreement Area

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
- Proposed Construction Laydown Areas
- Proposed Switchyard

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

Vegetation Communities, SWCA 2013;
Threatened and Endangered Plant Occurences, SWCA 2013, BLM 2015;
Threatened and Endangered Plant Habitat, BLM 2014, 2015;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

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October 2015

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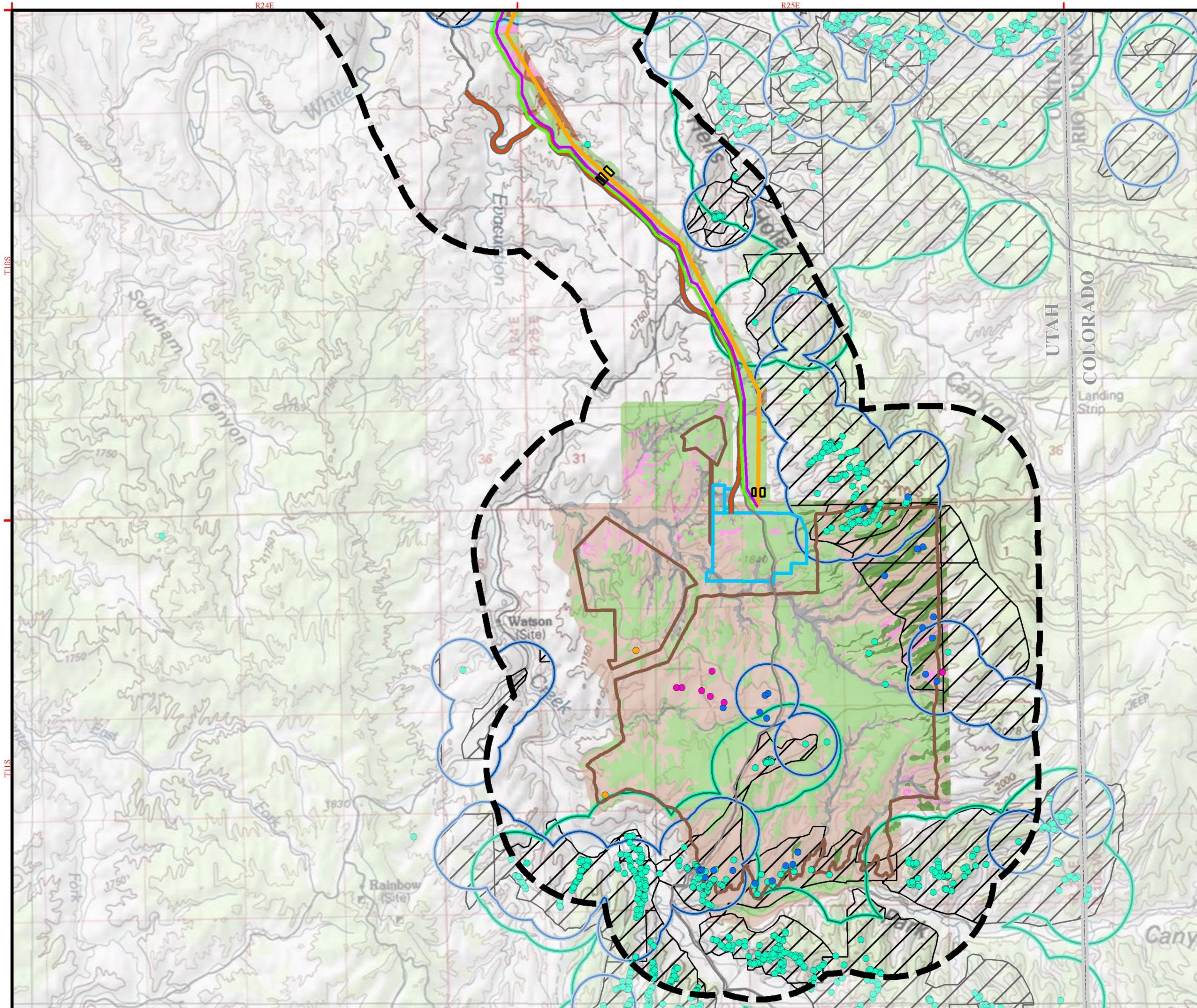

Map A-5b

Vegetation and Threatened and Endangered Plant Species

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

VEGETATION COMMUNITIES

- Badland
- Cliff and Canyon
- Developed/Disturbed
- Greasewood Flat
- Open Water
- Pinyon-Juniper Forest
- Riparian
- Sagebrush Shrubland
- Salt Desert Scrub

THREATENED AND ENDANGERED PLANT OCCURENCES

- Hairy Townsend Daisy
- Barneby Catseye
- Uinta Basin Hookless Cactus
- White River Penstemon
- Grahams Penstemon

THREATENED AND ENDANGERED PLANT HABITAT

- Uinta Basin Hookless Cactus Core 1
- Uinta Basin Hookless Cactus Core 2
- Uinta Basin Hookless Potential Range
- Grahams Penstemon Proposed Critical Habitat
- White River Penstemon Proposed Critical Habitat
- Penstemon Conservation Agreement Area

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
- Proposed Construction Laydown Areas
- Proposed Switchyard

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

Vegetation Communities, SWCA 2013;
Threatened and Endangered Plant Occurences, SWCA 2013, BLM 2015;
Threatened and Endangered Plant Habitat, BLM 2014, 2015;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

NOTES:
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October 2015

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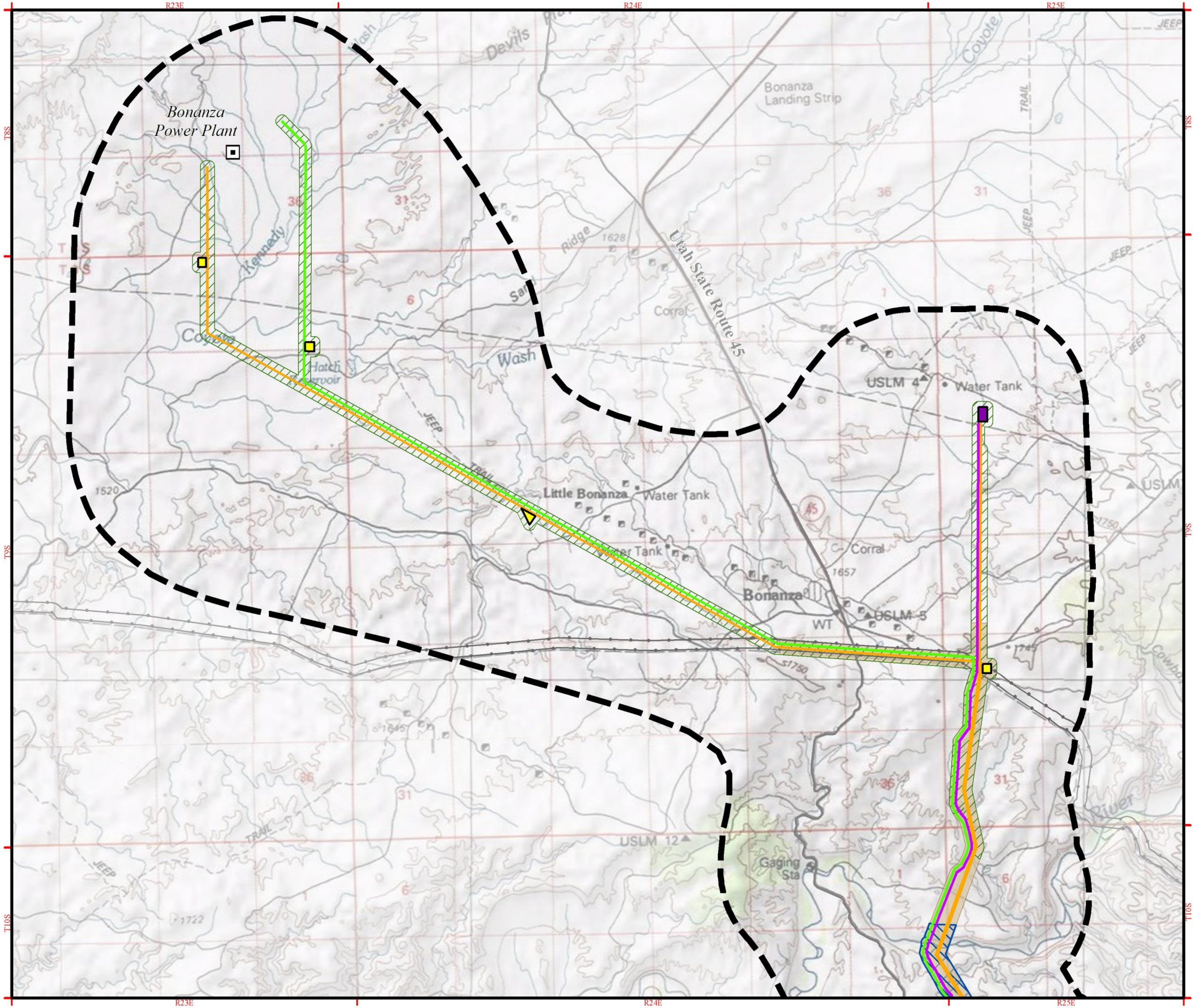

Map A-6a

Big Game Habitats

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

BIG GAME HABITATS

- Bighorn Sheep Habitat
- Pronghorn Habitat
- Bison Habitat
- Rocky Mountain Elk Habitat
- Mule Deer Habitat

Utility Project Features

- Utility Project Study Area
- Dragon Road Improvements
- Proposed Gas Line and Product Pipeline
- Proposed Construction Laydown Areas
- Proposed Water Pipeline
- Proposed Switchyard
- Proposed Powerline(s)

General Reference

- Power Plant
- South Project Plant Site Area
- Utah State Route 45
- South Project Mine Site Area
- Gas Pipeline

Data Sources

Bighorn Sheep Habitat, UDWR 2008; Bison Habitat, UDWR 2006;
Mule Deer Habitat, UDWR 2012; Pronghorn Habitat, UDWR 2010;
Rocky Mountain Elk Habitat, UDWR 2008;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
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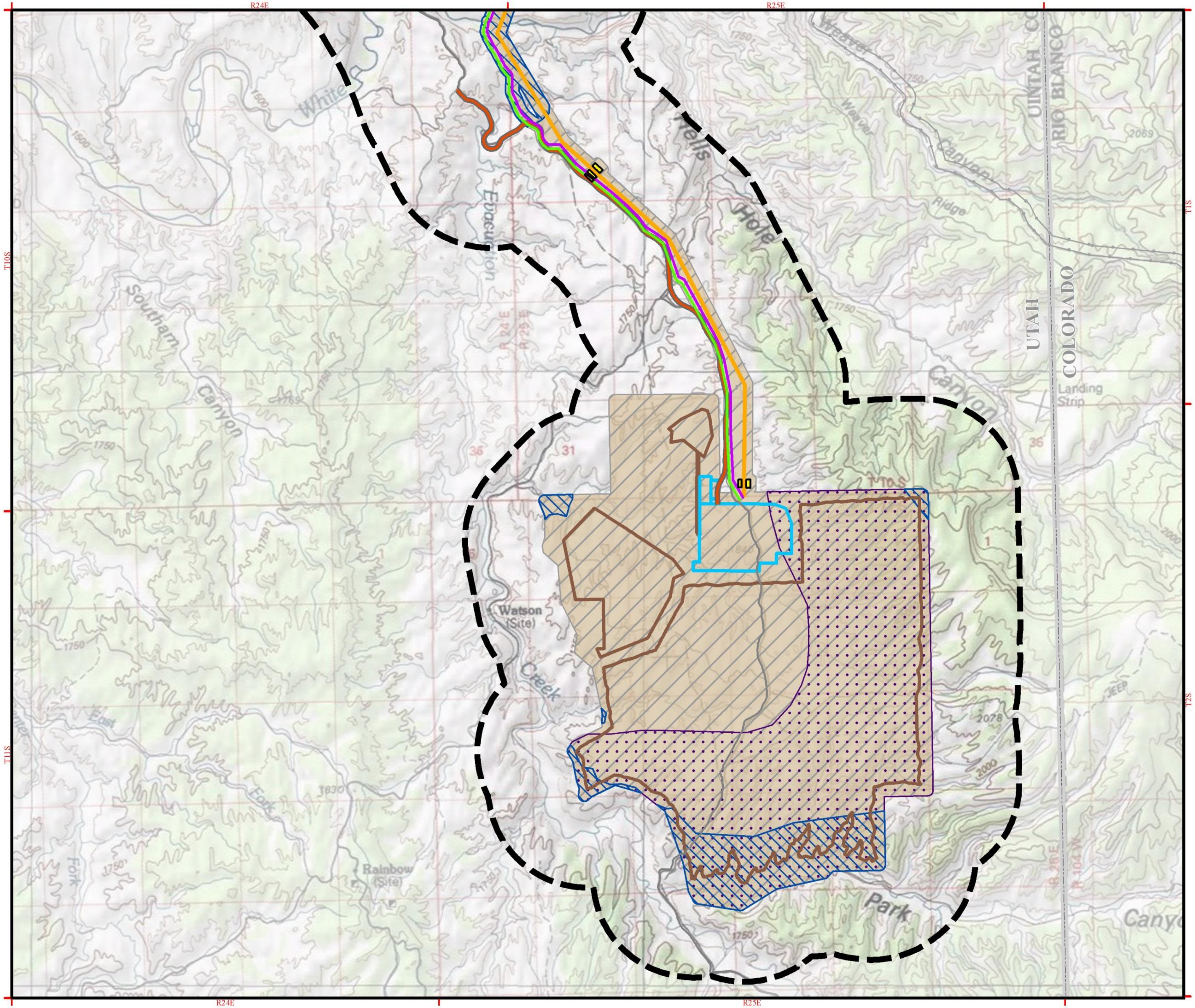

Map A-6b

Big Game Habitats

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

BIG GAME HABITATS

- Bighorn Sheep Habitat
- Bison Habitat
- Mule Deer Habitat
- Pronghorn Habitat
- Rocky Mountain Elk Habitat

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
- Proposed Construction Laydown Areas
- Proposed Switchyard

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

Bighorn Sheep Habitat, UDWR 2008; Bison Habitat, UDWR 2006;
Mule Deer Habitat, UDWR 2012; Pronghorn Habitat, UDWR 2010;
Rocky Mountain Elk Habitat, UDWR 2008;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
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Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

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Miles
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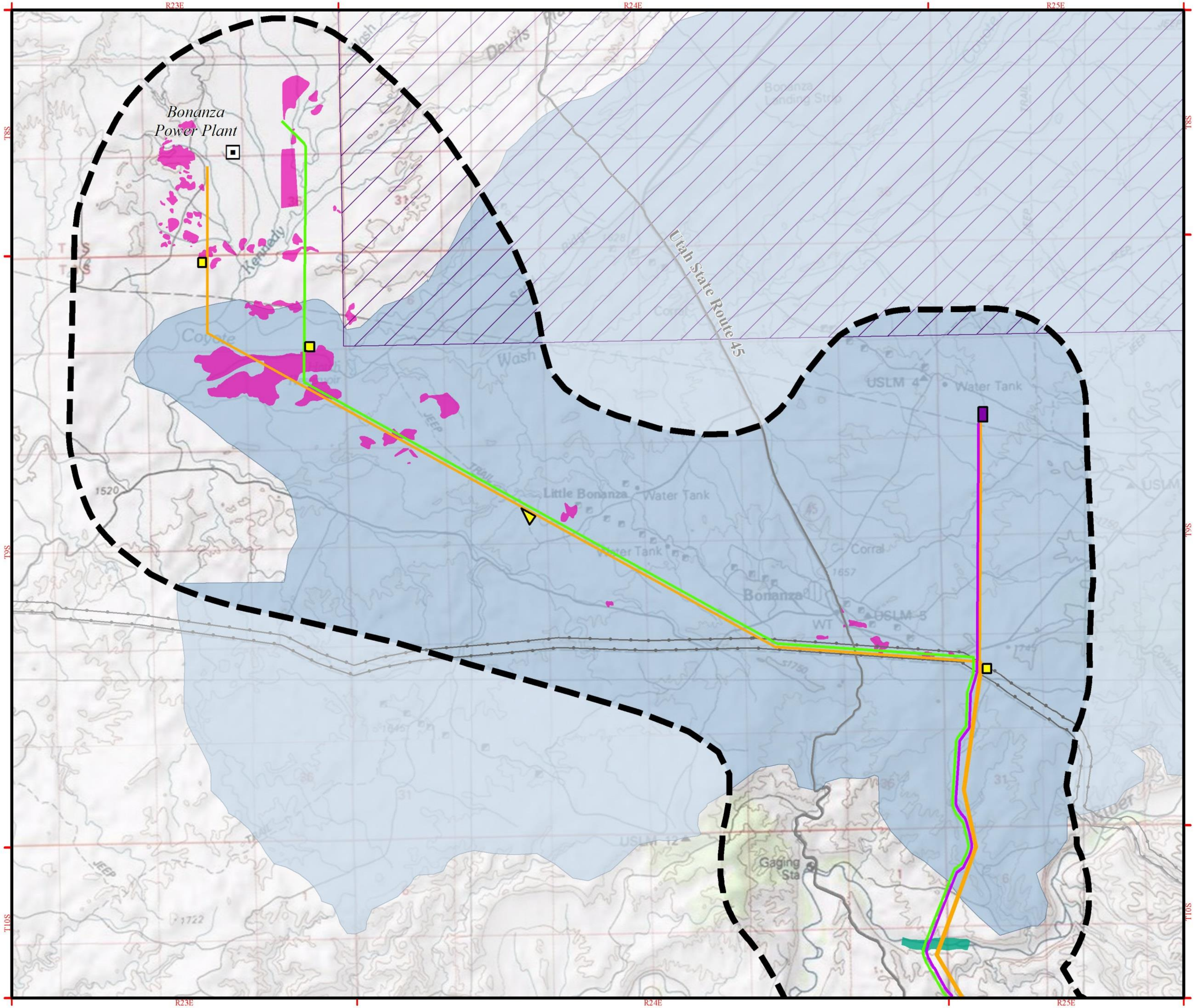

Map A-7a

Special Status Wildlife

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

SPECIAL STATUS WILDLIFE

- Black-footed Ferret Primary Management Zone
- Greater Sage-grouse Occupied, Winter, and Brood Habitat
- Prairie Dog Colony
- Yellow-billed Cuckoo Survey Area

Utility Project Features

- Utility Project Study Area
- Dragon Road Improvements
- Proposed Gas Line and Product Pipeline
- Proposed Construction Laydown Areas
- Proposed Water Pipeline
- Proposed Switchyard
- Proposed Powerline(s)

General Reference

- Power Plant
- South Project Plant Site Area
- Utah State Route 45
- South Project Mine Site Area
- Gas Pipeline

Data Sources

Black-footed Ferret Primary Management Zones, SWCA 2013;
Prairie Dog Colonies, SWCA 2013;
Greater Sage-grouse Occupied, Winter, and Brood Habitat, BLM 2012;
Yellow-billed Cuckoo Survey Area, SWCA 2013;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

NOTES:
[1] Raptor nests were determined to be active or inactive during surveys in 2013.
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October 2015

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Miles
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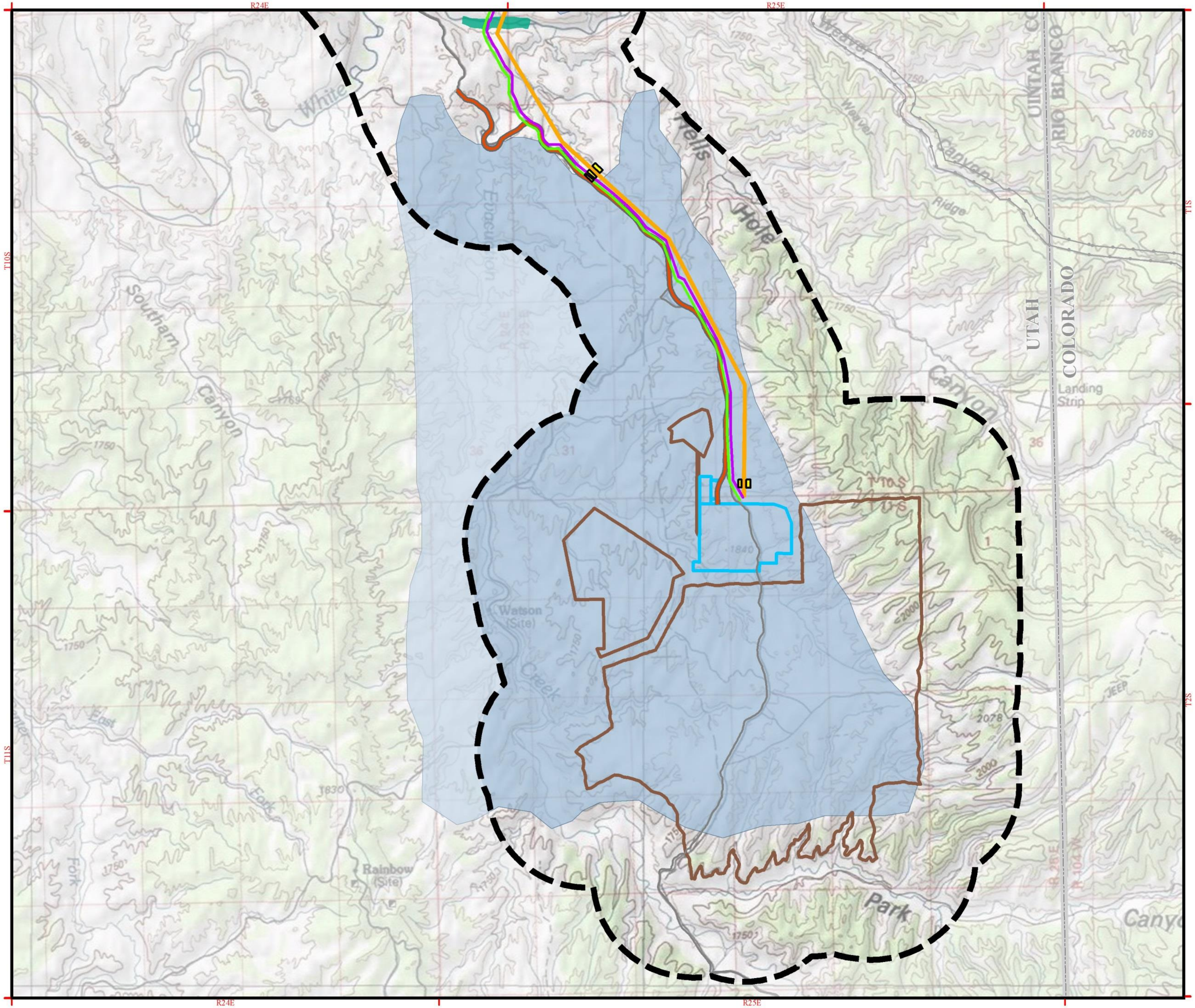

Map A-7b

Special Status Wildlife

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

SPECIAL STATUS WILDLIFE

- Black-footed Ferret Primary Management Zone
- Greater Sage-grouse Occupied, Winter, and Brood Habitat
- Prairie Dog Colony
- Yellow-billed Cuckoo Survey Area

Utility Project Features

- Utility Project Study Area
- Dragon Road Improvements
- Proposed Gas Line and Product Pipeline
- Proposed Construction Laydown Areas
- Proposed Water Pipeline
- Proposed Switchyard
- Proposed Powerline(s)

General Reference

- Power Plant
- South Project Plant Site Area
- Utah State Route 45
- South Project Mine Site Area
- Gas Pipeline

Data Sources

Black-footed Ferret Primary Management Zones, SWCA 2013;
Prairie Dog Colonies, SWCA 2013;
Greater Sage-grouse Occupied, Winter, and Brood Habitat, BLM 2012;
Yellow-billed Cuckoo Survey Area, SWCA 2013;
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[1] Raptor nests were determined to be active or inactive during surveys in 2013.
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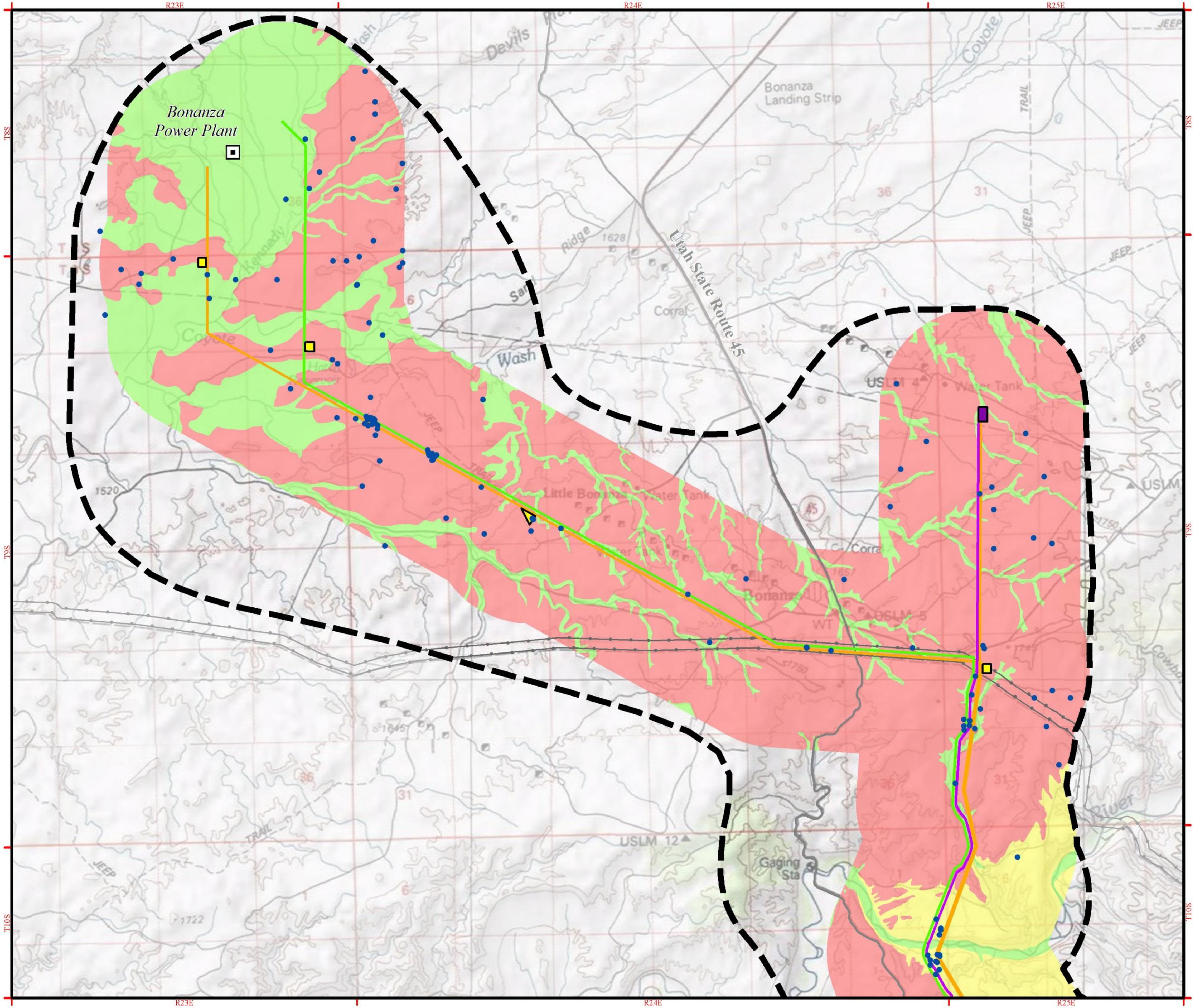

Map A-8a

Paleontological Resources

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

FOSSILS

- Fossil Locality

POTENTIAL FOSSIL YIELD CLASSIFICATIONS

- Very High
- High
- Moderate/Undetermined
- Low

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
- Proposed Construction Laydown Areas
- Proposed Switchyard

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

Fossil Localities, SWCA 2013; Potential Fossil Yield Classifications, UGS 2009;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
Pipelines as digitized by EPG, POWERmap Platts 2006;
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NOTES:
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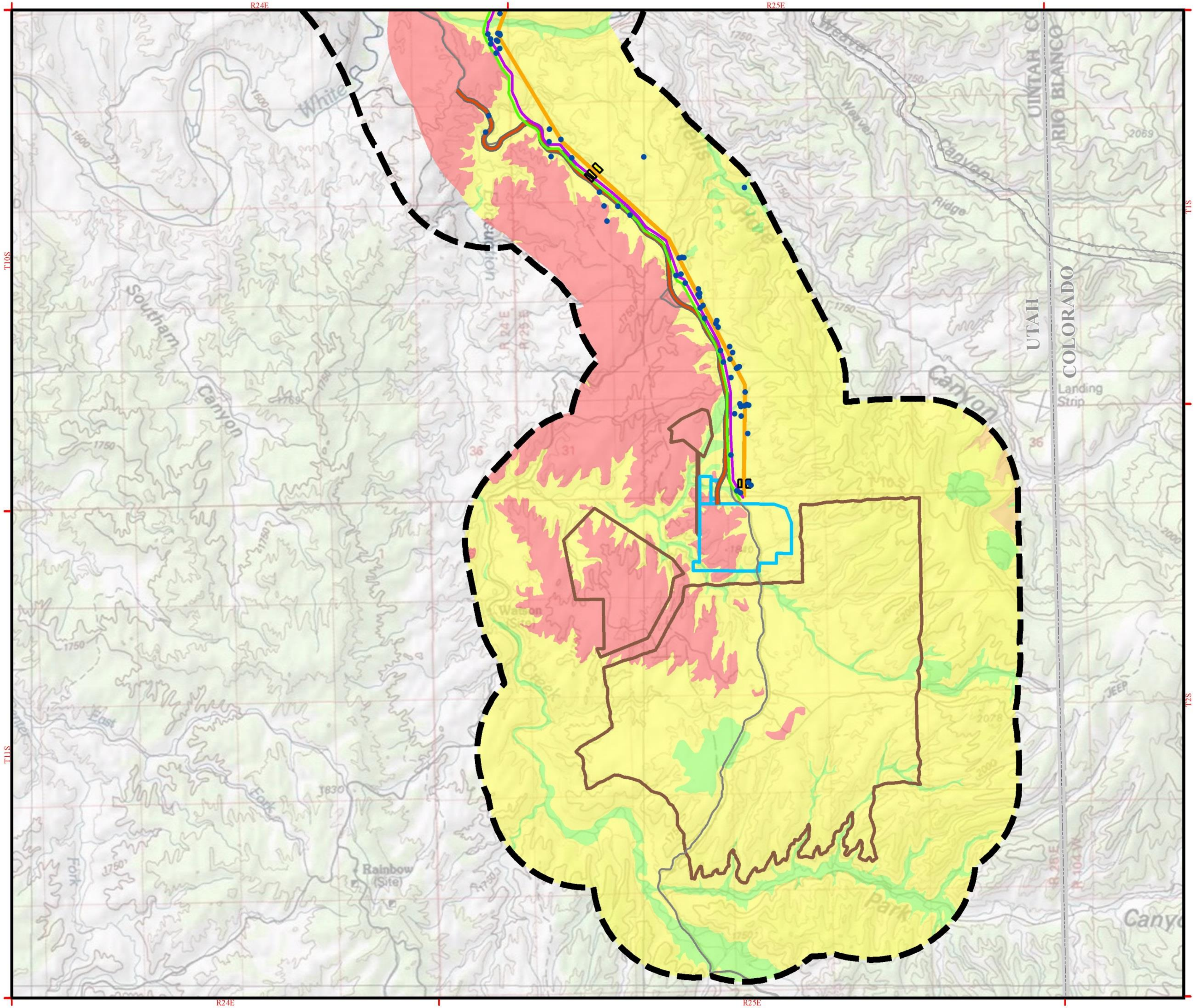

Map A-8b

Paleontological Resources

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

FOSSILS

- Fossil Locality

POTENTIAL FOSSIL YIELD CLASSIFICATIONS

- Very High
- High
- Moderate/Undetermined
- Low

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
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- Gas Pipeline
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- South Project Mine Site Area

Data Sources

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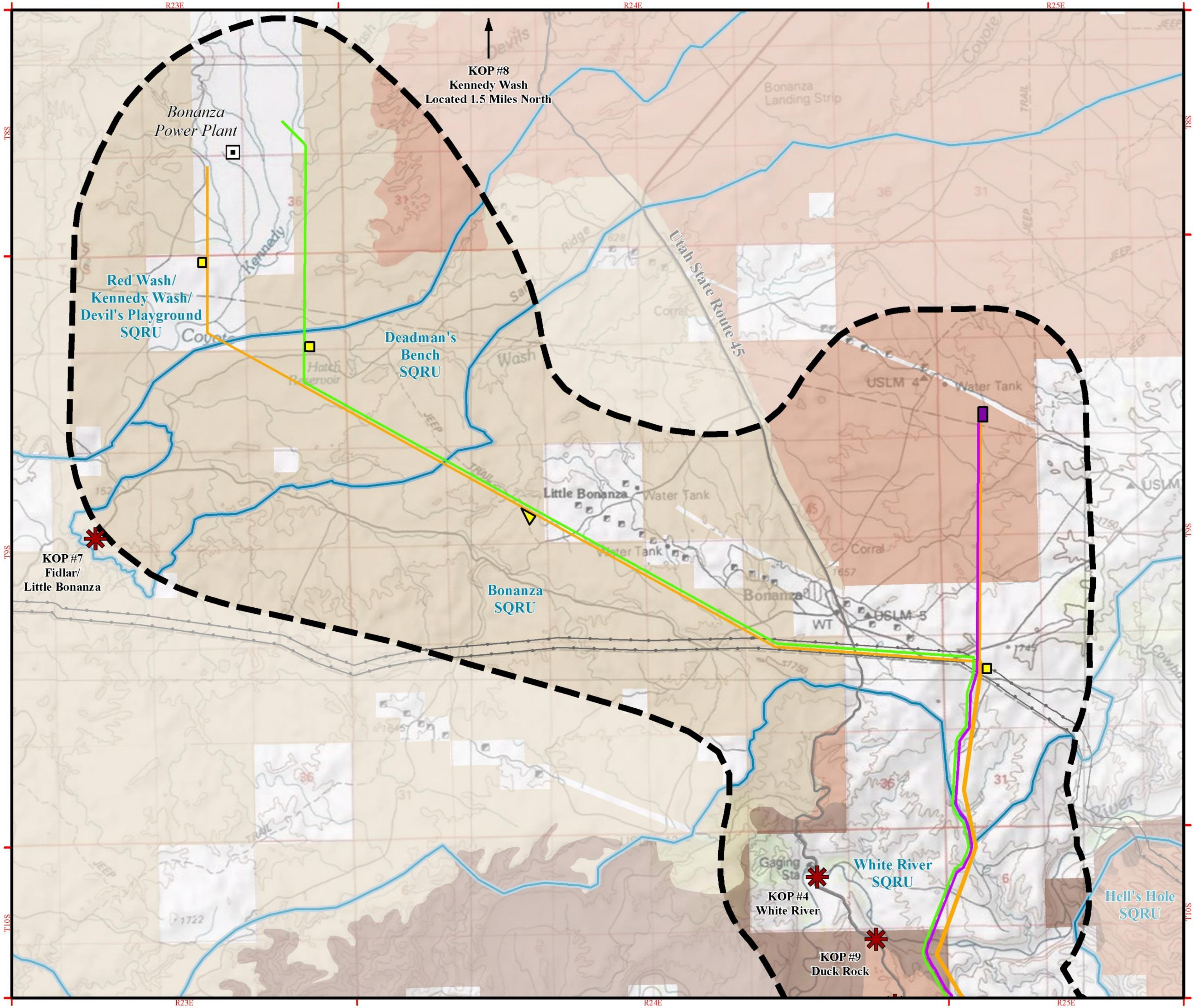

Map A-9a

Visual Resources

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

KEY OBSERVATION POINT (KOP) LOCATIONS

KOP Location

BLM VISUAL RESOURCE MANAGEMENT (VRM) CLASSES

Class II
Class III
Class IV

BLM VISUAL RESOURCE INVENTORY

Scenic Quality Rating Unit (SQRU)

Utility Project Features

Utility Project Study Area
Proposed Gas Line and Product Pipeline
Proposed Water Pipeline
Proposed Powerline(s)
Dragon Road Improvements
Proposed Construction Laydown Areas
Proposed Switchyard

General Reference

Power Plant
Utah State Route 45
Gas Pipeline
South Project Plant Site Area
South Project Mine Site Area

Data Sources

Key Observation Points, SWCA 2013, EPG 2015;
BLM Visual Resource Management Classes, BLM 2008;
BLM Scenic Quality Rating Units, BLM 2013;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
Pipelines as digitized by POWERmap Platts 2006;
Land Holdings/Leases, Enefit 2013; South Project Plant and Mine Site Areas, Enefit 2013

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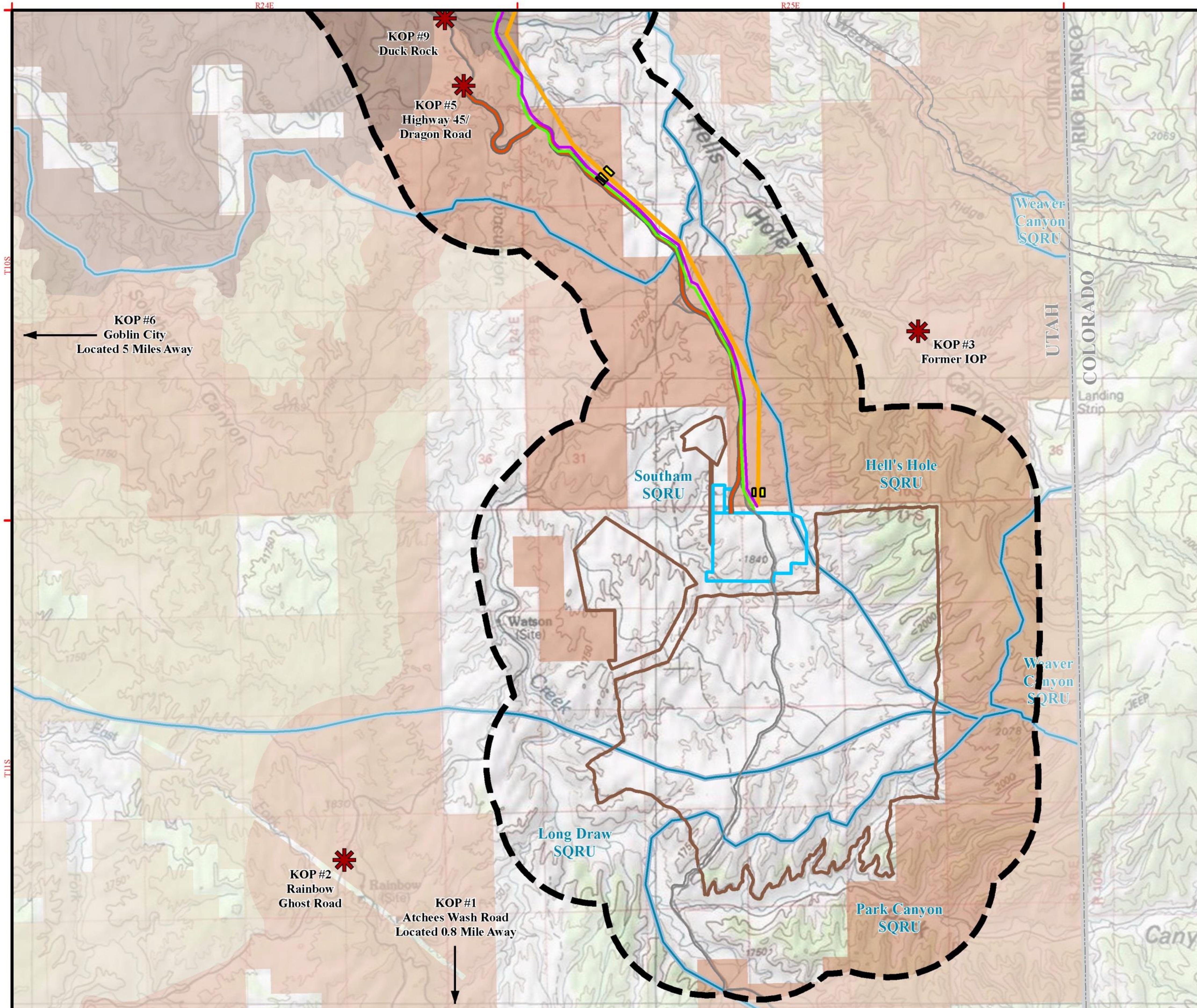

Map A-9b

Visual Resources

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

KEY OBSERVATION POINT (KOP) LOCATIONS

KOP Location

BLM VISUAL RESOURCE MANAGEMENT (VRM) CLASSES

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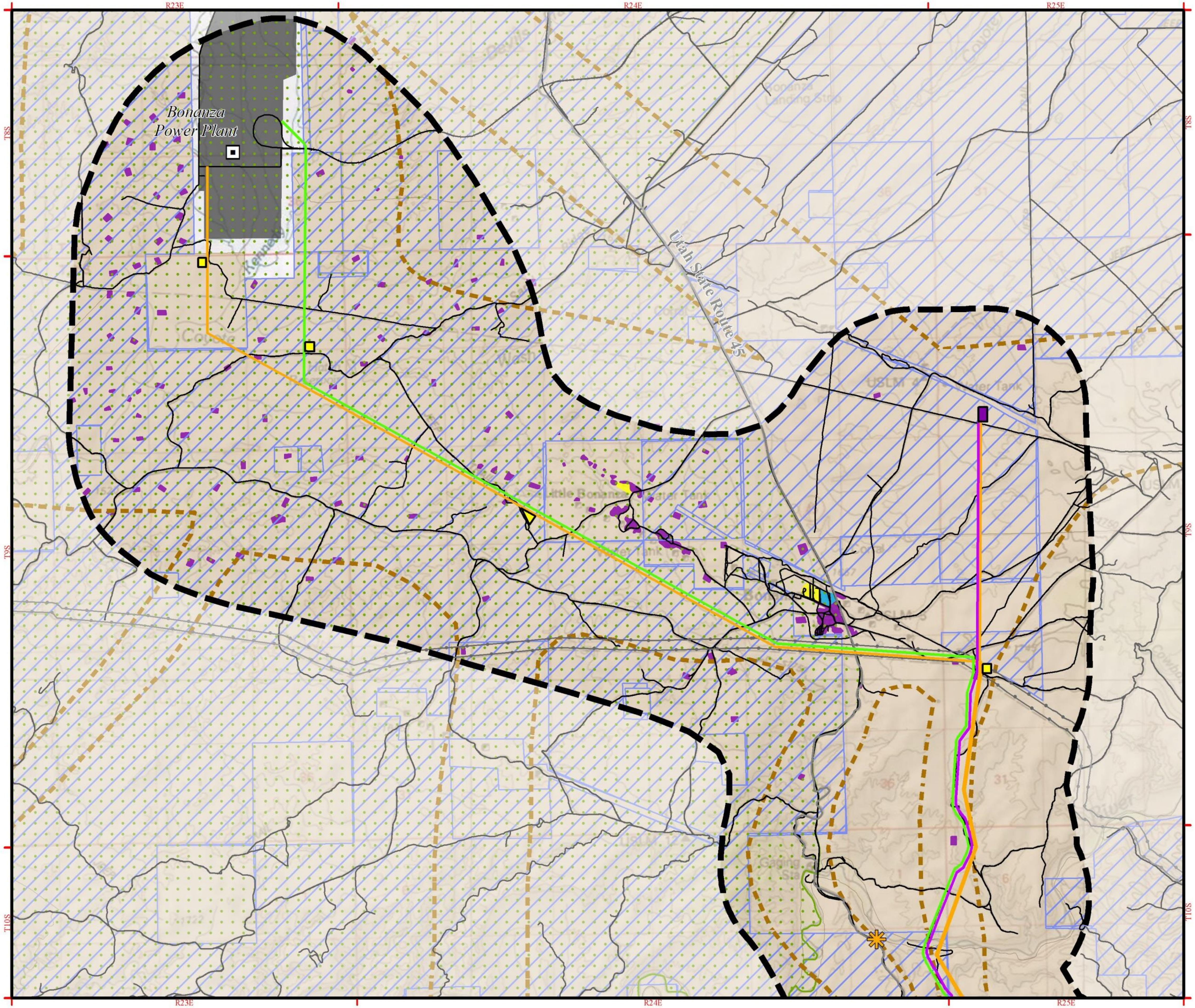

Map A-10a

Land Use, Recreation, and Special Designations

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

EXISTING LAND USES

- Road
- Railroad
- Industrial
- Public/Quasi Public
- Residential
- Utility
- Grazing Allotment
- Vernal Field Office Utility Corridor

RECREATION RESOURCES

- Duck Rock Interpretive Kiosk
- Off Highway Vehicle Designated Area

SPECIAL DESIGNATIONS

- Wild Horse Herd Area

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
- Proposed Construction Laydown Areas
- Proposed Switchyard

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

Roads, ESRI 2013, Uintah County 2015; Railroads, ESRI 2013;
Existing Land Uses as digitized by EPG, NAIP 2014; Utility Corridors, BLM 2008;
Grazing Allotments, BLM 2012; Duck Rock Interpretive Kiosk, BLM 2011;
Off Highway Vehicle Designated Areas, BLM 2008; Wild Horse Herd Areas, BLM 2009;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
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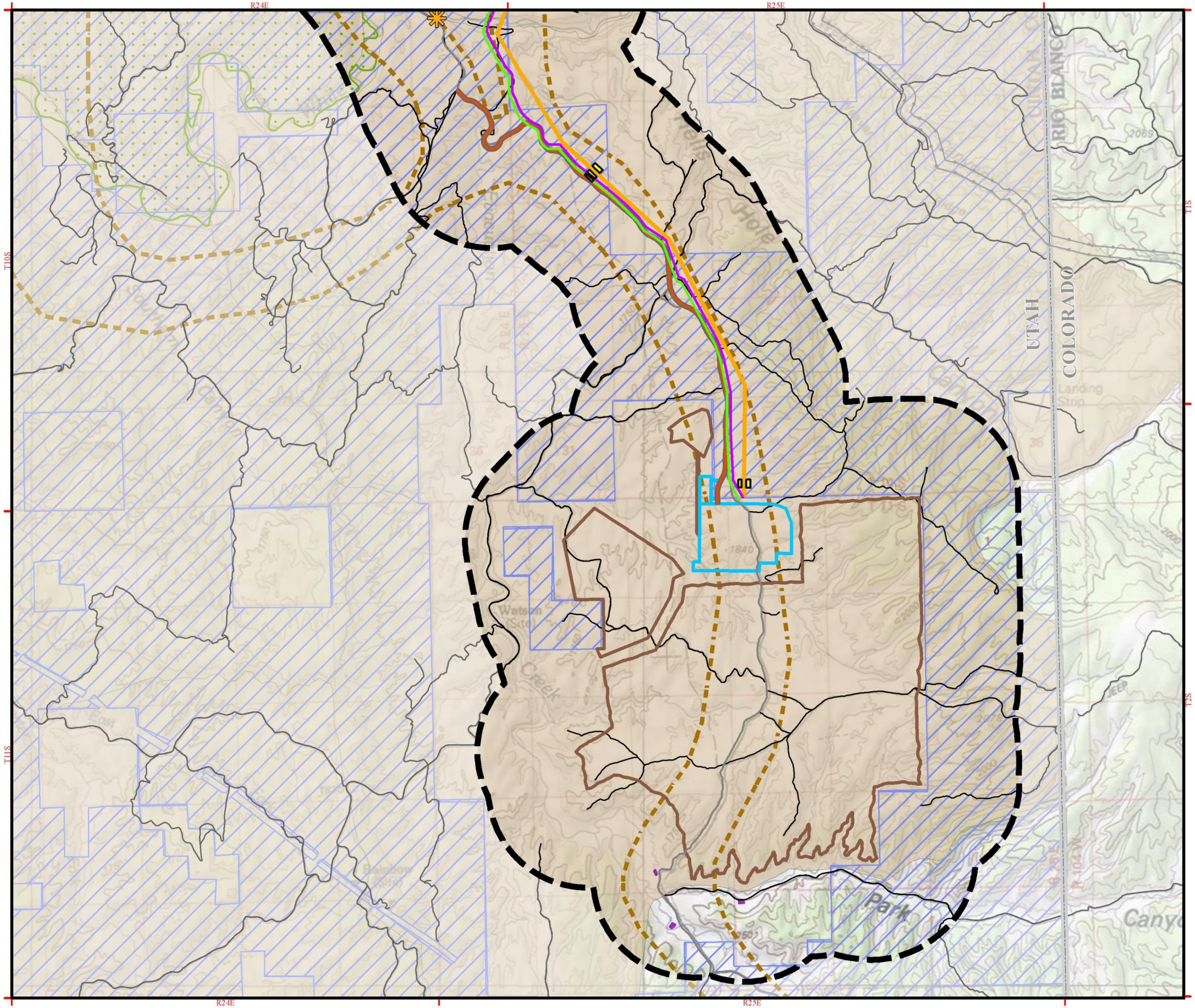

Map A-10b

Land Use, Recreation, and Special Designations

ENEFIT AMERICAN OIL UTILITY CORRIDOR PROJECT EIS

EXISTING LAND USES

- Road
- Railroad
- Industrial
- Public/Quasi Public
- Residential
- Utility
- Grazing Allotment
- Vernal Field Office Utility Corridor

RECREATION RESOURCES

- Duck Rock Interpretive Kiosk
- Off Highway Vehicle Designated Area

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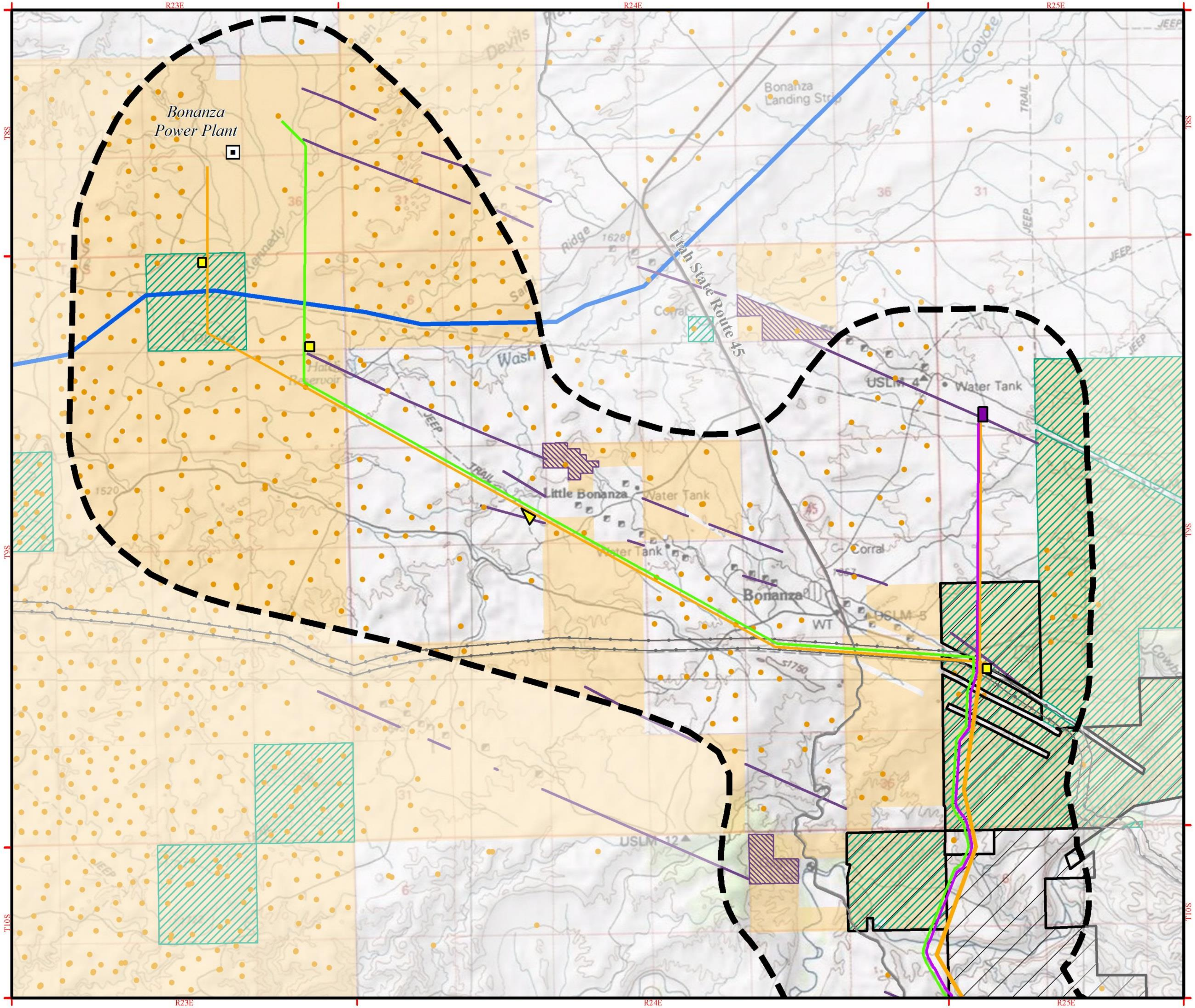

Map A-11a

Cumulative Development

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

PAST AND PRESENT ACTIONS

- Gilsonite Mine
- Gilsonite Lease
- Oil Shale and/or Tar Sand Development
- Oil and/or Gas Well
- Oil and/or Gas Development

REASONABLY FORESEEABLE FUTURE ACTIONS

- Energy Gateway South Transmission Line Alternative Route
- Oil Shale and/or Tar Sand Development
- Enefit Land Holdings/ Leases
- BLM Preferential Lease
- BLM RD&D Lease

Utility Project Features

- Utility Project Study Area
- Proposed Gas Line and Product Pipeline
- Proposed Water Pipeline
- Proposed Powerline(s)
- Dragon Road Improvements
- Proposed Construction Laydown Areas
- Proposed Switchyard

General Reference

- Power Plant
- Utah State Route 45
- Gas Pipeline
- South Project Plant Site Area
- South Project Mine Site Area

Data Sources

Gilsonite Mines, BLM 2008; Gilsonite Leases, SITLA 2014;
Oil Shale and/or Tar Sands Development, SITLA 2012, 2014, Enefit 2013;
Oil and Gas Wells, BLM 2012; Oil and Gas Development, BLM 2011, 2012;
Energy Gateway South Transmission Project, EPG 2014; Enefit Land Holdings/Leases, Enefit 2013;
Land Jurisdiction BLM 2013; Utility Project Features, Enefit 2013;
Power Plant as digitized by EPG, 2013; Highway 45 Alignment, BLM 2013;
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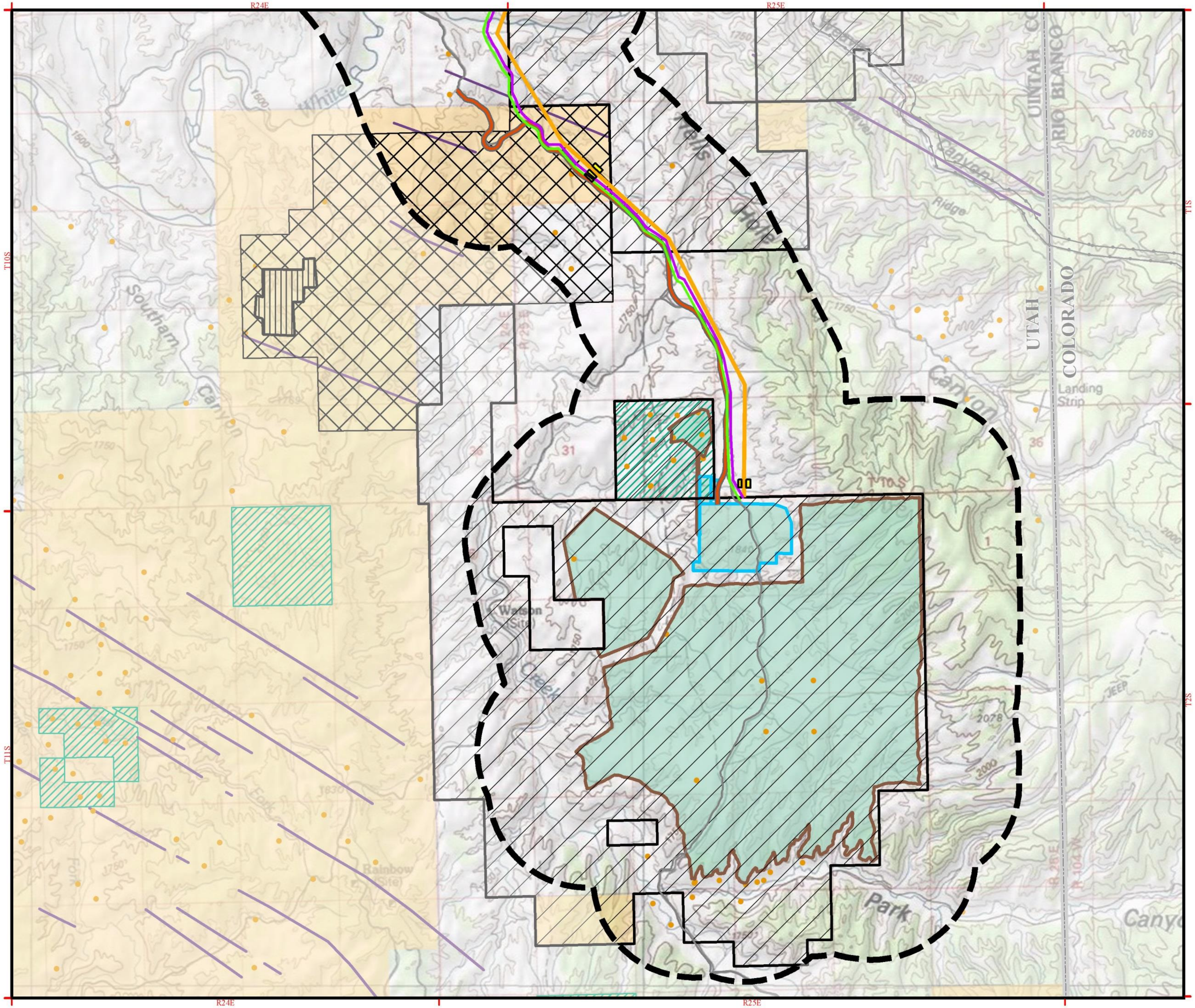

Map A-11b

Cumulative Development

ENEFIT AMERICAN OIL
UTILITY CORRIDOR PROJECT EIS

Resource Inventory

PAST AND PRESENT ACTIONS

- Gilsonite Mine
- Gilsonite Lease
- Oil Shale and/or Tar Sand Development
- Oil and/or Gas Well
- Oil and/or Gas Development

REASONABLY FORESEEABLE FUTURE ACTIONS

- Energy Gateway South Transmission Line Alternative Route
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Gilsonite Mines, BLM 2008; Gilsonite Leases, SITLA 2014;
Oil Shale and/or Tar Sands Development, SITLA 2012, 2014, Enefit 2013;
Oil and Gas Wells, BLM 2012; Oil and Gas Development, BLM 2011, 2012;
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Appendix B
Upland Erosion Control, Revegetation, and Maintenance Plan

Upland Erosion Control, Revegetation, and Maintenance Plan

For

Enefit American Oil's Utility Corridor Project

April 23, 2014

Table of Contents

Table of Tables

List of Acronyms and Abbreviations

BLM	Bureau of Land Management
EAO	Enefit American Oil
FWS	U.S. Fish and Wildlife Service
OHV	off-highway vehicle
ROW(s)	Right(s)-of-Way
VFO	Vernal Field Office

1. Introduction

Enefit American Oil (EAO) has prepared this *Upland Erosion Control, Revegetation, and Maintenance Plan* (*Reclamation Plan*) to identify the measures that would be used prior to, during, and following construction of EAO's proposed pipeline and transmission line utility corridor and access road improvements to Dragon Road (the Project, as described in Section 1.1). This *Reclamation Plan* has been prepared in accordance with the goals and objectives of the Bureau of Land Management (BLM), Vernal Field Office (VFO) and the BLM Green River District reclamation guidelines, except where the methods, techniques, and applications in this document are more stringent.

1.1. Project Description

This *Reclamation Plan* is applicable to the pre-construction, construction and post-construction of the proposed pipeline and transmission line facilities, including the pipeline and transmission line rights-of-way (ROWs), meter and valve stations, temporary laydown and staging areas, substations, and any other locations disturbed during construction, including interconnections with existing utilities. This *Reclamation Plan* is also applicable to those unpaved portions of the Dragon Road improvements that are not otherwise addressed by Uintah County road design requirements.

EAO is proposing to construct water supply, natural gas supply, and product delivery underground pipelines, as well as overhead electric transmission lines, across federal, state, and private land to supply utilities for EAO's oil shale mining and mineral processing operation located on EAO private land. The proposed utilities would consist of the following:

- Approximately 19 miles of 24- to 30-inch diameter welded steel water supply pipeline;
- Approximately 10 miles of 6- to 8-inch diameter welded steel natural gas supply pipeline;
- Approximately 11 miles of 12- to 16-inch diameter welded steel product delivery pipeline;
- Approximately 30 miles of 138-kV overhead transmission lines (including one 20-mile segment and a second 10 mile segment);
- Expanded ROW and improvement associated with the existing Dragon Road; and
- Associated ancillary facilities and temporary workspaces.

For more detailed information regarding the proposed activities, see EAO's Detailed Plan of Development, submitted to the Bureau of Land Management, Vernal Field Office April 2014.

1.2. Plan Purpose

The purpose of this *Reclamation Plan* is to describe and prescribe methods for cleanup, topsoil replacement, erosion control, seeding and planting, and reclamation monitoring. This plan is applicable to all construction disturbance activities associated with the Project, including pipeline and transmission line ROWs, temporary workspaces, Dragon Road improvement areas (not otherwise addressed in the Uintah County road design standards), and other areas of disturbance. This plan will be implemented on all lands in the Project area, with any modifications subject to landowner approval.

1.3. General Reclamation Objectives

The short-term goals of reclamation are to control erosion and sedimentation and minimize impacts to adjacent land. Properly executed construction practices, including temporary erosion control, optimum scheduling, and timely construction, will mitigate short-term impacts. Construction of the utility corridor Project would occur in two mobilizations separated by approximately 18 months (Section 2), and short-term reclamation goals are planned to be met during that interim time period.

Long-term goals include erosion and sedimentation control, protection of water resources, soil stabilization through successful reestablishment of stable conditions, reestablishment of functional vegetative communities, and a return to pre-existing land uses and conditions. The long-term goals will be met following the completion of Project construction through implementation of this *Reclamation Plan*. Monitoring during and following the construction phase will ensure that these goals are achieved.

EAO's reclamation efforts will meet short- and long-term reclamation goals by employing the following:

- Using proper growth media management techniques, including stripping, stockpiling, and reapplication of topsoil material where required to restore soil horizons and establish surface conditions conducive to the development of diverse, stable, self-generating plant communities;

- Establishing stable surface and drainage conditions that would minimize erosion and sedimentation;

- Revegetating disturbed areas using re-spread topsoil materials, locally or regionally collected seed (as available), in order to establish a long-term productive biotic community compatible with existing and proposed future land uses;

- Encourage native revegetation and discourage invasive weed spread by implementing practices identified in the Project's *Noxious Weed Control Plan*;

- Restoring contours to blend with the surrounding landscape; and

- Monitoring during the construction, restoration, and post-construction phases to ensure that short- and long-term reclamation goals are achieved. If the monitoring of the reclamation effort indicates that such efforts are not proving successful (i.e. failed plantings/seedings, excessive erosion), measures such as replanting/reseeding and additional erosion correctional methods would be employed to prevent further environmental degradation. Prior to implementing any corrective actions, EAO will consult with landowners and resource agencies, as necessary, to determine the appropriateness of the corrective action. The potential for supplemental actions to impact the ongoing restoration of the ROW through redisturbance will be considered prior to performing remedial work, as some corrective actions may prove unacceptably harmful to other successfully-restored areas.

This *Reclamation Plan* was developed to address the general conditions found in the Project area. The plan includes standard erosion, sediment control and restoration procedures that are in widespread use in the Uintah Basin. However, it is understood that site-specific considerations may require minor variance from the standard procedures described herein. In the event deviations due to field conditions are deemed necessary, EAO will coordinate with the relevant landowner(s) to identify appropriate alternate reclamation activities.

1.4. General Guidelines for Rehabilitation of Lands

The erosion, sediment control and restoration procedures proposed for the Project area have been developed from the BLM VFO and Green River District reclamation guidelines and have been adapted as necessary for anticipated site conditions.

1.4.1. Pre-Construction

Prior to construction, topsoil and vegetative debris will be removed to a depth of approximately 2-6 inches from the working, trench and spoil side of the pipeline ROW, and from the tower structure locations in the transmission ROW, where practical. The travel lane in the transmission corridor would be "high-bladed" in level areas where grading for safe travel is not necessary, such that woody surface vegetation will be cut at ground level (i.e. no root removal) in order to improve revegetation probability of success. Topsoil will be windrowed along the edge of the ROW, with the exception that topsoil on BLM land will be buried under the pipeline trench or tower footing subsoil (as applicable), identified by a thin layer of weed-free straw, for later retrieval. Burying of topsoil in this manner minimizes the potential for wind erosion and loss of topsoil and native seedbed. Further details on the proposed methods for topsoil and spoil pile maintenance during construction are provided in Section 3.2.1. Where topsoiling is not required and mowing or scalping (i.e. high-blading) is prescribed, plant root systems will be maintained. Surface rock will be saved, where available, for use in reclamation. Topsoiling will only be conducted where topsoiling can be conducted safely.

1.4.2. Post-Construction

Compacted soils in the utility corridor and other workspaces will be scarified to a depth of 3 to 6 inches to prepare the area for reseeding. All disturbed areas will be recontoured to blend with surrounding topography, drainage patterns will be reestablished, and topsoil and rock mulch replaced. The ROW will be imprinted and seeded, and straw crimping or punching will be used when required. Alternate seedbed preparation and seeding treatments may be prescribed within sensitive and species of concern habitats (e.g. Graham's beardtongue [*Penstemon grahamii*] or White River beardtongue [*Penstemon scariosus* vs. *albifluvis*] habitat). See Section 3.5 for additional details.

2. Reclamation Schedule

The utility corridor and access road improvements are planned to be constructed in two field mobilizations, separated by approximately 18 months. The initial mobilization would involve the construction of the water supply pipeline and first transmission line, followed by a second mobilization for construction of the natural gas supply and product delivery pipelines and second transmission line. Dragon Road improvement construction would be completed during the initial mobilization as well. The initial field mobilization would last approximately 12 months, followed by an 18-month period of no construction on the utility corridor, and then the second field mobilization would last approximately 10 months.

In order to minimize the surface disturbance area of the pipeline ROW, EAO has developed a construction configuration that includes shared construction space for each of the mobilizations (see Figure 4-1 in EAO's Detailed Plan of Development). As such, ROW reclamation activities following the initial mobilization would be limited and focused primarily on sediment and erosion control (e.g. slope breakers and water bars) and off-highway vehicle (OHV) control (e.g. temporary boulder placement) for those shared portions of the pipeline ROW, with no seedbed preparation or reseeding. A tackifier may be applied to temporarily "fix" the portion of the ROW surface where construction would occur later during this interim period to suppress fugitive dust, although soil compaction during the initial construction phase may be sufficient to preclude the need for tackifier application. Full reclamation of the first transmission line ROW and the Dragon Road improvement areas would be completed immediately following the initial mobilization, as would full reclamation for part of the water supply pipeline ROW where it is the only subsurface utility.

Beginning the year following the completion of construction of the full utility corridor and final restoration (i.e. following the second mobilization), temporary and permanent reclamation measures will be monitored and restoration success evaluated. Monitoring is necessary to periodically evaluate recovery status of restored areas, identify the need for additional remediation, and make a final determination regarding the success of restoration. To monitor the recovery of restored areas following completion of restoration activities, EAO will utilize monitoring procedures as described in Section 4.2. Monitoring will be conducted in years one to five at all restored areas. The goal of monitoring is to document and evaluate the need for remediation to ensure the restored areas are progressing toward the performance success standard. An annual report will be submitted to BLM to document success of any revegetation efforts for each year up to five years. Detailed post-construction monitoring procedures are discussed in Section 4.2.

3. Reclamation Process

The intent of reclamation is to restore the Project area to a beneficial pre-existing land use, to prevent undue or unnecessary degradation of the environment, and to reclaim disturbed areas so they are visually and functionally compatible with the surrounding landscape. The following sections outline sequential steps for reclaiming Project-related disturbances.

3.1. Reclamation Treatments

The development of general reclamation treatments and the selection of site- and condition-specific techniques required for the reclamation of disturbed areas has been based on the afore-mentioned BLM guidance. This plan includes standard revegetation and reclamation treatments for the Inter-Mountain Basins Big Sagebrush Shrubland and Colorado Plateau Mixed Low Sagebrush Shrubland vegetation communities in the Project area, as identified by SWCA (2013a)[1]. This plan also includes additional site- and condition-specific techniques for problematic or highly sensitive areas, such as steep-slope/erodible areas, wash crossings, and areas with sensitive plant species.

3.2. Reclamation Treatments for Sagebrush Shrubland Areas

This section describes the reclamation procedures and measures that will be used to reclaim and revegetate disturbed areas in the Uintah Basin.

3.2.1. Clearing, Grading and Topsoil Removal

Construction measures will include clearing vegetation, removing available topsoil, and grading the site for safe construction of pipelines and transmission lines. To avoid disturbing areas outside of the construction area, staking or flagging will define the total width of the ROW and all workspaces. Vehicle travel and equipment operation will be kept within the approved work areas.

Prior to the start of construction activities, vegetation will be cleared with topsoil, below the root crown, from the staked area during blading and topsoil salvaging activities. All bladework on the ROW will be kept at a minimum and, where appropriate, vegetation will be crushed or high-bladed. To prepare a stable and safe base for construction activities, the ROW will be scalped or bladed where the type and density of shrubs or similar vegetation poses a vehicle damage hazard. This method of "high-blading" will leave the reminder of the surface soil and root systems intact, except where topsoil is removed for trench excavation, tower footing excavation or excavating and grading safe construction ROW in steeper terrain.

Topsoil and vegetative debris will be removed from the ROW to a typical depth of 2 to 6 inches over the trench and spoil storage areas and tower footing locations, as well as any areas involving cut and fill, such as on sideslopes. Where soils have a high content of cobbles, rocks, or boulders, or where surface fines are less than 2 to 6 inches deep, topsoil salvaging may not be possible. EAO will make every effort to segregate the entire topsoil layer, avoiding mixing with the underlying horizons in the trench and spoil areas where grading is required. Construction equipment will travel across topsoil and spoil piles the minimum number of times required to minimize compaction of topsoil and trench spoil by equipment. To minimize impacts to vegetation left in place under the topsoil and spoil piles, these piles will only be placed on vegetation when the spoil is dry. The stockpiled topsoil will be buried under the trench or footing subsoil on BLM land, identified by a thin layer of

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[1] SWCA Environmental Consultants (SWCA). 2013a. General vegetation characterization and noxious weeds inventory technical report. Prepared for Enefit American Oil. July 2013. 110 pp.

weed-free straw, to prevent the loss of topsoil to wind erosion during construction. The two soil layers will be replaced in the proper order during backfilling and final grading.

The width of the surface disturbance will be kept to the minimum necessary for construction within the approved ROW, to minimize disturbance of biotic soil crusts. Whenever possible, the native surface will not be disturbed over the remainder of the ROW, which is particularly applicable to the transmission line corridor. If mowing or scalping is required in these areas, plant root systems will be left intact to encourage regrowth.

Surface rock, where present and where useful for reclamation, will be scraped or raked and windrowed. After backfilling and recontouring, the rock will be separated from the topsoil and then spread over the construction ROW to visually blend the disturbed areas with the adjacent undisturbed area, or it will be utilized as an erosion control (rock) mulch (see Section 3.3.1.4). Any rock that is removed from the ditch during trenching or tower footing excavation (especially large rocks) may be used during restoration efforts, placed on the ROW to deter OHV access, or removed from the ROW, as appropriate.

During construction, all vehicle travel will be within the construction ROW or on approved access roads. Cross-country vehicle travel outside of the construction ROW or on unapproved access roads will not be permitted.

3.2.2. ROW Restoration

As soon as practicable after the pipeline is assembled and installed in the trench, trench backfilling and ROW cleanup will begin. Within the transmission line corridor, cleanup will begin following tower erection and line stringing. Cleanup will begin with removal of pallets, scrap steel, and other construction debris. This refuse will be hauled by truck to an approved disposal site. Cleanup along the Dragon Road improved corridor will occur concurrent with paving and finish grading progression, as the majority of that ROW area will not require restoration of soils and vegetative communities.

3.2.2.1 Backfill and Finish Grading

The excavated trench material (subsoil) will be used to backfill the pipeline trench. A slight crown will be left over the trench, up to 12 inches high, to accommodate normal settlement of backfill. On sideslopes or in areas that drain perpendicular to the crown, it may be necessary to break or level the crown for 2 to 3 feet at periodic intervals, in order to allow water to pass through the berm and prevent channeling along the uphill side of the crown during precipitation events.

Excavated material from the tower footings will be used to level the resulting tower pad footprint and/or spread about the disturbed area surrounding the pad.

Topsoil or surface fines salvaged before construction will be spread evenly over the bladed area from which they were collected after backfilling and spreading is complete. Care will be taken not to mix topsoil with subsoil material. All existing drainage patterns will be preserved and restored during this process.

3.2.2.2 Scarification

Compacted soils, as determined by the environmental inspector, on-site reclamation specialist, or other qualified Project representative, will be scarified to a depth of at least 12 inches (per BLM Green River District specifications) utilizing heavy-duty disks, plows, or other similar equipment to prepare the seedbed. Sandy soils and bedrock surfaces, if present, will not be scarified.

3.2.2.3 Recontouring

Reshaping the land surface using tractors, backhoes, or graders is an effective and primary means of erosion control, along with restoring natural drainage patterns and contours to promote restoration and revegetation, and mitigating visual impacts. The original contour of the land will be reshaped to re-establish drainage patterns and to avoid concentrating water into areas not suited to high-volume flow.

3.2.2.4 Mulch

Any surface rock or cleared vegetation that is separated for use a mulch in specified areas will be spread over the contoured topsoil surface.

3.2.2.5 Imprinting

The use of an imprinting device will aid in the restoration of erodible soils by firming loosened soils to a minor degree. Imprinting leaves small depressions in the soil that slow wind velocities at the surface, decreasing wind erosion. More importantly, the depressions provide a micro-environment for the collection of windblown seeds and moisture, providing some shading or micro-relief against direct sunlight, as well as allowing for the retention of planted seeds. The imprinter will leave a non-directional depression pattern and will not leave furrows trending downslope, which could channelize runoff and encourage erosion. The imprinter will have a minimum furrow spacing of 18 inches (per BLM Green River District specifications). When water bars are to be used, they will be rebuilt or repaired after imprinter use, because the imprinter would likely flatten portions of the water bars.

3.2.2.6 Water Bars/Slope Breakers

Permanent water bars will be constructed on slopes and in areas of erodible soils in order to direct runoff from the disturbed areas to adjacent native vegetation or rock, thereby minimizing erosional channels and sediment transport before the re-establishment of vegetation. Water bars will be constructed to meet BLM VFO and Green River District guidelines for site stability and topographic diversity. Water bars will generally be constructed along contours (and therefore not necessarily perpendicular to the ROW) and will drain downslope at approximately two percent slope gradient. In addition, they will start and finish in undisturbed areas at the edge of the ROW, in order to route runoff into vegetated areas. Water bars will generally be 12 to 18 inches in width and will include a nominal 12-inch height at the berm crest. Water bars will be installed with the spacing guidelines provided in Table 3-1:

Table 3-1. Water bar spacing guidelines.

Percent Slope Spacing Interval	
1-5%	300 feet
5-15%	200 feet
15-25%	100 feet

Water bars will also be installed at the entrance and exit of wash crossings, depending upon local topographic conditions. Topsoil will not be used in the construction of water bars.

3.2.2.7 Temporary Erosion and Sediment Controls

Temporary erosion and sediment controls will be installed during construction of the Project in accordance with the utility corridor Project stormwater pollution prevention plan. Because of the two-stage construction mobilization, temporary erosion and sediment controls will remain in place following completion of construction of the water supply pipeline and overhead transmission line and during the 18-month gap between construction periods. Controls will be periodically inspected and maintained as necessary during this period. Following completion of the second construction mobilization, controls will remain in place until revegetation is complete and final stabilization has been achieved, or until replaced with permanent erosion control structures such as water bars.

3.2.3. Revegetation

Early re-establishment of vegetation is usually an excellent erosion control measure; however, natural vegetation in arid environments is extremely sparse and is of marginal erosion protection value at best, particularly in the initial years following restoration. Proposed revegetation along the ROW is designed to encourage regrowth of species that currently occur along the ROW. If construction completes in late spring or summer, seeding would be delayed until fall to take advantage of higher soil moisture conditions, in order to maximize the probability of revegetation success.

3.2.3.1 Seedbed Preparation

After recontouring and replacement of topsoil, the soil surface will be imprinted (Section 3.2.2.5). In this process, a roller with various shapes of convex protrusions is pulled over the disturbed area using a tractor. This process provides a small amount of surface soil compaction, which aids in the prevention of short-term wind erosion and dimples the soil surface.

In some areas where surface rock is available, rock mulching will be used. The rock will be applied after topsoil replacement. This technique has a similar effect as imprinting, such that the rocky surface provides micro-environments in which seed and moisture can collect, providing a better environment for natural revegetation. Imprinting typically would be not be used where rock mulch is used.

3.2.3.2 Seeding Mixtures and Rates

The primary seed mix for the Project was developed to be compatible with the vegetation types identified along the utility and access road ROW, to provide for big game forage in the area, and to stabilize soils for long-term reclamation success. All Project seed will be purchased from commercial seed vendors and certified as weed-free prior to application. Table 3-2 provides the seed mix for the Semi-Desert Big Sagebrush community (8 to 12 inches of precipitation per annum), which corresponds to the Inter-Mountain Basins Big Sagebrush Shrubland and Colorado Plateau Mixed Low Sagebrush Shrubland communities found in the Project area. Seeding rate is provided as pounds per acre of pure live seed. The seeding rate will be doubled if hydroseeding or broadcast seeding methods are used (Section 3.2.3.3). An alternative seeding rate may be applied in areas where deemed appropriate by BLM VFO. If inadequate seed is available to meet the target application rates provided in the species list, EAO will coordinate with BLM VFO and other landowners to develop an alternative seeding mix (or mixes).

Table 3-2. Reclamation seed mix species list for Semi-Desert Big Sagebrush Communities.

Semi Desert Big Sagebrush Communities (8 12" precipitation per annum)			
Species	**Seed Mix Options (lbs/ac)**		**Comments**
	A Sandy	**B Clayey**	
Grasses			
Siberian wheatgrass (*Agropyron frailie*)	3.00	2.00	
Russian wildrye (*Psathyrostachys juneca*)	2.00	5.00	
Indian ricegrass (*Stypia hymenoides*)	2.00	2.00	
Sand dropseed (*Sporobolus cryptandrus*)	0.25	0.00	
Crested wheatgrass (*Agropyron cristatum*)	0.50	0.50	
Needle-and-thread grass (*Hesperostipia commata*)	0.50	0.50	
Thickspike wheatgrass (*Elymus lanceolatus*)	2.50	1.00	
Subtotal, Grasses	**10.75**	**11.00**	
Forbs			
Globemallow (*Sphaeralcea coccinea*)	0.25	0.25	
Subtotal, Forbs	**0.25**	**0.25**	
Shrubs			
Fourwing saltbrush (*Atriplex canescens*)	2.00	2.00	
Shadscale (*Atriplex confertifolia*)	1.00	1.00	
Winterfat (*Krascheninnikovia lanata*)	0.50	0.50	
Wyoming big sagebrush (*Artemisia tridentata wyomingensis*)	0.50	0.50	
Subtotal, Shrubs	**4.00**	**4.00**	
Total Pounds Per Acre	**15.00**	**15.25**	

3.2.3.3 Seeding Methods

The main purpose of all seeding methods is to place the seed in direct contact with the soil, at an average depth of 0.5 to 1 inch (but not exceeding a depth of 1 inch), to cover the seed with soil, and to firm the soil around the seed to eliminate air pockets. Some methods of seeding are more effective at seed placement than others, and the terrain has an impact on the type of seeding method that is practicable; therefore, the exact method of seeding for a given site/location will vary.

Broadcast seeding can be accomplished using a hand-operated, cyclone-type seeder; a mechanical broadcast seeder attached to the imprinting device; or a specially designed blower. This method distributes the seed on top of the surface without a mulch, such that the seeds then must be covered by raking or dragging a chain or harrow over the seedbed. A rangeland drill may be used for broadcasting larger seeds. The cyclone-type seeder can be used on any slope that can be reached by foot; however, the blow seeder is limited by equipment access. Drill seeding places seed into the soil at a uniform depth, but it can only be used on more moderate slopes. Mechanical broadcasting with imprinting will be utilized on slopes where drill seeding is not feasible and safe. EAO will consider the availability and effectiveness of using an imprinter that imprints and sows seed simultaneously.

3.2.3.4 Salvage of Shrubs (Vertical Mulch)

Large shrubs salvaged whole with root crown during topsoil removal and windrowed along the edge of the ROW will be transplanted at road crossing areas with some expectation of survival, in order to enhance vertical structure and help serve as OHV control. The shrubs that do not survive transplantation would still be beneficial as vertical mulch, mitigating the impacts to the visual quality of the landscape.

3.3. Reclamation Treatments for Steep Slopes and Erodible Soils

Soil types along the utility corridor and their erosion and revegetation potential are described in SWCA (2013b)[2]. Soils that are restrictive to rehabilitation are present within the ROW, and SWCA (2013b) further classified these soils as highly restrictive and moderately restrictive to rehabilitation based on their physical and chemical characteristics, as shown in Table 3-3 below.

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[2] SWCA. 2013b. Soils and geology technical report. Prepared for Enefit American Oil. July 2013. 42 pp.

Table 3-3. Parameter ranges used to define soil features restrictive to rehabilitation.

Soil Features Restrictive to Rehabilitation	Parameters	Highly Restrictive Range	Moderately Restrictive Range
Salinity[1]	Salinity (mmhos/cm) of surface layer	≥16	8–16
Sodium adsorption ratio[2]	Sodium adsorption ratio of surface layer	>13	4–13
Alkalinity	pH	>9.0	7.9–9.0
Rooting depth	Minimum depth to bedrock or hardpan (inches)	<10	10–20
Droughtiness[3]	Available water supply (average to 100 centimeters [cm]) cm/cm	<5	5–10
Water erosion hazard[4]	Kw factor of surface layer *and* slope	≥0.37 and ≥10% or 0.20–0.36 and >30%	0.20–0.36 *and* 10%–30% or <0.20 *and* >30%
Wind erosion hazard	Wind erodibility group of surface layer	1, 2	3, 4, 4L
Reclamation potential[5]	pH *or* salinity (mmhos/cm)	≥9 *or* 8 or 16	Not defined

Note: Draft parameters in this table were developed by the BLM's National Science and Technology Center (BLM 2000). -

mmhos/cm = millimhos per centimeter

[1] Maximum value for the range in soil salinity. -

[2] Maximum value for the range in sodium adsorption ratio. -

[3] Maximum value for the range of available water capacity for the soil layer; inches of water per inches of soil. -

[4] K factor of surface layer adjusted for the effect of rock fragments. Slope is the maximum value for the range of slope of a soil component within a map unit. -

[5] Also includes the clay content and presence of course fragments. -

Acreage estimates for soils in the utility corridor Project area with these limitations are:

- Highly restrictive soils (i.e. one or more highly restrictive soil features): 283.2 acres; and
- Moderately restrictive soils (i.e. one or more moderately restrictive soil features, with no highly restrictive characteristics): 423.4 acres.

The objective of the reclamation treatments described in this section will be to stabilize soil and prevent erosion by wind or water.

3.3.1. Reclamation Procedures

The procedures necessary to achieve soil stabilization will be in addition to the procedures outlined in the standard restoration reclamation treatment (Section 3.2.2) and will include the following specific measures.

3.3.1.1 Recontouring

Recontouring, as described in Section 3.2.2.3, is especially important on steep and erodible terrains. Shaping the land surface to approximate original contours and directing runoff into existing drainageways or stable outlets will be the main reclamation objectives in all steep-slope and erodible areas.

3.3.1.2 Water Bars/Slope Breakers

Water bars, as described in Section 3.2.2.6, also will be an important reclamation measure for steep and erodible terrain. Bar spacing generally is reduced in steep-slope and erodible areas, in accordance with Table 3-1 in Section 3.2.2.6. Water bars may be omitted when the surface is rocky and resistant to water erosion.

3.3.1.3 Stockpiling

On slopes too steep to maintain windrowed trench material, stockpile areas may be maintained at the top or base of the slope within the ROW, as necessary, to prevent undesired transport of material.

3.3.1.4 Rock Mulch

Layering of rock or importing rock for use on the surface of erodible soils is an appropriate erosion control measure in some critical areas. Suitable sites include areas that have a natural gravel, cobble, or boulder veneer on the surface, and naturally rocky slopes. Rock mulch over erodible soils slows wind and creates wind eddies at the soil surface, reducing wind erosion. It also provides micro-environments beneficial to plant re-establishment by allowing seeding and moisture to collect, shade, and provide protection from direct sunlight and dessicating winds. Steep areas may require construction of water bars in addition to the rock mulch. Rock mulch also helps to visually restore the native surface prior to disturbance as long as the color does not contrast with the natural surface.

3.4. Reclamation Treatments for Wash Crossing Areas

Dry wash crossings occur throughout the utility corridor. They are typically small in area but represent a location where a pipeline ROW could transition from a relatively stable, steady-state ground surface environment to one of infrequent but intense erosion potential. Modifications to the standard reclamation treatments are required to address the possibility of flash flood conditions. Transmission line ROWs are not expected to be affected by wash crossings, as towers can be sited to avoid wash flow paths. Similarly, the Dragon Road ROW would be designed to meet Uintah County road standards, taking permanent drainage control into consideration. Therefore, there are no specific wash crossing reclamation treatments for the transmission line or Dragon Road ROWs.

The objective of this reclamation treatment is to prevent pipeline exposure and promote dry wash bed and bank stabilization. The following additional reclamation procedures will be used to reclaim disturbed areas at wash crossings:

- Omit saving topsoil and imprinting in active wash areas;
- Deepen burial of the pipelines to ensure that flash flood erosion action will not expose the pipelines or jeopardize the pipeline integrity. The pipelines will be installed below the bottom of the channel in drainages with increased depth of cover in washes (minimum 5 feet), where scour or sediment load movement potential may be greater;
- Armor the banks with riprap where necessary with a rock size larger than the carrying capacity of the major storm flow, where conditions are naturally unstable or a higher order of protection is necessary to protect against hydraulic erosion (in general, natural recontouring and restoration are preferred);
- Re-establish the original channel and water flow path;
- Omit crowning of the backfill over the pipelines, and prevent channeling of water along the pipeline and pipeline disturbances;

- Minimize the disturbance width and vegetation clearing to only that necessary for pipeline installation, backfilling, and regrading; and
- Omit seeding within the wash (bank seeding is still required).

Restoration of dry washing crossings will be in accordance with requirements set under the State of Utah's Stream Alteration permit process and the United States Army Corps of Engineers' Nationwide permit process, as appropriate.

3.5. Reclamation Treatments for Sensitive Plant Species

In the event the Project area encroaches into a conservation area as identified in the *Conservation Agreement and Strategy for Graham's Beardtongue (Penstemon grahamii) and White River Beardtongue (P. scariosus* var. *albifluvis*) (the Agreement)[3], reclamation treatments as prescribed in the Agreement will be utilized for the utility corridor. It is anticipated that the primary reclamation treatments will remain unchanged, including topsoiling, seedbed preparation, and reseeding. However, seed salvage from Graham's and/or White River beardtongue individuals, or salvage of individuals themselves may occur during pre-construction clearing activities. The post-construction seed mix may also be augmented with salvaged sensitive species seed in accordance with the Agreement.

In the event the Agreement does not persist, and one or both species become listed under the Endangered Species Act, it is anticipated that EAO would develop a site-specific reclamation treatments for areas where the species are present and anticipated to be directly or indirectly affected by the Project. EAO would coordinate with BLM in development of a biological assessment for anticipated impacts to the species and would develop site-specific mitigation measures that would be implemented as part of the overall reclamation process.

3.6. Reclamation Treatments for Visually Sensitive Areas

The objective of this reclamation treatment is to return the land to its predisturbance appearance, soil stability and vegetative composition within a reasonable period of time and to the extent practicable, with an emphasis on restoration of visual resources. Based on the landscape position of the utility corridor in the vicinity of public travel ROWs and recreational areas, EAO is considering the entire ROW as visually sensitive.

To offset the potential visual impacts of the utility corridor, construction and reclamation will include the following additional reclamation procedures:

- Keeping the area of disturbance to the absolute minimum requirements for construction by utilizing a combined pipeline ROW;
- Following existing utility corridor routes to the extent practicable;
- Using rock mulch or other similar methods to blend the color of the disturbed area with the surrounding landscape;
- Restoring contours as closely as possible to match the adjacent undisturbed areas with the new ROW; and
- Using vertical mulch to provide vertical structure, to aid in visual screening and to promote OHV control.

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[3] The Agreement was tentatively approved by Uintah County in March 2013 and submitted to the U.S. Fish and Wildlife Service (FWS) in April 2014. Parties to the agreement include the FWS, BLM, the Utah School and Institutional Trust Lands Administration, the State of Utah, and the Uintah County Commission. The Agreement is anticipated to be published in the Federal Register in late April or early May 2014, with final approval by August 2014. The reclamation activities and treatments indicated herein associated with these sensitive species are based upon the April 2014 version of the Agreement submitted to FWS and are subject to change pending final revision, approval, and execution.

4. Post-Construction Monitoring and Maintenance

Beginning the year following construction and restoration, temporary and permanent reclamation measures will be monitored and restoration success evaluated. Monitoring is necessary to periodically evaluate recovery status of restored areas, identify the need for additional remediation, and make a final determination regarding restoration success. To monitor the recovery of restored areas following completion of restoration activities, EAO will utilize qualitative monitoring criteria and procedures for evaluating revegetation success. The following sections summarize the performance success standards and monitoring protocols for the Project.

4.1. Performance Standards

The long-term goal of restoration is to restore structure and function on disturbed areas that will eventually lead to the establishment of self-sustaining native plant communities and native fauna use. To determine whether disturbed areas are progressing towards this goal, the following performance standards and methods will be used to assess restoration success along restored areas. If the performance standards are met on a restored area in a five-year time period (or earlier if approved by the BLM or other landowner), the restored area would be released from further restoration maintenance and/or monitoring.

Restoration will be considered successful if plant cover, density and richness of native perennial vegetation (mainly dominant shrubs, but also forbs and grasses) is equal to or exceeds 70 percent for these parameters in adjacent undisturbed reference areas, in accordance with BLM Green River District guidelines. A minimum of two undisturbed reference/control sites (i.e. one north of the White River and one south of the White River) will be selected in consultation with the BLM VFO.

4.2. Monitoring

Monitoring will be conducted in years one to five following completion of the second construction mobilization at all restored areas in the Project. The goal of monitoring will be to document conditions and evaluate the need for remediation to ensure the restored areas are progressing toward the performance success standard.

During monitoring, the success parameters (cover, density and richness of annual and perennial vegetation) will be estimated at each site. Other site characteristics to be monitored in addition to the success parameters include soil erosion, natural recruitment of native plant species, reproduction, invasive/non-native plant species abundance, fauna use, and pattern of established vegetation (i.e. present of large interspaces). Lack of erosion at a site provides evidence that soils have been adequately stabilized, while natural recruitment and/or reproduction indicate that important functional processes are in place that initiate regeneration, such as pollination and seed dispersal. EAO understands invasive/non-native species potentially compete with native perennial species; invasive species control is addressed separately in the Project *Noxious Weed Control Plan*). Fauna use is an indicator that habitat conditions are being restored. Patterns of established vegetation help determine whether large bare areas are indicative of site conditions or simply a result of the patchiness of the surrounding vegetation and landscape.

Based on monitoring observations, the restored site is given a success rating of Exceeds Objectives, Acceptable, Unacceptable, or Severely Deficient. Determinations are made regarding release or remediation activities, as appropriate. Remediation activities may include reseeding the site, spot seeding, adding transplants, installation of erosion control measures, and/or fencing. Recommendations could also include waiting another year or two prior to initiating remediation to allow for more favorable germination/establishment conditions, in the event of a drought or other abnormal environmental conditions.

Photography will also be used to help document the status of recovery at all sites. Photo points will be established and photographs will be taken prior to disturbance, following initial reclamation treatment(s), during each monitoring visit, and when restoration efforts are deemed complete.

4.3. Remedial Action and Maintenance

EAO's main emphasis will be to address all active erosion problems as soon as practicable based on an evaluation of conditions against the original erosion control work. Additional erosion control work will be performed by employing the same basic techniques identified in Section 3.2, based on site-specific conditions.

Temporary erosion control structures such as straw bale sediment barriers or silt fences would be removed when the sites are deemed stable and revegetation has developed in accordance with the BLM VFO and Green River District vegetative productivity guidelines. Reseeding or replanting efforts, including supplemental mulching and/or exclusionary measures to minimize wildlife or grazing impacts (where necessary and practical), may occur in agreement with BLM or other landowner where monitoring during the second growing season indicates a revegetation deficit (particularly where accompanied by observed increases in water or wind erosion).

When the success criteria for revegetation are not met, EAO will further consult with the BLM and/or other landowner on the benefits and approaches for further remedial efforts. EAO anticipates that remedial revegetation work will consider the relative benefits of additional equipment re-entry onto the ROW, site preparation, seedbed preparation, and revegetation, as opposed to allowing the restoration process to continue. For example, in cases where 40 percent success is achieved in portions of the ROW as compared to the 70 percent performance standard, remedial action may serve to jeopardize the success of the existing 40 percent.

4.4. Reporting

EAO will document observations of reclamation and revegetation success following the field inspections and will provide a summary report to BLM, as required. Areas that require remedial action will also be identified and will include a description of additional erosion control or reclamation work proposed. Reports will be submitted within three months of the inspection. Areas where control applications for noxious weeds are required will also be reported.

5. Off-Highway Vehicle Control

EAO recognizes that OHV use by third parties is a factor that affects the success of erosion control and revegetation efforts. Even though the Project alignment as proposed parallel existing disturbance corridors, it is still possible that changes in OHV use may occur. EAO plans to use existing roads to the extent possible for access to the ROW during construction, rather than constructing new access roads. No designated public travel off-highway travel routes would be created by the Project (although an unimproved two-track would remain on the pipeline and transmission line for maintenance access.

EAO will not be able place formal restrictions on OHV use along the ROW because these uses can only be designated by BLM (or other landowner). However, based on the BLM VFO's Record of Decision and Approved Resource Management Plan (BLM 2008)[4], OHV use designations in this area are limited to existing roads or trails. EAO prefers to discourage OHV use along or on the ROW in order to protect biological resources and avoid re-disturbance and damage to erosion control structures, most commonly water bars/slope breakers. By using vertical mulch and placing boulders along the ROW, access will be made more difficult for OHVs. EAO will also assist in discouraging vehicle travel in the ROW by installing signage and barrier gates at public road crossings.

In addition to restoration of contours (including washes), removal of temporary gates at fence lines, installation of erosion control structures, and revegetation, EAO will install additional OHV controls at the intersections of roads or trails as desired by individual landowners. These OHV control measures may include earthen or rock berms and breaches, as well as repair or replacement of fence lines removed/damaged during the course of construction, in addition to signage informing third parties the area is being restored and OHV travel/disturbances is not permitted.

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[4] Bureau of Land Management (BLM). 2008. Record of decision and approved resource management plan, Vernal Field Office. October 2008.

Appendix C
Noxious Weed Control Plan

Noxious Weed Control Plan

For

Enefit American Oil's Utility Corridor Project

April 23, 2014

Table of Contents

Appendices

List of Acronyms and Abbreviations

BLM	Bureau of Land Management
BMP(s)	best management practice(s)
EAO	Enefit American Oil
EI	environmental inspector
MOU	Memorandum of Understanding
mph	miles per hour
MSDS	Material Safety Data Sheet
PUP	Pesticide Use Proposal
ROW(s)	Right(s)-of-Way
VFO	Vernal Field Office
WMA	Weed Management Area

1. Introduction

Noxious weed control practices for Enefit American Oil's (EAO's) Utility Corridor Project (Project) as described in this plan have been developed utilizing the following sources:

- Field surveys performed in 2013 by SWCA Environmental Consultants, Inc.[1] for EAO (SWCA 2013);
- Bureau of Land Management (BLM), Vernal Field Office (VFO) Record of Decision and Approved Resource Management Plan (RMP), October 2008[2] (BLM 2008);
- BLM VFO Surface Disturbing Weed Policy (BLM Instruction Memorandum UTG010-2010-001);
- State of Utah, Department of Agriculture's *Utah Noxious Weeds List*[3]; and
- Uintah County's Noxious Weed Rules and Regulations (Appendix A).

EAO has prepared this *Noxious Weed Control Plan* (*Plan*) for management of noxious and invasive species before, during and following construction of EAO's proposed pipeline and transmission line utility corridor.

1.1. *Plan* Purpose

The purpose of this *Plan* is to prescribe methods to prevent and control the spread of noxious weeds before, during and following construction of the Project. EAO and its contractors will be responsible for carrying out the methods and practices described in this *Plan*.

This *Plan* is applicable to the pre-construction, construction and operation of the proposed pipeline and transmission line facilities, including the pipeline and transmission line rights-of-way (ROWs), meter and valve stations, temporary laydown and staging areas, substations, and any other locations disturbed during construction, including interconnections with existing utilities.

1.2. Goals and Objectives

The goal of noxious weed control is to implement preventative measures to minimize the establishment and spread of noxious weeds during ground-disturbing activities associated with construction of the proposed facilities. The Utah Noxious Weed Act defines three classes of noxious weeds:

- <u>Class A, Early Detection Rapid Response</u> – Declared weeds not native to the state of Utah that pose a serious threat to the state and should be considered as a very high priority;
- <u>Class B, Control</u> – Declared noxious weeds not native to the state of Utah, that pose a threat to the state and should be considered a high priority for control; and
- <u>Class C, Containment</u> – Declared noxious weeds not native to the state of Utah that are widely spread but pose a threat to the agricultural industry and agricultural products with a focus on stopping expansion.

The State of Utah maintains a list of species under each of these classes. Uintah County has incorporated these state definitions and species lists, while also adding individual species to each class that are of particular concern to the county.

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[1] SWCA Environmental Consultants (SWCA). 2013. General vegetation characterization and noxious weeds inventory technical report. Prepared for Enefit American Oil. July 2013. 110 pp.

[2] Bureau of Land Management (BLM). 2008. Record of decision and approved resource management plan, Vernal Field Office. October 2008.

[3] Utah Noxious Weed Act R68-9, Utah Code Annotated Title 4 Chapter 17.

Noxious weeds are typically opportunistic plant species that tend to readily colonize disturbed areas and compete with desirable vegetation. Monitoring and maintenance during construction and operational phases will include identification of any local infestation areas on and adjacent to the ROW and other areas disturbed during construction. By identifying and treating infested areas, EAO will minimize the opportunity for noxious weeds to spread and out-compete the specifically selected desirable species included in EAO's reclamation seed mixes. An evaluation of the efficiency of the prescribed control measures will also be implemented during the growing season immediately following construction, as well as during continued operation, in order to inform the effectiveness of the methods and improve decision-making regarding noxious weed control in the future.

1.3. Project Description

EAO is proposing to construct water supply, natural gas supply, and product delivery underground pipelines, as well as overhead electric transmission lines, across federal, state, and private land to supply utilities for EAO's oil shale mining and mineral processing operation located on EAO private land. The proposed utilities would consist of the following:

- Approximately 19 miles of 24- to 30-inch diameter welded steel water supply pipeline;
- Approximately 10 miles of 6- to 8-inch diameter welded steel natural gas supply pipeline;
- Approximately 11 miles of 12- to 16-inch diameter welded steel product delivery pipeline;
- Approximately 30 miles of 138-kV overhead transmission lines (including one 20-mile segment and a second 10 mile segment);
- Expanded ROW and improvement associated with the existing Dragon Road; and
- Associated ancillary facilities and temporary workspaces.

For more detailed information regarding the proposed activities, see EAO's Detailed Plan of Development, submitted to the BLM April 2014.

2. Noxious Weed Inventory

A baseline field inventory for noxious and invasive weeds was completed by SWCA in 2013 for the proposed utility corridor, including the proposed ROW, ancillary facilities, and temporary laydown areas. Target species included those listed as Class A, B and C species on the State of Utah and Uintah County noxious weed lists, and target survey areas included areas of existing disturbance or development. Most of the species included on these weed lists have a low potential to occur due to limited distribution in the Uinta Basin and the limited amount of disturbed habitat in the area. The species with the highest potential to occur include hoary cress (*Cardaria* spp.; Class B), broad-leaved peppergrass (*Lepidium latifolium*; Class B), field bindweed (*Convolvulus* spp.; Class C), Russian olive (*Eleagnus angustifolia*; Class C), and saltcedar (*Tamarix ramosissima*; Class C) (SWCA 2013).

It is important to note that, although considered an invasive weed, halogeton (*Halogeton glomeratus*) is not listed on any noxious species lists in the state of Utah. Although prevalent in the area along roadsides, halogeton was not included in the target survey species list and is not further addressed in the *Plan*; however, it is anticipated that EAO may coordinate halogeton control measures with individual landowners and/or Uintah County's Weed Department.

Three noxious weed species were encountered during pedestrian surveys of the area, including saltcedar, Russian olive, and broad-leaved peppergrass. Russian olive and broad-leaved peppergrass were limited to the northern shoreline of the White River and an isolated riparian location on state land approximately 1,000 feet east of State Road No. 45 and 1,100 feet south of Stanton Road, while saltcedar was more widely distributed in the area along washes and roadsides and in association with riparian areas.

EAO's primary objective under this *Plan* is to prevent the spread of noxious weeds and treat selected areas where target species are aggressive and comprise a significant portion of the vegetation community as compared to similar, adjacent undisturbed areas. Continual, repeated control efforts within the ROW are generally not considered practical where those species are already established and abundant in the adjacent areas. The preventative measures described in Section 3.2 will be implemented along the ROW to minimize the spread of noxious weeds.

3. Noxious Weed Management

The following combination of activities is proposed for managing noxious weed populations:

- Implementation of preventative measures, which includes early detection and treatment;
- Following best management practices (BMPs) during construction; and
- Implementing an ongoing weed management program to control the spread of noxious weeds during ongoing operation and maintenance.

EAO will work closely with the BLM and Uintah County to prevent noxious weeds from becoming established or spreading as a result of the Project.

3.1. Identification of Problem Areas

Prior to Project construction, EAO will provide information and training to construction personnel regarding noxious weed management; identification; and the impacts on agriculture, livestock and wildlife as part of the pre-construction environmental training. The importance of preventing the spread of noxious weeds into areas not already infested, and controlling the proliferation of weeds already present, will be explained. During construction, areas of concern for noxious weeds will be identified and marked in the field by qualified EAO environmental personnel. The marked areas will serve to alert construction crews to the presence of noxious weeds and will prevent access until noxious weed management control measures have been properly implemented.

3.2. Preventative Measures

To prevent the spread of existing noxious weeds and prevent the introduction of new noxious weeds, prior to construction, appropriate treatment will be used to treat identified weed infestations. Treatment activities will serve to reduce the potential spread or proliferation of noxious weeds during construction activities. Pre-construction control measures may include one or more of the following:

- Treatment methods and timing will be determined based on species- and area-specific conditions (e.g. proximity to water/riparian areas, land use, topography, season, etc.) and will be coordinated with the land owner and the Uintah County Weed Department. Additionally, all treatment methods will follow the requirements of any specific agency regulations and/or guidelines (e.g. BLM, Uintah County Weed Department).
- Chemical application is a proven, effective management method for reducing the size of noxious weed populations. Application will be controlled, as described in Section 5, to minimize unintended impacts to adjacent native vegetation. In areas of dense infestation, a broader application may be used. The timing of the application will be based on the extent of infestation, landowner/agency request and the construction schedule.
- Mechanical methods, which utilize equipment to mow or disc weed populations and disturb the soil surface, will be employed within native vegetation communities only as necessary. Because of the non-selective nature of these methods, mechanical control is not considered likely for use.

To avoid the spread of existing noxious weeds, and prevent the introduction of new noxious weeds during construction, preventative measures will be implemented that follow BMPs. At a minimum, the following practices will be adhered to:

- All construction vehicles and equipment will be thoroughly cleaned of soil and plant material prior to mobilization to the Project site and all clearing and grading equipment will be cleaned prior to leaving an identified noxious weed site. Cleaning will include mechanical removal of clumps of sod or soil and high-pressure air spraying. The construction contractor will deploy cleaning stations, using a non-permeable poly-fabric, such that the soil and plant material from the cleaning operation can be removed and disposed of without contaminating the underlying soil. Equipment cleaning will concentrate on tires, tracks, and equipment undercarriages. Special attention will be paid to axles, frames, cross members, motor mounts, and on steps, running boards, and on bumpers/brush guards. Equipment air filters and housings will also be cleaned of vegetative matter and seeds. Vehicle cabs will be swept out and material disposed of in waste bins. The contractor will certify in writing that vehicles and equipment are free of soil and debris capable of transporting noxious weed material prior to delivery to and mobilizing from contractor yards, and that plant materials have been removed prior to entry onto the ROW. EAO's environmental inspector (EI; or other qualified company representative) will have the authority to deny entry or prevent movement beyond a designated cleaning station if equipment has not been satisfactorily cleaned.

- Once the ROW has been cleared of all identified weed infestations and graded, pipeline installation will proceed without further cleaning activities.
- Prior to the off-site transport of ROW restoration equipment, the contractor will ensure that all equipment is clear of soil and vegetative material, in order to minimize the potential for spread of weeds. Cleaning sites will be inspected and their locations recorded by the EI.
- The construction contractor will ensure and certify in writing that all straw bales used for erosion and sediment control, mulching, and restoration seed mixes are certified as weed-free from the supplier.
- The construction contractor will implement the reclamation of disturbed lands as soon as practicable following construction, as specified in the Project's *Upland Restoration, Revegetation and Maintenance Plan* (*Reclamation Plan*). Appropriate restoration efforts will ensure an adequate vegetative cover that minimizes the potential of noxious weed development.

3.3. Post-Construction Treatment Methods

EAO will implement noxious weed control measures that are in accordance with federal, state, and local requirements, as well as any applicable landowner agreements. Post-construction control measures may include one or more of the following:

- Treatment methods and timing will be determined based on species- and area-specific conditions (e.g. proximity to water/riparian areas, land use, topography, season, etc.) and will be coordinated with the land owner and the Uintah County Weed Department. Additionally, all treatment methods will follow the requirements of any specific agency regulations and/or guidelines.
- Chemical application is a proven, effective management method for reducing the size of noxious weed populations. Application will be controlled, as described in Section 5, to minimize unintended impacts to adjacent native vegetation. In areas of dense infestation, a broader application may be used. The timing of the application will be based on the extent of infestation, landowner/agency request and the construction schedule. Subsequent reseeding will be in accordance with the Project *Reclamation Plan*.
- Mechanical methods, which utilize equipment to mow or disc weed populations and disturb the soil surface, will be employed within native vegetation communities only as necessary. Because of the non-selective nature of these methods, mechanical control is not considered likely for use. If mechanical methods are used, subsequent seeding will be conducted to re-establish a desirable vegetative community that will stabilize soils and slow the potential re-introduction of noxious weeds. Seed selection and distribution will be in accordance with the Project *Reclamation Plan*.
- If areas of disturbance are not seeded until the following spring because of weather or other scheduling constraints, all annuals and undesirable vegetation that have become established will be eradicated via chemical or mechanical methods prior to reseeding.

4. Monitoring

Noxious weed surveys will be conducted as part of EAO's post-construction reclamation monitoring effort, as well as on an annual basis as part of EAO's standard ROW operation and maintenance activities. Special attention will be paid to those areas identified as having known infestations.

4.1. Reclamation Monitoring

EAO intends to commence restoration monitoring during the first growing season following the completion of Project construction. Reporting of noxious weed infestations will be included with evaluations of revegetation success. A report summarizing ROW stability, revegetation progress, and percent cover of native vegetation and of weed infestations, will be prepared each year for up to five years following the completion of Project construction. EAO will implement this monitoring measure on all lands, regardless of landowner, and will document results, with those results being made available to the BLM and Uintah County as required.

4.2. Monitoring of Known Infestation Areas

In addition to the ongoing noxious weed monitoring (annually by EAO, as well as by other landowners and Uintah County), EAO will conduct annual site visits during the first three years following the completion of Project construction at the location of known infestations where pre-construction treatment (mechanical, chemical, or otherwise) was completed. The goal of these visits will be to assess the effectiveness of the treatment method in order to inform future treatment activities where necessary.

5. Herbicide Application, Handling, Spills, Reporting and Cleanup

5.1. Herbicide Application and Handling

Herbicide application will be in accordance with BLM regulations, Uintah County regulations, and/or landowner requirements, as applicable. Herbicide selection will be coordinated with BLM VFO, Uintah County, and/or the Natural Resources Conservation Service Extension Service, as applicable. When a noxious weed infestation is identified on BLM land during regular EAO monitoring, EAO will prepare and submit a completed Pesticide Use Proposal (PUP) form to the BLM VFO. No application of herbicides will take place until the BLM VFO has reviewed and approved, in writing, the PUP. Before herbicide application, EAO will obtain any required permits from local, state, and/or federal agencies. Where applicable, a licensed and certified contractor will perform the application in accordance with applicable laws and regulations.

Only those herbicides registered with the United States Environmental Protection Agency and are approved for use by the applicable land management agency will be used. All product label and advisory statements will be adhered to. Generally, application of herbicides will not occur when the following conditions exist:

- Wind velocity exceeding 10 miles per hour (mph) for ground application or 6 mph for aerial application; -
- Snow or ice coverage of the foliage of target species; or -
- Adverse weather conditions are imminent. -

Vehicle-mounted sprayers (e.g. handguns or booms) will be used primarily in open areas that are readily and safely accessible by vehicle. Hand applications (e.g. backpack sprayers) or aerial applications may be used in rough terrain or that which does not have existing vehicle access routes. Calibration checks of equipment will be conducted at the beginning of spraying and periodically during application to ensure that proper application rates are being achieved.

Herbicides will be transported to the Project site with the following provisions:

- Only the quantity needed for that application will be transported;
- Concentrate will be transported in approved containers only and in a manner that will prevent tipping or spilling, and in a compartment that is isolated from food, clothing and safety equipment;
- Mixing will be done off site and a distance greater than 200 feet from open or flowing water, wetlands, or other sensitive resources such as known special status species habitat. No herbicides will be applied at these areas unless authorized by the appropriate regulatory agencies;
- All herbicide equipment and containers will be inspected for leaks daily; and -
- Herbicides will be used in accordance with all manufacturer label recommendations and warnings. -

5.2. Herbicide Spills and Reporting

All reasonable precautions will be taken to avoid herbicide spills. In the event of a spill, cleanup will be immediate. Contractors will keep spill kits in their vehicles and in appropriate storage areas to allow for quick and effective response to spills. Items in the spill kit include (but may not be limited to) the following:

- Protective clothing and gloves; -
- Adsorptive clay (e.g. "kitty litter" or similar); -
- Plastic bags and bucket; -
- Shovel; -
- Fiber brush and screw-in handle; -

- Dust pan;
- Caution tape;
- Highway flares (for use on existing paved roads only); and
- Detergent.

Response to an herbicide spill will vary with the size, location, and potential threat of the spill, but general response procedures include the following:

- Traffic control;
- Dressing the clean-up team in protective clothing and equipment;
- Stopping the leak;
- Containing the spilled material;
- Cleaning up and removing the spilled herbicide and contaminated adsorptive material and soil; and
- Transporting the spilled material and contaminated material to an authorized disposal site.

5.2.1. Worker Safety and Spill Reporting

All herbicide contractors will obtain and have readily available copies of the appropriate material safety data sheets (MSDSs) for the herbicides used and will keep copies of the MSDSs in the application vehicle. All herbicide spills will be reported in accordance with applicable laws and requirements. In each case, the appropriate regulatory agency and hazardous materials coordinator will be notified immediately as specified in the Project *Spill Prevention, Control, Countermeasures, and Reporting Plan* and an incident report will be completed and filed with EAO in accordance with PUP requirements.

General Requirements Regarding Herbicides and Pesticides

When handled, prepared and used as directed, most herbicides have little potential to cause environmental harm or personal injury. Measures such as the use of proper protective clothing, understanding the nature and chemical properties of the herbicide, and knowledge of appropriate first-aid procedures are fundamental to applying herbicides in a safe manner.

Herbicide Storage

Herbicides should be stored in a fire-resistant metal storage cabinet in a pre-designated area that is also fire-resistant. The area chosen should be kept dry, cool and have an exhaust fan for proper ventilation. Furthermore, the area should be secured with a lock and posted with warning signs. Bottles of herbicide should have the date they were received and the date of each use written on the label.

Transport

Containers of herbicide should be transported in a cushioned, leak proof box with securable lid. The box should be firmly secured to the non-wooden open bed of a pickup truck or utility trailer. Herbicides are not to be transported in the truck cab or inside of a passenger vehicle. The load should be checked periodically when transporting over long distances to a treatment site.

Mixing and Application

Appropriate tools and containment structures will be on hand and deployed where mixing is to take place. In addition, the appropriate absorbents will be readily available in the event of an uncontrolled spill. Proper protective clothing will be worn during all mixings and applications.

Spills

If an incident should occur resulting in a spill on an individual, the soil, or into a waterbody, the following procedure will be used in each case:

<u>Body Contact Spill</u>

The contaminated clothing should be removed and the affected areas flushed with water. Immediate transport to a predetermined hospital or clinic should be made if the herbicide has been ingested or inhaled.

<u>Soil Spill</u>

The contaminated soil should be shoveled into a leak-proof container or can be spread on heavy plastic sheets. However, every attempt should be made to prevent the herbicide from spreading over the soil surface. Contaminated soil should be disposed of as a hazardous material.

<u>Spill in Waterbodies</u>

Spill control materials to absorb the spill should be deployed to assist with containment and cleanup. Once deployed, the used materials should then be properly containerized and disposed of in accordance with all applicable local, state, and federal regulations. Appropriate agencies should also be contacted immediately and notified of the spill.

Appendix A. Uintah County’s Noxious Weeds Rules and Regulations -

UINTAH COUNTY WEED CONTROL
Rules and Regulations

SECTION 1. DEFINITIONS

As used in this policy:

"Commission" means the county legislative body of Uintah County, Utah.

"Noxious weed" means any plant the Utah State Commissioner of Agriculture or the Uintah County Commission determines to be especially injurious to public health, crops, livestock, land, or other property.

"County noxious weed" means any plant which is not on the Utah State Noxious Weed List, is especially troublesome in Uintah County, and is declared by the Uintah County Commission to be a noxious weed within Uintah County.

"Non-noxious weed" means any nuisance plant not currently designated as "noxious" by the State of Utah or Uintah County.

"Non-cropland" means lands not currently used for producing food or cash crops for livestock or human consumption. Ornamental turf areas are not considered non-cropland.

SECTION 2. AUTHORITY AND STATEMENT OF INTENT

The Uintah County weed control program will function in accordance with the ***1971 Utah State Noxious Weed Act, Title 4 Chapter 17***, as may be amended from time to time, to organize, supervise, and coordinate a weed control plan for Uintah County. This Policy may be amended on an annual basis by majority vote of the Weed Board and the approval of the Commission.

A County Weed Supervisor is hired by the County to carry out the policies set forth herein. The Weed Supervisor is under the direction of the Commission. All weed control will be performed in accordance to the policies set forth herein.

Uintah County encourages private and commercial weed control efforts where possible. County Weed Department personnel are available to assist citizens with weed identification and consult upon matters pertaining to the best and most practical method of noxious weed control and prevention. The Weed Department encourages the responsible use of chemical, biological, cultural and mechanical methods to control noxious weeds. Furthermore, the Weed Department is committed to the education of County citizens regarding the impacts of noxious weeds on natural resources and the economy.

SECTION 3. WEED BOARD

A Weed Board, of no less than three and no more than five members, is appointed by the Commission to oversee weed control policies in Uintah County. At least two of the Weed Board members must derive a significant portion of their income from agriculture. The Weed Board members should, when possible, reside in different geographic areas of the County.

The County Weed Board shall hold regular meetings each year to coordinate the County's weed control efforts. Any organization concerned with weed control is invited to have a representative in attendance. Representatives from the following agencies should be invited:

U.S. Forest Service, Bureau of Land Management, National Park Service, Utah Division of Wildlife Resources, Utah State Trust Lands, Utah Department of Agriculture and Food, Utah

Department of Transportation, Ute Indian Tribe, Uintah County Extension, Uintah County Road Supervisor, Uintah Basin Cooperative Weed Management Area (UBCWMA), energy companies, and canal companies.

The Uintah County Weed Supervisor and the County Commissioner, in charge of the Weed Department, should be in attendance. Any other interested parties or citizens may be notified of these meetings through a public notice on the Utah Public Meeting Notice website.

A spring meeting shall be held to discuss, coordinate and plan priorities relating to the County's weed control program and related entities for the upcoming year. Grant opportunities may also be discussed.

Mid year meetings may be held to discuss pressing weed control issues such as new weed discoveries, weed law and policy violations, and enforcement.

A fall/winter meeting shall be held to inform the Weed Board of the weed control activities of the Weed Department for the past weed season and to discuss possible changes to the noxious weed program for the following year. The Weed Supervisor shall present an ***Annual Weed Control Progress Report*** summarizing the past summer's weed control activities.

SECTION 4. WEED CONTROL SERVICE AREA

Uintah County Weed Department personnel may control noxious and/or invasive weeds within the geographical boundary known as Uintah County, Utah. Five weed control zones are established to specify areas of weed control within the County:

ZONE 1 – County controlled properties (rights-of-way, recreation areas, cemeteries, etc.)

ZONE 2 – Canals, waterways and gravel pits (public and private)

ZONE 3 – Private lands (non-cropland only)

ZONE 4 – Federal, state and tribal controlled properties

ZONE 5 – Herbicide Restricted Areas

SECTION 5. NOXIOUS WEED CLASSIFICATIONS

The Utah Department of Agriculture and Food has declared 27 weeds as noxious. Uintah County has declared three additional weeds as noxious. These weeds are organized into three classifications:

Class A Weeds, *Early Detection Rapid Response (EDRR)* – These weed infestations have a relatively low population and management efforts shall be focused towards eradication.

Class B Weeds, *Control* – These weed infestations have a significant population considered to be beyond eradication, but still considered controllable. Management efforts shall be focused towards controlling expansion.

Class C Weeds, *Containment* – These weed infestations are beyond control and management efforts shall be made to contain smaller localized infestations.

The following lists include the State and County designated noxious weeds that may be controlled by Uintah County:

UTAH STATE NOXIOUS WEED LIST

CLASS A NOXIOUS WEEDS

Black Henbane, Diffuse Knapweed, Johnsongrass, Leafy Spurge, Medusahead, Oxeye Daisy, Purple Loosestrife, St. Johnswort, Spotted Knapweed, Sulfur Cinquefoil, Yellow Starthistle, Yellow Toadflax

CLASS B NOXIOUS WEEDS

Bermudagrass, Dalmatian Toadflax, Dyer's Woad, Hoary Cress, Musk Thistle, Perennial Pepperweed, Poison Hemlock, Russian Knapweed, Scotch Thistle, Squarrose Knapweed

CLASS C NOXIOUS WEEDS

Canada Thistle, Field Bindweed, Houndstongue, Quackgrass, Saltcedar

COUNTY NOXIOUS WEED LIST

The following additional weeds have been declared noxious in Uintah County:

CLASS A NOXIOUS WEED

Common teasel

CLASS B NOXIOUS WEED

Puncturevine

CLASS C NOXIOUS WEED

Russian-olive

SECTION 6. WEED CONTROL PRIORITIES

Four weed control priorities are established for the purposes of organizing weed control programs. These priorities are subject to annual changes made by the Weed Board.

PRIORITY 1

- The following State and County Noxious Weeds may or may not exist in the County. Those that are present, are believed to exist on less than 25 total infested acres within the County and management efforts shall be focused towards prevention or eradication:

  Bermudagrass, Sulfur Cinquefoil, Oxeye Daisy, Poison Hemlock, Black Henbane, Johnsongrass, St. Johnswort, Diffuse Knapweed, Squarrose Knapweed, Purple Loosestrife, Medusahead, Common Teasel, Yellow Starthistle, Scotch Thistle, Dalmatian Toadflax, Yellow Toadflax, Dyer's Woad
- Control any weed considered by the County to be a nuisance on Zone 1, County properties.
- EDRR Weeds: Infestations, of any noxious weed, of 1 acre or less on any single property

PRIORITY 2

- The following State and County Noxious Weeds are believed to exist in the County on more than 25 and less than 1,000 total infested acres and management efforts shall be focused towards controlling expansion:

  Hoary Cress, Houndstongue, Spotted Knapweed, Puncturevine, Leafy Spurge
- Assist in the control of designated noxious weeds on Zone 2 areas, canals, waterways, and gravel pits.

PRIORITY 3

- The following State and County Noxious Weeds are known to exist in the County on ~~over~~ more than 1,000 total infested acres and management efforts shall be to contain smaller localized infestations:

  Field Bindweed, Russian Knapweed, Perennial Pepperweed, Russian-olive, Quackgrass, Saltcedar, Canada Thistle, Musk Thistle
- Assist in the control of designated noxious weeds on Zone 3, private properties.

PRIORITY 4

- Assist in the control of designated noxious weeds on Zone 4, federal, state, city, and tribal properties.

SPECIAL PROJECT WEEDS

Periodically, Uintah County Weed Department may receive special funding, individually or in cooperation with the UBCWMA, to do certain weed control projects. When this occurs, the Weed Department may subsidize or refund a percentage of the cost of these projects to participating landowners. The Weed Department and all participants are subject to the rules and regulations of the funding source.

ZONE 5 HERBICIDE RESTRICTED AREAS

Special circumstances including, but not limited to, public health, sensitive vegetation, sensitive animals or sensitive areas may require the County Weed Department to restrict or cease the application of herbicides in certain areas temporarily or permanently. Individuals, organizations, businesses or agencies may request that specific sections of Zone 1 right-of-way areas be designated as an "Herbicide Restricted Area." To be considered, these entities must contact the Weed Department and agree to and sign a ***Zone 5 Herbicide Restricted Area Weed Control Agreement*** each year (agreements are available at www.uintahweeds.org/programs.html or at the Weed Department). Herbicide Restricted Areas may only include real property within right-of -way areas lawfully owned or leased by the requesting party and may not infringe upon neighboring property owners. In the case of severe human health concerns, evidence of the property owners' condition must be presented to the Uintah County Commission for special consideration. Signs designating "Zone 5 Weed Control" will be provided, free of charge, by the Weed Department for the restricted areas and shall be posted at the beginning and ending of the restricted area within five days of signing the agreement. Entities who have posted "Zone 5 Weed Control"signs are responsible for controlling all designated state and county noxious weeds in these "Zone 5 Herbicide Restricted Areas" by an approved legal and legitimate method, such as herbicide, mowing, mulch, or controlled burn. Control measures must be done in such a way that the paved or gravel traveling surface is not damaged and public safety is not put in jeopardy. If noxious weeds are left uncontrolled, the Weed Department may send the violator an *Individual Notice to Control Noxious Weeds.* As per the terms and conditions of the Notice, the Weed Department may then control noxious weeds in the area(s) of violation without further notice to the violating entity.

NOXIOUS WEED SEED RESTRICTIONS

"It shall be unlawful for any person, firm, or corporation to sell, offer, or expose for sale or distribute in the State of Utah any agricultural, vegetable, flower, tree and shrub seeds, or seeds for sprouting for seeding purposes which: Contain, either in part or in whole, any prohibited noxious weed seeds."

"Prohibited noxious weed seeds are the seeds of any plant determined by Utah Commissioner of Agriculture and Food to be injurious to public health, crops, livestock, land, or other property." (*Utah Seed Law, R68-8*)

SECTION 7. WEED CONTROL SERVICES AND FEES

All property owners are encouraged to participate in the weed control process by locating, identifying and controlling noxious weed infestations on their individual properties.

Any individual, corporation, municipality, tribe, government agency, or organization owning, leasing, or controlling property within Uintah County may request the services of the County Weed Department in accordance with weed control priorities established and approved by the Weed Board and the Uintah County Commission as set herein.

The Uintah County Weed Department may control State and/or County designated noxious weeds on non-cropland areas including, but not limited to, rangeland, pasture, wetland, field edges, road sides, canal banks, utility rights-of-way, and vacant land. All private landowner requests for bare-ground weed control, cropland weed control and residential yard and/or garden weed control will be referred to commercial applicators. Non-noxious weeds may only be controlled when control can reasonably be done in conjunction with regular noxious weed control.

The Weed Department applies EPA approved herbicides according to current manufacturer labels. In the event of unsatisfactory results, the Weed Department will coordinate with the customer and the chemical manufacturer to organize a new treatment plan at no additional cost to the customer. The Weed Department does not offer any guarantee against normal weed regrowth.

The Weed Department reserves the right to deny services in areas that may be injurious or hazardous to employees or County equipment. The Weed Department may assist in scheduling commercial application equipment when County equipment is unavailable or when circumstances warrant.

SPRAY SERVICE FEES – Service fees include the complete cost incurred by the Weed Department for one spray unit per hour and the cost of all chemicals used. A spray unit consists of a maximum of: Two employees, one truck spray unit, one trailer, and one ATV spray unit. Minimum fee is half of the "Spray Unit Fee" and "Herbicide Cost." See Attachment A Fee Schedule for specific prices, available at www.uintahweeds.org/programs.html or at the Weed Department.

DISCOUNTS

Private landowners: 50% off the total cost of spray service fee and chemicals.

Canal companies: 50% off the total cost of spray service fee and chemicals.

Federal, State, Tribal agencies: 25% off the total cost of spray service fee and chemicals.

County Government entities: Cost of chemicals only.

A current fee schedule is available at the Uintah County Weed Department or on the County web site at www.uintahweeds.org/programs.html .

SPECIAL PROJECTS – Special funding (grants) may be obtained periodically that may affect the price of specific projects. All fees are subject to the requirements of the funding source.

HERBICIDE RETAIL SALES AND REIMBURSEMENTS – Private landowners and canal companies, who possess or control land in Uintah County, Utah, may qualify for reimbursement of a portion of the cost of herbicides purchased for private, non-commercial weed control. Government entities and commercial applicators are not eligible for this program. To be eligible for reimbursement, participants must:

- Possess or control at least five acres of land in Uintah County (canal companies are exempt)
- Purchase qualifying herbicides from any licensed herbicide vendor
- Turn in a copy of their herbicide purchase receipts to the Weed Department. Receipts may be turned in to the Weed Department during normal business hours. Reimbursement checks will be processed at the end of each month.

See Attachment A Fee Schedule for specific information, available at www.uintahweeds.org/programs.html or at the Weed Department.

Qualifying herbicides: Only certain herbicides qualify for reimbursement under this program. A list of qualifying herbicides is available at the Uintah County Weed Department or on the County web site at http://www.uintahweeds.org/programs.html. The Weed Department does not offer for sale any herbicide.

Herbicides purchased through this program may not be used by Weed Department personnel to perform contracted labor. All reimbursement requests are subject to funding for this program and shall be subject to review by the Weed Supervisor.

SPRAY UNIT RETAIL SALES AND REIMBURSEMENTS – Uintah County citizens possessing or controlling property in Uintah County, Utah, may purchase any qualifying spray unit for noncommercial weed control use, and may receive, from the Weed Department, a percentage reimbursement of the sales price. Participants must complete and turn in a ***"Herbicide Spray unit Cost-Share Form"*** with their spray unit purchase receipt to the Weed Department. Reports and receipts may be turned in to the Weed Department during normal business hours. Reimbursement checks will be processed at the end of each month. One reimbursement per household is permitted every three years. All rebates are subject to funding for this program. See Attachment A Fee Schedule for specific information, available at www.uintahweeds.org/programs.html or at the Weed Department.

HERBICIDE SPRAY EQUIPMENT RENTALS – Any adult citizen of Uintah County may rent available spray equipment from the Weed Department to spray herbicides on weeds within the County. Rental equipment may not be used to spray any substance other than EPA approved herbicide and associated surfactant's. Rental equipment may not be used for commercial herbicide applications. A rental agreement, deposit, and daily fee may be required to rent spray equipment. See Attachment A Fee Schedule and rental agreement for specific information, available at www.uintahweeds.org/programs.html or at the Weed Department.

SECTION 8. FIRE CODE RELATING TO WEED CONTROL

Uintah County Fire Code, Chapter 3, Section 304

SECTION 304 COMBUSTIBLE WASTE MATERIAL

304.1 Waste accumulation prohibited. Combustible waste material creating a fire hazard shall not be allowed to accumulate in buildings or structures or upon premises.

304.1.1 Waste material. Accumulations of wastepaper, wood, hay, straw, weeds, litter or combustible or flammable waste or rubbish of any type shall not be permitted to remain on a roof or in any court, yard, vacant lot, alley, parking lot, open space, or beneath a grandstand, bleacher, pier, wharf, manufactured home, recreational vehicle or other similar structure.

304.1.2 Vegetation. Weeds, grass, vines or other growth that is capable of being ignited and endangering property, shall be cut down and removed by the owner or occupant of the premises. Vegetation clearance requirements in urban-wildland interface areas shall be in accordance with the *International Wildland- Urban Interface Code.*

SECTION 9. NOXIOUS WEED NOTICES

Notices. *(UCA R68-9-6)*

General and individual notices pertaining to the control and prevention of noxious weeds shall be substantially of the types prescribed herein; namely, *General Notice to Control Noxious Weeds*, *Individual Notice to Control Noxious Weeds*, and *Notification of Noxious Weed Lien Assessment.*

GENERAL NOTICE TO CONTROL NOXIOUS WEEDS

Each county weed control board before May 1 of each year shall post a general notice of the noxious weeds within the county in at least three public places within the county and publish the same notice on at least three occasions in a newspaper or other publication of general circulation within the county. *(UCA 4-17-7)*

Such public notice shall state that it is the duty of every property owner to control and prevent the spread of noxious weeds on any land in his possession, or under his control, and shall serve as a warning that if he fails to comply with this notice, enforced weed control measures may be imposed at the direction of County authorities. Such general notice shall also include a list of weeds declared noxious for the State of Utah and for said county, if any. *(UCA R68-9-6)*

INDIVIDUAL NOTICE TO CONTROL NOXIOUS WEEDS

If the county weed control board determines that particular property within the county requires prompt and definite attention to prevent or control noxious weeds, it shall serve the owner or the person in possession of the property, personally or by certified mail, a notice specifying when and what action should be taken on the property. Methods of prevention or control may include definite systems of tillage, cropping, use of chemicals, and use of livestock. *(UCA 4-17-7)*

An owner or person in possession of property who fails to take action to control or prevent the spread of noxious weeds as specified in the notice is maintaining a public nuisance. *(UCA 4-17-7)*

FAILURE TO CONTROL NOXIOUS WEEDS AFTER NOTICE

If the owner or person in possession of the property fails to take action to control or prevent the spread of noxious weeds within five working days after the property is declared a public nuisance, the county may, after reasonable notification, enter the property, without the consent of the owner or the person in possession, and perform any work necessary, consistent with sound weed prevention and control practices, to control the weeds. *(UCA 4-17-8)*

NOTIFICATION OF NOXIOUS WEED LIEN ASSESSMENT

Any expense incurred by the county in controlling the noxious weeds is paid by the property owner of record or the person in possession of the property, as the case may be, within 90 days after receipt of the charges incurred by the county. If not paid within 90 days after notice of the charges, the charges become a lien against the property and are collectible by the county treasurer at the time general property taxes are collected *(UCA 4-17-8)*. A notice shall be provided such person, showing an itemized cost statement of the labor and materials necessarily used in the work of said control measures. *(UCA R68-9-6)*

APPEALS OF INDIVIDUAL NOTICE TO CONTROL NOXIOUS WEEDS

Any person served with notice to control noxious weeds may request a hearing to appeal the terms of the notice before the county weed control board within 10 days of receipt of such notice and may appeal the decision of the county weed control board to the county legislative body.

Any person served with notice to control noxious weeds who has had a hearing before both the county weed control board and the county legislative body may further appeal the decision of the county legislative body by filing written notice of appeal with a court of competent jurisdiction. *(UCA 4-17-8.5)*

ATTEST:

Uintah County Commission

Darlene R. Burns — 4/11/2011
Darlene R. Burns *Date*
Chair

Michael J. McKee — Apr 11 2011
Michael J. McKee *Date*

Mark D. Raymond — 4-11-11
Mark D. Raymond *Date*

Uintah County Clerk-Auditor

Michael W. Wilkins — 4-11-11
Michael W. Wilkins *Date*

Uintah County Weed Board

Tony George — 3-31-11
Tony George *Date*

Absent
Chip Goodrich *Date*

Absent
Steve Hanberg *Date*

Mark Kettle — 3-31-11
Mark Kettle *Date*

John Snow — 3/31/11
John Snow *Date*

UINTAH COUNTY, UTAH
Uintah county
CLERK-AUDITOR

Revised March 31, 2011

Appendix D
Consideration of Alternatives

Alternatives Considered but Eliminated by the Bureau of Land Management

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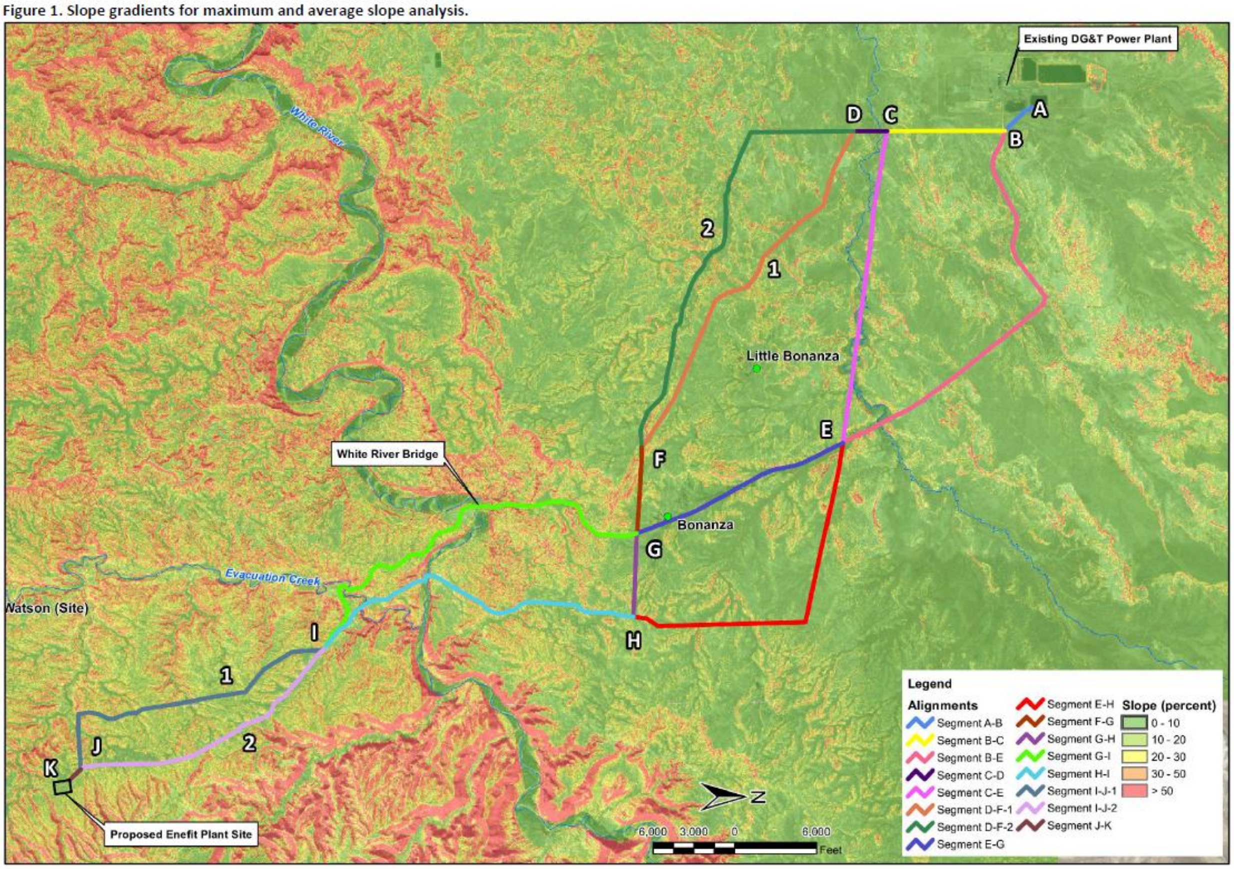
Alternatives Considered but Dismissed by the BLM

1. Alternative Route Alignments

In 2012 and 2014, Enefit reviewed several overall alternative routes for their proposed utility corridors comprised of 16 different segments. *Enefit Routing Alignment Comparison Based on Plans of Development (POD) Dated November 26, 2012 and April 23, 2014* documents that review and *EAO Response to Enefit Routing Alignment Comparison* documents the EPG's technical review of those alignments. These segments are shown in comparison to project area topography on the below Figure 1 which was excerpted from the EAO Response document. Both documents conclude that the proposed alternative is the least environmentally damaging overall of the routes identified for consideration.

Figure 1. Slope gradients for maximum and average slope analysis.



BLM has reviewed both the Enefit prepared comparison and the EPG prepared review of the 16 alignments. In addition, BLM compared those documents and their conclusions to various in-house resource GIS data sets. A summary of BLM's findings from their internal data review is summarized in the following table:

	Route 1A	Route 1B	Route 2A	Route 2B	Route 3A	Route 3B	Route 4A (Proposed)	Route 4B
Sage grouse GHMA	Present	Present	Present	Present	Present	Present	Present	Present
Sage grouse PHMA	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
Sage grouse population area	Present	Present	Present	Present	Present	Present	Present	Present
Sage Grouse EIS corridor	Present	Present	Present	Present	Present	Present	Present	Present
Wilderness character	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
Existing RMP corridor	Present	Present	Present	Present	Present	Present	Present	Present
VRM	II, III, and IV	II, III, and IV	II (edge), III, and IV	II (edge), III, and IV	II (edge), III, and IV	II (edge), III, and IV	II (edge), III, and IV	II (edge), III, and IV
Sclerocactus potential habitat	Present	Present	Present	Present	Present	Present	Present	Present
Sclerocactus core conservation area 1	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
Sclerocactus core conservation area 2	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
Floodplain crossing including Evacuation Creek and White River	3	3	9	9	3	3	3	3
Wild Scenic River	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
ACEC	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present

Based on the review of both documents and the internal data, BLM has determined the following:

- That the range of alternatives considered by Enefit is appropriate given the objective of moving utilities from existing sources to their private land and moving their product from their private land to existing transmission facilities. Enefit proposes to connect to the nearest available utility supply and product transportation facility to minimize impacts. Requiring Enefit to connect to a more distant utility supply and product facility would be remote and speculative given that Enefit has indicated they can, if necessary or under the no action alternative, generate their own utilities on-site and transport their product by truck. Therefore, no alternatives requiring connection to more distant utility sources were carried identified by the BLM as reasonable for inclusion in this EIS.

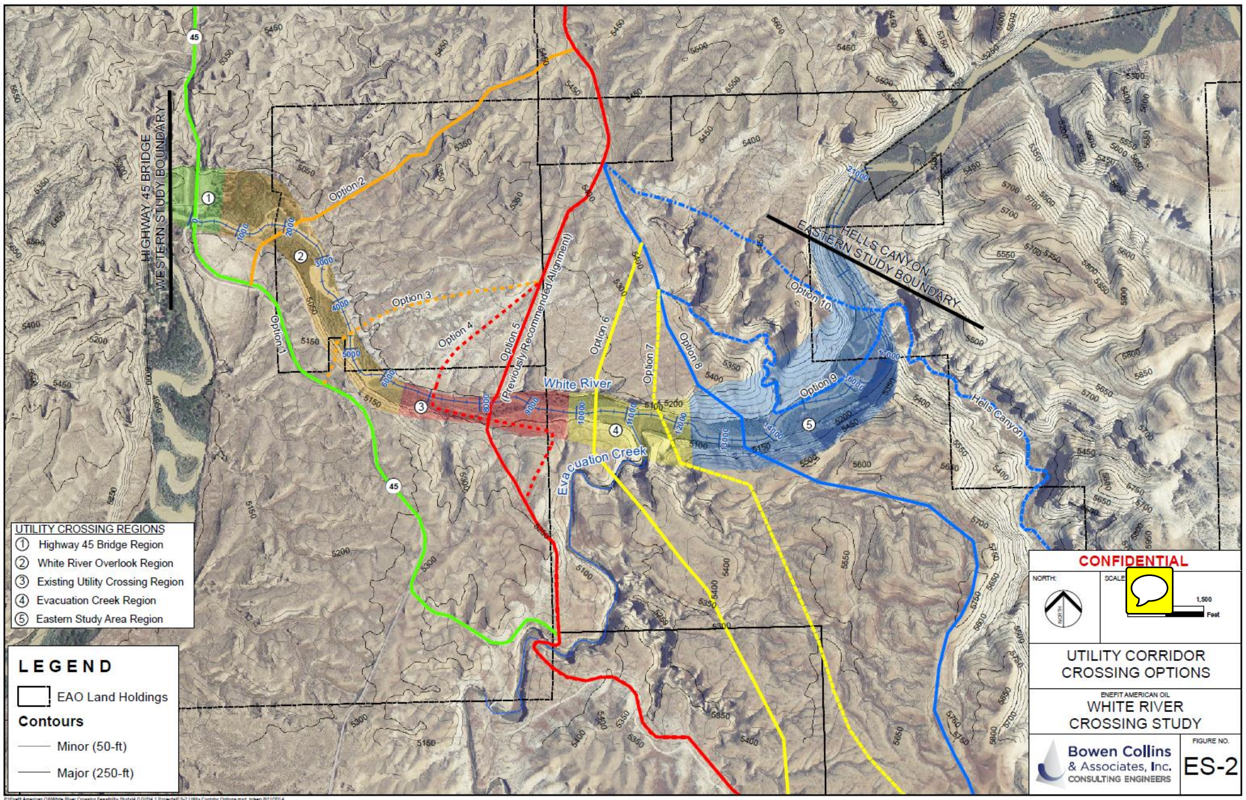
- The segments of the proposal that were carried forward as the proposed action are the shortest routes available and also the widest (topographically) and flattest routes available, which minimizes cut and fill during construction. All other segments identified as possible alignments are substantially similar to the proposed action in impact nature. However, all other considered segments are longer, equally or more topographically challenging, and have an equal or higher occurrence of resource issues. Therefore, BLM concurs that the other segments can be eliminated from detailed analysis as it would not improve the range of alternatives, especially as they relate to minimizing impacts expected from those alternatives.
- Further, no issues were identified by the BLM, the public during public scoping, or BLM's cooperators that necessitate the detailed review of any of the other alternatives.

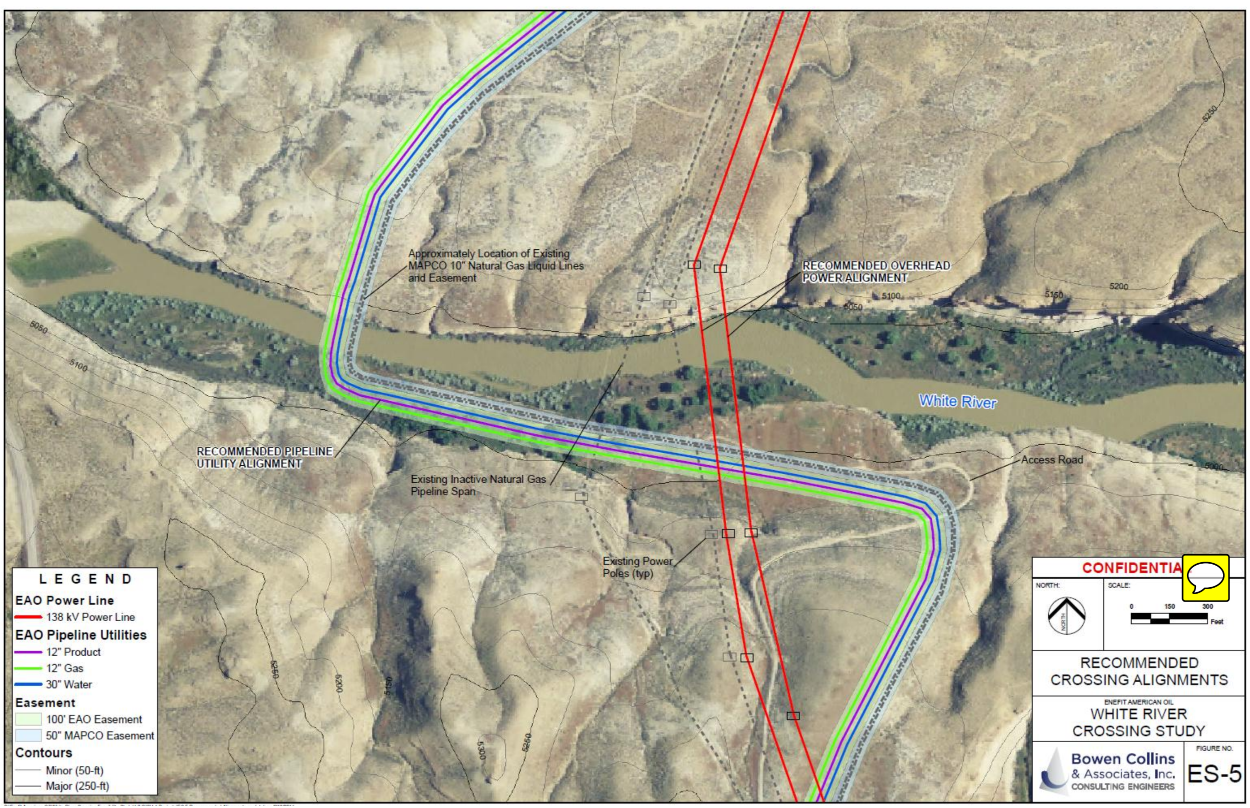
2. White River Crossing Alternatives

Ten crossing location alternatives considered by Enefit for crossing the White River were documented in the *White River Crossing Technical Pre-Feasibility Study September 2014.* The two most feasible alternatives were further reviewed by EPG, as documented in *EAO Response to Enefit Routing Alignment Comparison (segments "G to I" and "H to I").* This review considered both alternative crossing locations and alternative methods for crossing the river. In addition, three crossing methods were considered by Enefit for crossing the White River were documented in the *White River Crossing Technical Pre-Feasibility Study September 2014.* These are discussed further in the following subsections.

a. Pipeline and Powerline Crossing locations

Ten possible crossing locations in five separate regions are shown in the below figure ES-2 excerpted from the Pre-Feasibility Study. There ten locations were identified by Enefit as meeting their goals for the crossing: providing balance of cost and risk, minimize environmental impact and permitting requirements, and providing a reliable and stable crossing for operation and maintenance. The ten routes were then ranked by Enefit's contractor according to Engineering and Construction Factors, Environmental Impact and Permitting Factors, and Cost and Operation Factors to identify the recommended pipeline crossing location. The proposed action was determined to have the best access for long term operation and maintenance on both sides of the river, the best topography, good alignment with the rest of the proposed routes, and consolidated Enefit's proposal with other pipeline and powerline crossings as shown in the below excerpted figures-5 from the Pre-Feasibility Study.


UTILITY CROSSING REGIONS
① Highway 45 Bridge Region
② White River Overlook Region
③ Existing Utility Crossing Region
④ Evacuation Creek Region
⑤ Eastern Study Area Region
LEGEND
EAO Land Holdings
Contours
Minor (50-ft)
Major (250-ft)
HIGHWAY 45 BRIDGE WESTERN STUDY BOUNDARY
HELLS CANYON EASTERN STUDY BOUNDARY
Option 1
Option 2
Option 3
Option 4
Option 5 (Previously Recommended Alignment)
Option 6
Option 7
Option 8
Option 9
Option 10
White River
Evacuation Creek
Hells Canyon
CONFIDENTIAL
UTILITY CORRIDOR CROSSING OPTIONS
ENEFIT AMERICAN OIL
WHITE RIVER CROSSING STUDY
Bowen Collins & Associates, Inc. CONSULTING ENGINEERS
FIGURE NO.
ES-2


Approximately Location of Existing MAPCO 10" Natural Gas Liquid Lines and Easement
RECOMMENDED OVERHEAD POWER ALIGNMENT
White River
RECOMMENDED PIPELINE UTILITY ALIGNMENT
Existing Inactive Natural Gas Pipeline Span
Access Road
Existing Power Poles (typ)
LEGEND
EAO Power Line
138 kV Power Line
EAO Pipeline Utilities
12" Product
12" Gas
30" Water
Easement
100' EAO Easement
50" MAPCO Easement
Contours
Minor (50-ft)
Major (250-ft)
CONFIDENTIAL
RECOMMENDED CROSSING ALIGNMENTS
ENEFIT AMERICAN OIL
WHITE RIVER CROSSING STUDY
Bowen Collins & Associates, Inc. CONSULTING ENGINEERS
FIGURE NO.
ES-5

Based on the review of both documents, BLM has determined the following:

- That the range of alternatives considered by Enefit is appropriate given the objective of moving utilities from existing sources to their private land and moving their product from their private land to existing transmission facilities. Any routes further to the east or west would move into areas with greater topographical challenges or resource issues. They would also be out of alignment with the rest of the utility project.
- The route carried forward as the proposed action is the shortest route available and also the widest (topographically) and flattest route available, which minimizes cut and fill during construction. All other segments identified as possible alignments are substantially similar to the proposed action in impact nature. However, all other considered segments are longer, equally or more topographically challenging, and have an equal or higher occurrence of resource issues. Specifically the route that would parallel Highway 45 is narrow and would result in significant cut and fill to fit the utilities into the narrow canyon navigated by Highway 45. Therefore, BLM concurs that the other segments, including paralleling Highway 45, can be eliminated from detailed analysis as they would not improve the range of alternatives, especially as they relate to minimizing impacts expected from those alternatives.
- Further, no issues were identified by the BLM, the public during public scoping, or BLM's cooperators that necessitate the detailed review of any of the other alternatives.

b. Pipeline Crossing Methods

Three possible crossing methods were identified as potentially feasible for the proposed White River crossing: open cut, trenchless (microtunnel) and overhead utility bridge. Enefit concluded that due to the size of bridge required to support the three proposed pipelines, the overhead utility bridge was unlikely to be feasible due to high costs and visual impacts. They concluded that open cut construction methods are proven feasible for the project area, but less desirable due to the permitting requirements, environmental impacts, and risks associated with working in a flowing river. They concluded that the trenchless construction method is their preferred method due to its ability to minimize the environmental impacts, permitting requirements, and risks.

Based on the review of the Pre-Feasibility Study, BLM has determined the following:

- That the range of method alternatives considered by Enefit is appropriate given BLM's experience with methods used for other pipeline crossings in this and other rivers in the Vernal Field Office.
- The method carried forward as the proposed action is the least impacting of the possible methods because it minimizes impacts to the river and visual resources. The bridge crossing method would result in similar impacts to the river, but greater impacts to visual resources. The open cut method would result in greater impacts to the river, but similar impacts to visual resources. Therefore, BLM concurs that the other methods can be eliminated from detailed

analysis as they would not improve the range of alternatives, especially as they relate to minimizing impacts expected from those alternatives.

- Further, no issues were identified by the BLM, the public during public scoping, or BLM's cooperators that necessitate the detailed review of the other method alternatives.

3. Alternative Water Withdrawal Points

Two water withdrawal points are available to Enefit to supply water for their project. Their water right allows for withdrawal from either the White River or the Green River. Enefit has elected to utilize water from the Green River for their project due to higher and more stable flows, and due to the fact that they were able to work out a deal with the Bonanza Powerplant to utilize the Plant's existing water withdrawal system and pipeline to withdraw and move the water closer to the Enefit project area. BLM requested technical feasibility data from Enefit regarding their ability to withdraw water from the White River. Ryan Clerico provided a response on June 5, 2015 that confirmed that they could withdraw the water from points in the White River near the proposed utility crossing. The supplemental details they provided in response to this question are as follows:

- To withdraw the water, a minimum of six to eight acres would be disturbed for installation of at least 3 to 4 withdrawal facilities. This would result in a relocation of the proposed pipeline and powerline crossing, which would result in greater environmental impacts from those utilities since the proposed crossing was determined to be the least impacting crossing point. Also, the proposed utilities are able to span above (power lines) or weave between (pipelines) archaeological sites present in the crossing area. The pads required to support the withdrawal facilities would not be able to avoid those archaeological sites.
- The White River has a lower flow rate than the Green River, so withdrawal would have to occur when the water is available and then the water would have to be stored in a reservoir or tank battery on Enefit's private land against the time when flows cannot supply the required water. There would also be a greater probability that endangered fish in the White River would be adversely impacted if the water is withdrawn from that river given the lower flows, than if the same water amounts were withdrawn from the higher flowing Green River.

Based on the review of the provided details, BLM has determined the following:

- That the range of water withdrawal locations considered by Enefit is appropriate given the limitations of their existing water right, which is administered by the Utah Division of Water Rights and is therefore outside the jurisdiction of the BLM.
- The Green River withdrawal location carried forward in the proposed action is the least impacting of the two possible withdrawal locations because the facilities and half the pipeline are already in place, and because the Green River has a higher flow rate than the White River. Also, the White River withdrawal site would likely result in additional impacts to visual resources, archaeological resources, and surface resources (from construction of the facilities on BLM land and construction of the reservoir on private land). Therefore, BLM concurs that the

White River withdrawal location can be eliminated from detailed analysis as it would not improve the range of alternatives, especially as they relate to minimizing impacts expected from those alternatives.

- Further, no issues were identified by the BLM, the public during public scoping, or BLM's cooperators that necessitate detailed review of the White River withdrawal location alternative.

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Routing Alignment Comparison Memorandum

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EAO Response to Enefit Routing Alignment Comparison

This document has been prepared to respond to data gaps identified by the Bureau of Land Management (BLM), Vernal Field Office regarding Enefit American Oil's (EAO) utility corridor and Dragon Road improvement right-of-way (ROW) application pertaining to the BLM's Utility Corridor Project Environmental Impact Statement. Data gaps addressed in this response were transmitted by the BLM in the form of a table contained in the file *Enefit Routing Alignment Comparison Table_9-22-14.docx*. The table was prepared based on EAO's Preliminary Plan of Development (PPOD; dated November 26, 2012) and Detailed Plan of Development (DPOD; dated April 23, 2014). The data gaps identified in the table focus primarily on the physical and environmental evaluation criteria and results used by EAO to select EAO's preferred route and inform the ROW application. The PPOD provided a summary of the evaluated routes and overall scoring (see Table 1 in the PPOD). The DPOD provided engineering and construction information for EAO's preferred route. This data gap response has been prepared to provide additional detail regarding the scoring criteria and route segment scores summarized in the PPOD, in order to allow the BLM to conduct a thorough analysis of all potential route segments. It should be noted that the Dragon Road upgrade was not similarly evaluated for route alternatives, as Dragon Road is an existing ROW proposed only for improvement. While some minor route deviations from the existing Dragon Road centerline occur in the proposed upgrade, there are no significant re-routes that warrant an independent routing analysis for that part of the Utility Corridor Project. Therefore, the Dragon Road improvement will not be further mentioned in this data gap response.

Background and Methodology

The routing study began with preliminary route selection based on the logical termini for each utility type. Preliminary route selection was completed at a high level based on existing major constraint data and regional knowledge. The preliminary routes were then separated into discrete segments for scoring purposes, and detailed scoring criteria was selected for conducting the comparative analysis. Each segment was then scored against the selected criteria, corrected for length of the segment (resulting in a "length-weighted average"), and a preferred set of segments (collectively, a route) were selected for the utilities.

Segment Descriptions

The segmented analysis was completed based on the common points associated with many of the potential line routes. The segments were separated at points of divergences and convergence of the preliminary routes (see Appendix C in the PPOD). Each segment end point was labeled with a unique letter designation, allowing reference to segments by the endpoint labels. In some instances, a number was also part of the segment label for situations where end point designations match other segment alternatives. The following briefly describes each segment highlighting the end points and the existing parallel corridor (where applicable). The segments were generally grouped as options north and south of Bonanza.

North of Bonanza

- Segment A-B – Begins at the existing Deseret Generation and Transmission (DG&T) water supply pipeline prior to entering the terminal building and ends on the north side of the DG&T coal hauling railroad prior to divergence to points C or E.
- Segment B-E – Begins at the railroad. This segment parallels the railroad in the north side to State Road 45, then crosses the railroad and parallels State Road 45 on the west side heading south to the point of intersection with the Chevron pipeline alignment.
- Segment E-G – Begins at the Chevron pipeline crossing of State Road 45, crossing the Chevron pipeline, and then parallels State Road 45 on the west side, crossing gilsonite mines to the Questar pipeline crossing of State Road 45, then crosses under the Questar pipeline.
- Segment B-C – Begins on the north side of the railroad then crosses under the railroad and ends at the north side of the Chevron pipeline.
- Segment C-E – Parallels the Chevron pipeline alignment on the north side, to minimize impact on the intermittent stream channel, to State Road 45.
- Segment E-H – Begins at the Chevron pipeline crossing of State Road 45, first crossing State Road 45, then parallels the Chevron pipeline on the north side to the east and then crosses the Chevron pipeline, then heads south paralleling other existing pipeline facilities on the west side of the existing corridor.
- Segment C-D – This is a short segment that begins by crossing under the Chevron pipeline at the western Chevron pipeline crossing, then under the intermittent stream channel, to a point of divergence between the transmission line corridor route recommended by Moon Lake Electric Association (MLEA) and the Chipeta Wells Road alignment.
- Segment D-F(1) – A cross-country route that generally follows the MLEA-recommended transmission line route and an existing county road to the Questar pipeline alignment, then crosses the gas line.
- Segment D-F(2) – Proceeds south from the Moon Lake power supply corridor overland to the north side of Chipeta Wells Road, then parallels Chipeta Wells Road to the Questar pipeline alignment, where it then crosses Chipeta Wells Road and the gas pipeline.
- Segment F-G – Parallels on the south side of the Questar pipeline alignment from the intersection of the MLEA-recommended transmission corridor to the west side of State Road 45.

South of Bonanza

- Segment G-H – Begins at the Questar gas pipeline crossing of State Road 45 going first under State Road 45, then along the south side of the Questar gas pipeline corridor and ends at the intersection of the Questar gas pipeline and the proposed transmission corridor.
- Segment H-I – Parallels the Mid-American Pipeline Company (MAPCO) liquefied natural gas (LNG) pipelines to a point of convergence south of the White River and Evacuation Creek crossings. This segment begins by crossing as many as three gilsonite mines, while staying on the west side of the MAPCO LNG lines. It then crosses the White River and proceeds to the crossing of Evacuation Creek. The segment then proceeds to the intersection of Dragon Road.

- Segment I-J(1) – Follows an existing small MLEA transmission line route from south of Evacuation Creek to Dragon Road.
- Segment G-I – Follows State Road 45 on the west side of the road to the White River and continues along the west side of State Road 45 to the Dragon Road intersection, at which point the route crosses under State Road 45 and continues on the south side of Dragon Road to the Evacuation Creek crossing. This segment ends at the intersection of Dragon Road and the MAPCO LNG pipelines.
- Segment I-J(2) – Follows Dragon Road and the MAPCO LNG pipelines from the point of convergence south of Evacuation Creek to EAO's private property.
- Segment I-K – Begins at the point of convergence of Dragon Road and an existing small MLEA transmission line route and ends at EAO's private property.

In order to evaluate topographic considerations, a preliminary plan and profile of each segment at 1 inch = 2,000 feet scale was prepared and is provided in Annex 1. Segmented analysis enables the evaluation of several potential routes by adding together the physical and environmental scores and costs associated with each segment.

Scoring Criteria

Utility segments were scored based on the set of constraints described below. Each physical and environmental constraint was scored using a 1 to 10 scale, with 10 being the least desirable. Zeros were used where the constraint does not apply to a specific segment. The scoring of each segment was adjusted by the total length of the segment. This allowed for normalization of the scoring when adding segments of different length. Scores were balanced for alignments that have more individual segments than others. Raw segment scores were multiplied by the segment length (in miles) to provide a length-weighted score.

Crossings

There are several key crossings that are anticipated to require specific engineering design solutions. The intent of the routing alternative analysis was to highlight these key crossings without limiting the potential for future design solutions, rather than to evaluate specific design criteria at the time of route selection. The number of crossings was evaluated for each alternative; therefore, the more crossings required, it can be reasonably assumed that there is a higher potential for increased site-specific engineering solutions and in turn a higher degree of technical risk, potential for route variation, increased cost, etc. The key crossing types identified to date, along with the general type of engineering solution required to address crossing issues, are provided below (note that the crossing types focus primarily on the three pipelines – water, natural gas, and product – as it was assumed that transmissions lines could span these crossings without significant issue, therefore rendering the pipelines as the critical element):

- Power crossings – Typical pipeline bury is anticipated, along with cathodic protection and monitoring stations.

- Existing pipeline crossings – Design of these crossings will be site specific and should be based on pothole information and design requirements for the existing utility. Casing will likely be required, as well as cathodic protection and monitoring stations for both existing and proposed pipelines.
- State highway and railroad crossings – Permits would be required from the existing ROW holder prior to construction. Casings may be required generally from ROW line to ROW line. There may be potential for open cut crossings of state highways, but this would require permitting with the Utah Department of Transportation.
- County road crossings – County road crossings would be reviewed and approved by Uintah County. Casings may not be required but could better facilitate future maintenance.
- White River crossing – Based on the time of year, environmental impacts, and the location of the crossing, several options may be available for the design and construction of the White River crossing. Subsequent to the PPOD and preliminary routing analysis, EAO conducted a study focusing solely on the White River crossing, evaluating a variety of locations and construction methods. A summary of that study was provided to the BLM as part of the data gap response submitted October 12, 2014.
- Evacuation Creek crossing – Existing utility crossings of Evacuation Creek have utilized both utility bridges and open cut subsurface crossings (as well as full spans for overhead transmission); therefore, both options should be considered feasible. It is important to note that, depending on the location of the White River crossing, a crossing of Evacuation Creek may not be necessary. I.e. if the selected route alternative occurs upstream of the Evacuation Creek discharge to the White River, then no Evacuation Creek crossing would be required.
- Gilsonite trench crossings – Gilsonite mine trenches typically range from 8 to 12 feet in width. One 20-foot segment of steel casing pipe could be used to span this distance. Foundations on either side of the trench and pipe supports across the trench may be required and should be evaluated during final detailed design.

Physical Evaluation Criteria

The following is a description of the physical criteria that were evaluated and the scoring used to evaluate the segment alternatives.

- BLM-Administered Lands – In order to limit the complexity associated with multiple utility ROW landowners, preference was given to routes with a higher percentage of BLM-managed lands, in accordance with the following scheme: 100% = 1, 50% = 5, 0% = 10.
- Existing Road Crossings – Utility road crossings add both complexity and cost to project construction, due to pavement repair/replacement and need to acquire necessary encroachment permits. State and named county road crossings were scored based on the following scheme: 0 crossings/mile = 1, 1 crossing/mile = 3, 2 crossings/mile = 6, 3 or more crossings/mile = 10.
- Available Width – In the creation of the alignment corridors, nearby utilities and linear infrastructure were used to the greatest extent possible. In some cases, there may not be adequate space within existing easements and corridors to accommodate the new utilities. This

constraint was designed to capture the added difficulty of trying to “fit too much” infrastructure in a small corridor. This constraint was scored on a visual basis based on a review of the plan and profile drawings, using recent high-resolution aerial imagery.

- Maximum Slope – Steep slopes, even for short distances, on longitudinal or cross-slopes can cause construction and long-term stability issues. This constraint was based on an analysis of a continual slope grid, which was developed using a 10-meter digital elevation model and the alignment segments. Each segment was summarized by determining the total lengths within five different slope categories. The five slope categories were: Over 50% slope, 30% - 50% slope, 20%-30% slope, 10%-20% slope, 0%-10% slope. Scores were developed based on the steepest slope category with more than 250 feet of alignment in it. Slopes were scored based on the following scheme: Over 50% slope, 10-9; 30% - 50% slope = 8-7; 20%-30% slope = 6-5; 10%-20% slope = 4-3; 0%-10% slope = 2-1.
- Average Slope – This analysis was intended to capture alignments that may have steep slopes over longer distances. The average slope analysis was based on the following scheme: 25% of the alignment is over a 50% slope = 10, 25% of the alignment is over a 30% slope = 7, 25% of the alignment is over a 20% slope = 4, 25% of the alignment is over a10% slope = 2.
- Gilsonite Mine Crossings – There are many active and former gilsonite mines within the Utility Corridor Project area. Gilsonite is a form of natural asphalt that is only found within the Uinta Basin and is often in long vertical veins that extend to the surface. Most of these mines are several thousand feet long, 8 to 12 feet in width, and over 1,000 feet deep. These obstacles will be difficult for the construction of the proposed pipelines and may necessitate special construction techniques to suspend the pipelines over the mine pit. Mine crossings add a significant amount of expense and complexity to pipeline construction, and may present long-term maintenance and stability challenges. This constraint was scored using the following scheme: 0 crossings = 0, 1 crossing = 5, 2 crossings = 7, 3 or more crossings = 10.
- Construction Access – Some segments of this pipeline will be constructed in remote areas away from roads. Areas with limited access add difficulty and expense to the construction, as access may only be along the ROW for long stretches, and/or temporary access roads would need to be constructed, to deliver equipment and materials. This constraint was scored on the percentage of the segment located near existing roads using the following scheme: 100% adjacent to existing roads = 0, 0% adjacent to existing roads = 10.
- Utility Crossings – Utility crossings can be a major source of complexity for new utility construction. Utility crossings can affect construction schedule, inspection requirements, cathodic protection requirements, long-term maintenance, and overall project cost. This constraint was scored on the number of utility crossings per mile using the following scheme: 0/mile = 1, 1/mile = 3, 2/mile = 6, 3 or more/mile = 10.
- Drainage Crossings – Drainage crossings can present environmental permitting and special construction considerations. Crossing locations may necessitate concrete encasements to protect the pipeline from erosion and stream bed scour. Some stream and river crossings can require special construction techniques such as horizontal directional drilling or microtunneling. The number of stream and river crossings per mile was scored based on the following scheme: 0/mile = 1, 1/mile = 3, 2/mile = 6, 3 or more/mile = 10.

It is important to note that physical constraints, in many cases, are expected to result directly in additional environmental impacts (e.g. more surface disturbance, unstable slopes, greater erosion, lower potential for long-term reclamation, etc.). While these related factors were not explicitly scored in this evaluation, the physical constraint score also has an influence on environmental impacts.

Environmental Criteria

Environmental evaluation criteria were divided into two categories – primary and secondary. In areas where primary criteria were identified, there may be significant implications on successful construction, or the area should be avoided to the extent possible. In areas with secondary evaluation criteria, utility construction should also be avoided to the extent practical, but these areas may not represent as significant a routing concern. The primary and secondary environmental criteria are described below.

Primary

- Areas of Critical Environmental Concern (ACEC) – ACEC is a BLM designation and certain types of activities within the ACEC may be limited. ACECs may include fragile, sensitive, rare, or unique lands or resources. An ACEC designation may preclude pipeline or transmission lines from the area. This constraint was scored using the following scheme: intersecting boundary with an ACEC = 10, within 5 miles of an ACEC = 5, beyond 5 miles of an ACEC = 0.
- Wild and Scenic Rivers – Rivers designated as Wild and Scenic have high recreational and/or scenic values. These areas may preclude pipeline crossings or may necessitate special trenchless construction techniques or other mitigation to minimize impacts on the resource. This constraint was scored using the following scheme: intersecting boundary with a Wild and Scenic River = 10, no intersecting boundary with a Wild and Scenic River = 0.
- Large Wetland Complexes – Wetland crossings require a U.S. Army Corps of Engineers (USACE) permit. Wetlands also pose constructability issues. Consequently, routing should consider reducing the number and amount of wetlands crossed and, if truly required, consideration should be given to horizontal directional boring under the wetland. This constraint was scored using the following scheme: intersecting boundary with a large wetland complex = 10, no intersecting boundary with a large wetland complex = 0.
- Large Water Bodies– Federal regulations mandate that pipeline valves be placed on either side of water bodies in excess of 100 feet. As a result, crossings of large water bodies should be minimized to the extent practical. This constraint was scored using the following scheme: intersecting boundary with a large water body = 10, no intersecting boundary with a large water body = 0.
- Permit Sensitive Lands (e.g., Department of Defense lands, lands with tribal ownership) – Land ownership and associated permitting requirements can significantly affect schedules and complexity of ROW acquisition. This constraint was scored using the following scheme: intersecting boundary with a permit sensitive land = 10, no intersecting boundary with a permit sensitive land = 0.
- Habitat for Federally Threatened and Endangered Species – Impacting habitats used by threatened and endangered species or areas designated by the U.S. Fish and Wildlife Service

(USFWS) as critical habitat requires consultation with the USFWS. This constraint was scored using the following scheme: intersecting boundary with critical habitat = 10, no intersecting boundary with critical habitat = 0.

- Wildlife Refuges – These areas may contain significant wildlife resources. In some cases, federal regulations may necessitate additional valving to protect ecological resources. This constraint was scored using the following scheme: intersecting boundary with a wildlife refuge = 10, no intersecting boundary with a wildlife refuge = 0.

Secondary

- Source Water Protection Areas or Wellhead Protection Areas – These are municipal groundwater resources. Routing is not precluded, but avoidance may ameliorate concerns associated with product pipeline breach and drinking water contamination.
- Water/River Crossings – Crossing flowing waters requires different construction techniques than traditional upland procedures and crossings should be minimized. These crossings may require USACE and State of Utah permits. This constraint was scored using the following scheme: 0 crossings/mile = 1, 1 crossing/mile = 3, 2 crossings/mile = 6, 3 or more crossings/mile = 10.
- Wetland Crossings – As discussed above, wetland crossings may require non-standard construction methods, as well as USCAE permitting. This constraint was scored using the following scheme: numerous intersecting boundaries with wetlands = 10, no intersecting boundary with wetlands = 0.
- Sensitive Habitats and Special-Status Species Occurrences – Sensitive areas are often areas of high biological diversity and provide habitat for sensitive, threatened and/or endangered (i.e. special-status) species. These habitats include riparian areas, breeding habitats, critical habitats for big game and greater sage-grouse, and known occurrences of sensitive, threatened, endangered species. All may be subject to greater protection by state and federal agencies. This constraint was scored using the following scheme: entire length of segment impacted = 5, no segment impact = 0. For occurrences of federally protected species, these segments were scored with a 10.

There are two notable criteria that were not considered in the initial routing evaluation. First, for hazardous liquid pipelines, federal regulations mandate that operators identify portions of their pipelines that “could affect” high consequence areas (HCAs), such as rural communities or shallow, unconfined aquifer areas. These “could affect” pipeline segments are subject to higher regulatory controls, including increased pigging frequencies and stricter repair criteria, resulting in higher long-term operation and maintenance costs, as well as other potential risks in the event of a release. HCAs must be accounted for in emergency response planning and incorporated into an integrity management plan for the pipeline facility. HCAs must be requested from the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA) due to homeland security issues, although EAO has not yet contacted PHMSA regarding the Utility Corridor Project pending the BLM scope of analysis and evaluation of outstanding data. “Could affect” segments may assist in evaluating route alternatives.

Second, properties listed on the National Register of Historic Properties or identified by the State Historic Preservation Office (SHPO) are areas with significant cultural, historical, or tribal interests. Construction in or adjacent to these areas can cause impacts to cultural resources, which may require avoidance or mitigation. Evaluation of these locations must be conducted by an agency or qualified individual with access to the SHPO database. This evaluation was not conducted for the initial routing analysis, although a full Class I/Class III cultural resource survey was completed for the preferred route and has been submitted to the BLM.

Scoring Results

As described above, each segment was evaluated with respect to physical constraints, environmental constraints, and cost. The following sections discuss the general results of the analysis and highlight key constraints as they relate to specific segments. A tabulation of the individual segment scoring is also provided.

Physical Criteria Evaluation Results

The majority of the property in the area is BLM-administered land. Other than EAO, significant land owners include the State of Utah's School and Institutional Trust Lands Administration, American Gilsonite, and other private landowners. No segments have a significant impact caused by road crossings. State Road 45 crosses segments E-H, G-H, and G-I. The highest number of county road crossings was observed in Segment H-I.

The available width is somewhat difficult to fully-evaluate at this scale of study, however, there are a number of key factors than can be considered to inform this constraint analysis. Existing topography, drainages, existing utilities, and existing roads were used to provide an indication of available width, with the following segments exhibiting higher degrees of limitation:

- <u>Segment B-E</u> – This area is generally buildable, however, there are short stretches adjacent to the highway where steep side cut and/or fill slopes may require special construction techniques.
- <u>Segment C-E</u> – The existing drainage could have to be crossed several times, as it was by the Chevron pipeline. It appears that, by constructing on the north side of the Chevron pipeline, these crossings can be minimized.
- <u>Segment G-I</u> – This area could be the most limited of the segments. There is a long stretch north of the White River crossing with steep fill and cut side slopes adjacent to State Route 45. This issue is magnified by the need to have all utilities – water/natural gas/product pipelines and both transmission lines – cross through this area.
- <u>Segment H-I</u> – This segment could have some width issues given the proximity of the existing MAPCO pipelines and the undulation of the existing terrain.

In terms of constructability, the maximum slope criterion – slopes greater than 30 percent – was used to highlight extreme difficulty areas associated with alignment segments. This was treated as a fatal flaw analysis in an effort to identify routes with difficult constructability. Based on this analysis, Segments G-I, H-I, I-J(1) and I-J(2) were identified as the most difficult of the alignment segments with respect to maximum slope. This was generally in areas of steep cut and fill slopes along State Route 45 and steep cliffs and breakovers in Segments G-I, H-I, I-J(1) and I-J(2).

The average slope evaluation is more descriptive of total constructability for each segment. While this evaluation does not explicitly differentiate between longitudinal slope and cross slope, it does illustrate segments that are relatively flat versus those that are relatively steep. Segments G-I, H-I and I-J(1) had a slope characterized as 25 percent of the alignment being a slope between 20 percent and 30 percent.

American Gilsonite Company owns, operates, and maintains active mines, abandoned mines, and future mines in the region. These areas will require special construction techniques to cross the gilsonite veins. Segments E-G, G-H and H-I were most affected by American Gilsonite property.

Table 1 below provides the physical evaluation criteria scoring for each segment. Figures 1 and 2 show slope gradients and the existing topography for the area and include labels for key spot elevations along the various segments. Figure 3 shows the land ownership in the region, with the areas shaded in blue owned by American Gilsonite and the southeast-to-northwest trending lines indicating the location of gilsonite veins.

Table 1. Physical evaluation criteria scoring matrix.

Segment		Land Ownership/Easements			Constructability Criteria						Sum of Points	Length (miles)	Length Weighted Total (Points x Length)
		BLM Land	Existing Road Crossings	Available Width	Max Slope	Average Slope	Gilsonite Crossing	Construction Access	Utility Crossings	Drainage Crossings			
North of Bonanza	Segment A-B	0	0	0	2	1	0	0	1	7	11	0.47	5
	Segment B-C	0	0	0	2	1	0	6	3	4	16	1.64	26
	Segment B-E	2	0	2	8	3	0	0	2	4	21	6.09	128
	Segment C-D	0	0	0	3	1	0	10	1	6	18	0.46	10
	Segment C-E	2	1	3	5	2	0	6	1	6	21	4.38	114
	Segment D-F(1)	0	1	0	5	2	0	6	1	3	22	5.49	99
	Segment D-F(2)	0	0	0	7	2	0	3	1	8	21	6.25	131
	Segment E-G	2	0	2	6	3	10	0	2	6	31	3.14	97
	Segment E-H	3	1	1	6	3	5	6	1	5	31	4.97	154
	Segment F-G	1	0	2	7	3	0	10	1	5	29	1.19	34
South of Bonanza	Segment G-H	10	0	1	4	3	7	9	1	2	37	1.16	43
	Segment G-I	3	1	8	10	5	5	0	2	3	37	6.01	222
	Segment H-I	6	3	4	9	5	10	9	2	4	52	4.98	259
	Segment I-J(1)	4	0	3	8	5	0	10	1	3	34	4.47	152
	Segment I-J(2)	2	1	2	7	3	0	1	1	4	21	4.01	84
	Segment J-K	10	0	0	5	5	0	0	0	0	20	0.21	4

Figure 1. Slope gradients for maximum and average slope analysis.

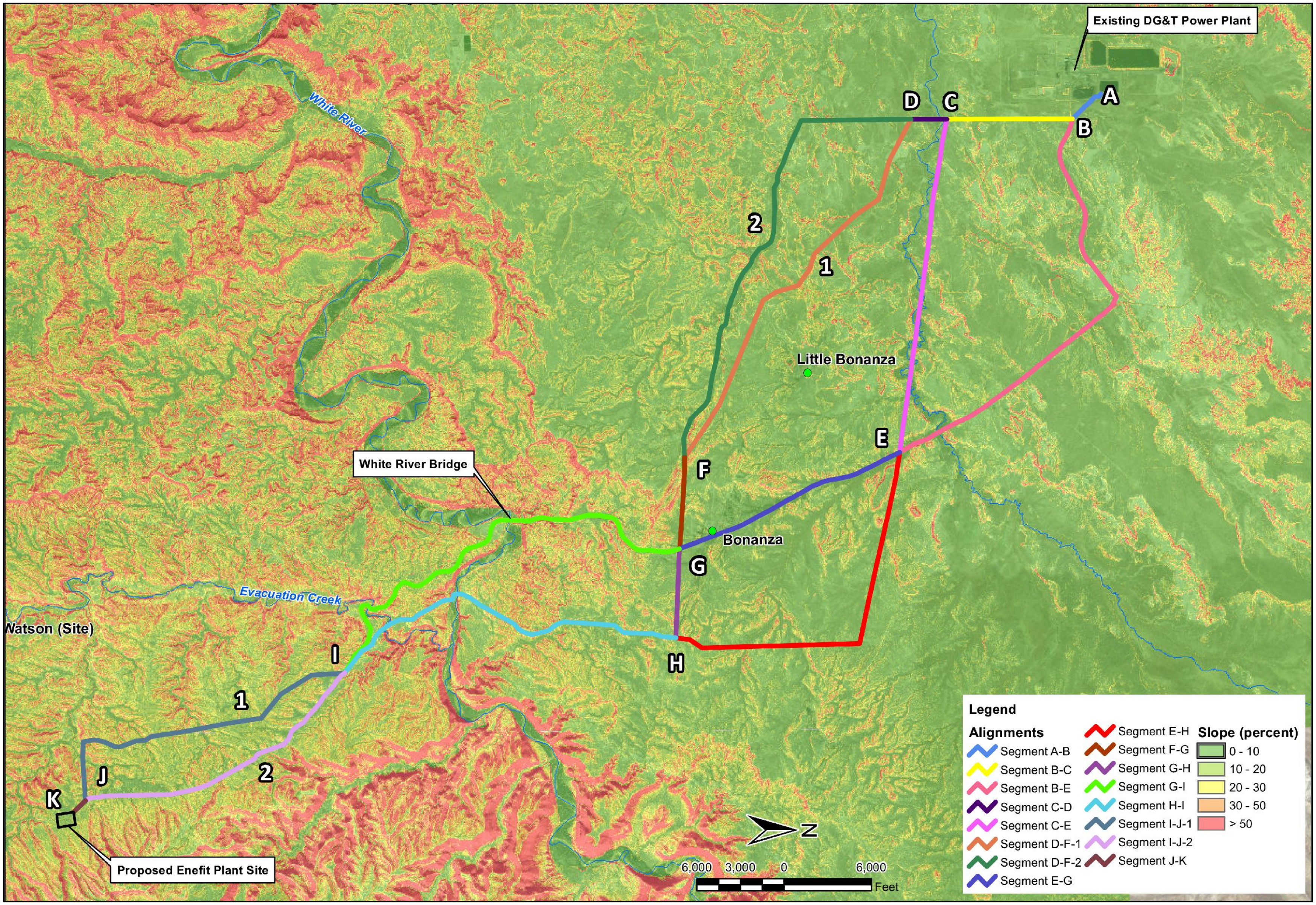


Figure 2. Existing topography and spot elevations.

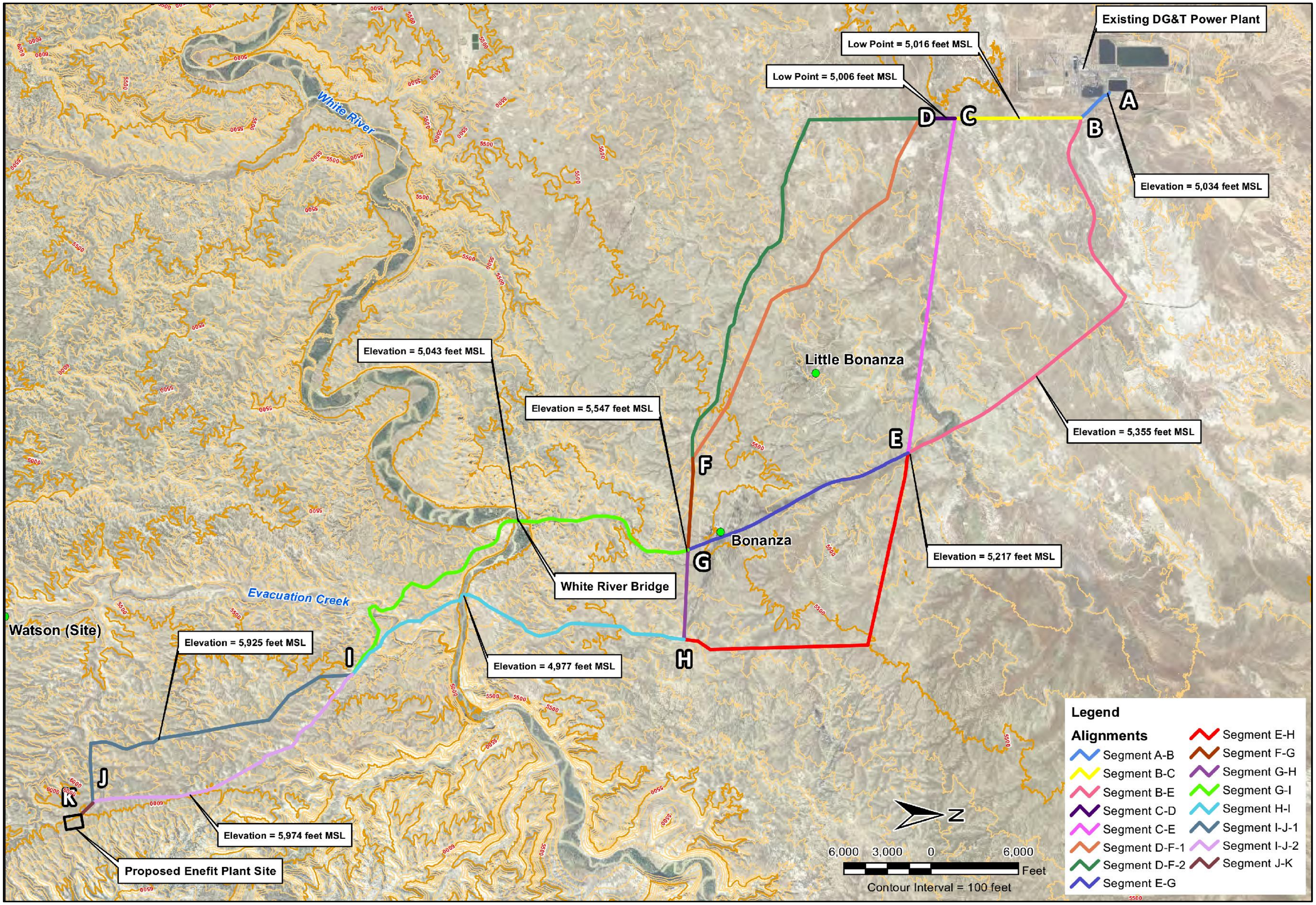
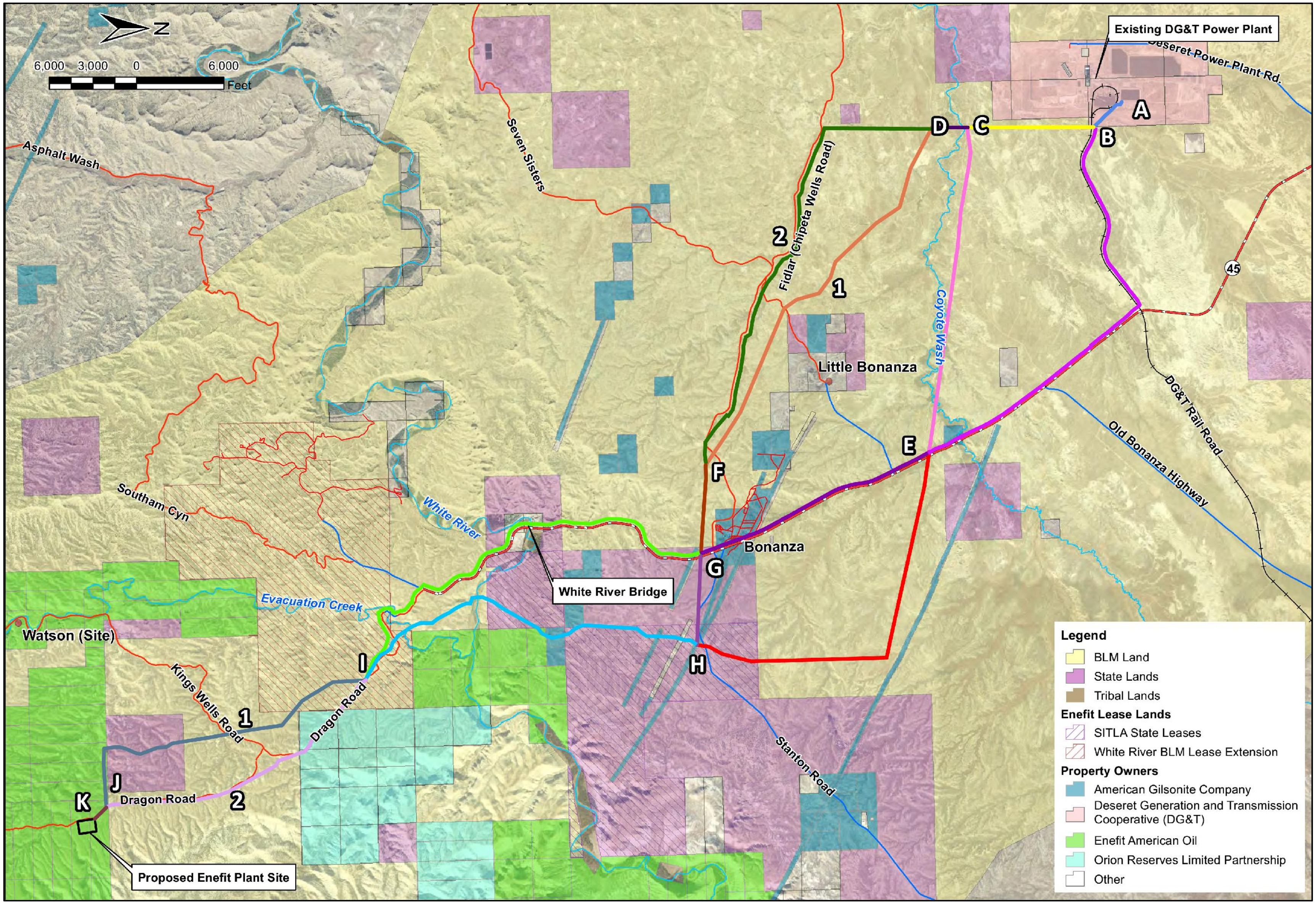


Figure 3. Land ownership.



Environmental Criteria Evaluation Results

There were no primary environmental criteria located within any segments, with the exception of designated critical habitat in the White River for Colorado pikeminnow. However, this designation applies to the entire section of the White River in which potential crossing locations could be evaluated; therefore, there is no difference between alternatives with regard to this primary criterion. Several other special status fish species, including the bonytail chub, humpback chub, and razorback sucker, also have critical habitat designated along the White River, however, at river reaches beyond 25 miles downstream from any potential reasonable crossing location.

Regarding secondary environmental criteria, source water protection zones, river/wetland crossings, special status species occurrences, and sensitive habitat areas were observed at several locations. Table 2 below provides the environmental criteria scoring matrix for each of the segments.

Table 2. Environmental evaluation criteria scoring matrix.

Environmental Alignment Evaluation Criteria																			
Segment Label		Primary Environmental Constraints						Secondary Environmental Constraints									Sum of Points	Length (miles)	Length Weighted Total (Points x Length)
		BLM ACEC's	Wild & Scenic Rivers	Large Water Bodies	Wetland Complexes	Critical Habitat	Wildlife Refuges	Source Water Protection Areas	River Crossings	Wetland Crossings	Threatened and Endangered Species Occurrences (UNHP)	Sensitive Species Occurrences (UNHP)	Greater Sage-grouse Habitat and Leks	Wild Horse and Burro Lands	Sensitive Habitats (crucial wildlife habitat [UDWR])	Sensitive Habitats (riparian)			
North of Bonanza	Segment A-B	0	0	0	0	0	0	0	7	0	0	5	5	5	2	0	24	0.47	11
	Segment B-C	0	0	0	0	0	0	0	4	0	0	4	5	5	2	0	20	1.64	33
	Segment B-E	0	0	0	0	0	0	0	4	0	1	5	6	5	2	0	23	6.09	140
	Segment C-D	0	0	0	0	0	0	0	6	0	0	1	5	5	2	5	24	0.46	11
	Segment C-E	0	0	0	0	0	0	0	6	0	1	2	5	5	2	5	26	4.38	114
	Segment D-F(1)	0	0	0	0	0	0	0	3	10	1	1	5	5	2	0	17	5.49	93
	Segment D-F(2)	0	0	0	0	0	0	0	8	0	1	1	5	5	2	0	22	6.25	138
	Segment E-G	0	0	0	0	0	0	0	6	0	1	3	5	5	3	0	23	3.14	72
	Segment E-H	0	0	0	0	0	0	0	5	0	2	2	5	0	3	0	17	4.97	85
	Segment F-G	0	0	0	0	0	0	0	5	0	0	1	5	5	3	0	19	1.19	23
South of Bonanza	Segment G-H	0	0	0	0	0	0	0	2	0	0	2	5	0	3	5	17	1.16	20
	Segment G-I	0	0	0	0	10	0	0	3	5	10	4	2	3	5	5	55	6.01	330
	Segment H-I	0	0	0	0	10	0	0	4	5	10	5	4	0	5	0	43	4.98	214
	Segment I-J(1)	0	0	0	0	0	0	0	3	0	0	2	5	0	5	0	15	4.47	67
	Segment I-J(2)	0	0	0	0	0	0	0	4	0	0	4	5	0	5	0	18	4.01	72
	Segment J-K	0	0	0	0	0	0	0	0	0	0	2	5	0	5	0	12	0.21	3

Routing Evaluation Summary and Conclusions

The combined route scoring is provided in Table 1 of the PPOD, where Route 4A (consisting of segments A-B-C-D-F1-G-H-I-J2-K) was selected as the preferred route based on the comparative scoring of physical and environmental criteria. The selected route offers benefits related to existing construction access points, flatter topography (i.e. less severe maximum and average slopes) and minimization of gilsonite vein crossings, all of which reduce the site-specific impacts of this route as compared to the alternate routes.

Following State Route 45 to Dragon Road is possible. However, the alignment from point G to the White River offers significant challenges, including laying fairly deep cut slopes along the road back to provide for the utility corridor width necessary for the pipelines and transmission lines. While gilsonite veins can be crossed, the technical and environmental risk associated with these exposed crossings is significant. Because of the open, exposed nature of many of the historic mined-out areas (many reaching depths of up to 1,000 feet below ground surface), issues such as worker safety during construction and maintenance, exposed casing, and geotechnical stability of the vein walls and surrounding land should be strongly considered for any route requiring one or more gilsonite mine crossings.

Some additional key physical alignment findings include the following:

- Segment B-E – This segment was viewed as less preferable compared to Segment B-C-E based on potential available width limitations adjacent to State Road 45. Also, Segment C-E offered the ability to parallel the existing Chevron pipeline corridor.
- Segment D-F(2) – This option was removed from further consideration due to cost, as this segment is approximately 0.75 mile longer than D-F(1) without offering any apparent advantages.
- Segments E-G and G-I – Segment G-I controlled the removal of both segments from being part of the preferred route. While E-G did not appear to have any fatal flaws, G-I is significantly constrained due to available width.
- Segments I-J(1) – I-J(1) is longer than I-J(2) and had a significantly less desirable physical constraint score.

Based on the consistency and regional nature of the environmental constraints in this area, physical constraints are expected to be the primary driver for final alignment selection. This, of course, should be balanced with minimizing environmental impacts; however, the physical constraints, in many cases, are expected to result directly in additional environmental impacts (e.g. more surface disturbance, unstable slopes, greater erosion, lower potential for long-term reclamation, etc.).

Annex 1. Segment Preliminary Plan and Profile Sheets

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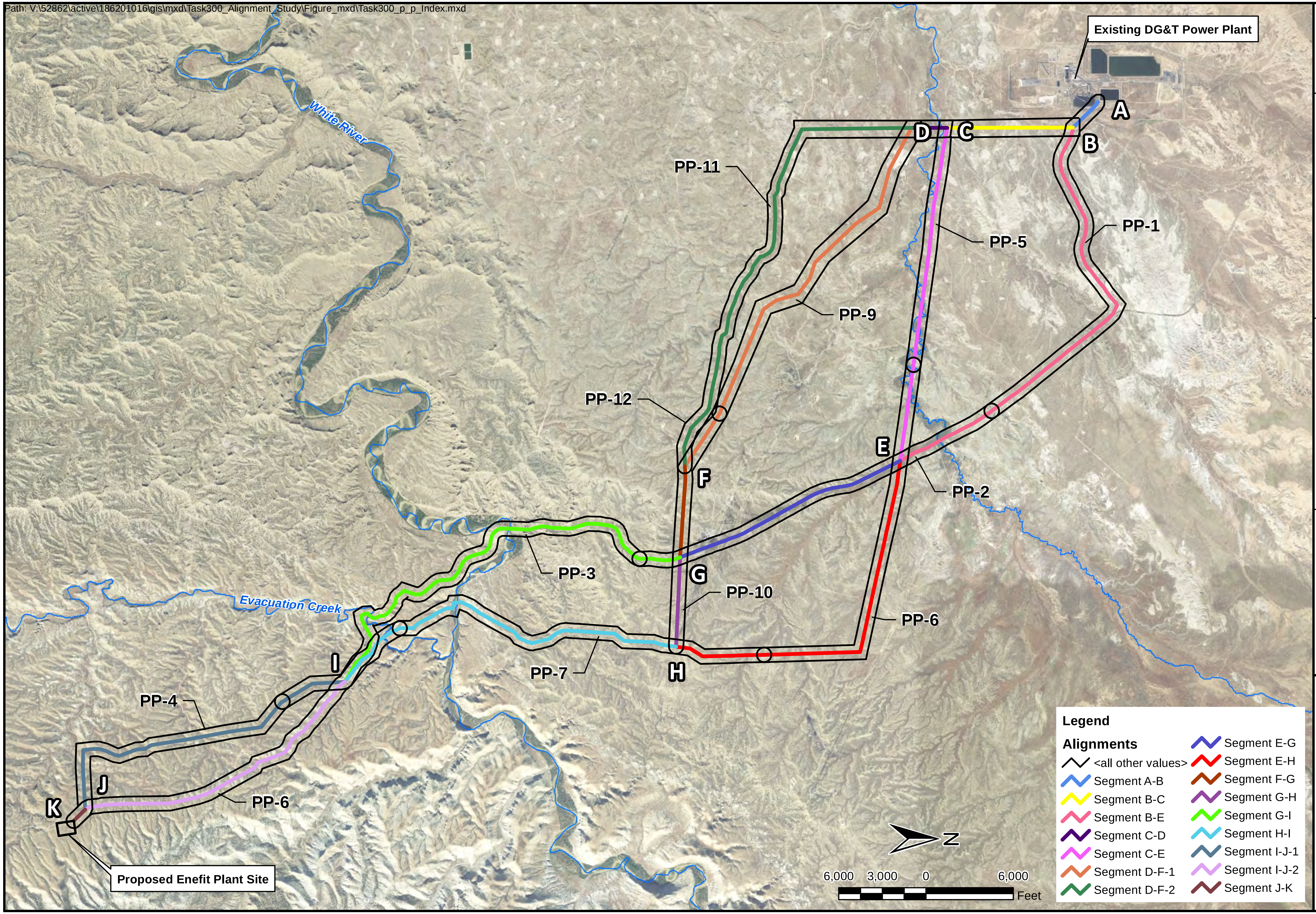

FIGURE: **PP-I**

DATE: 7/31/2012

Proposed Pipeline Alignments Plan and Profile Index Sheet

APPROVED BY:

CHECKED BY: PMD

DRAWN BY: DLB

FOR: **Enefit American Oil**

PIPELINE ALIGNMENT STUDY

JOB NUMBER: 186201016

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REFERENCE: Imagery: Utah AGRC, National Agricultural Imagery Program (NAIP) 2011, 1-m
Contours: USGS, 10-m DEM, contour interval: 100 ft

Applicant and Consultant Routing Alignment Comparison

ENEFIT ROUTING ALIGNMENT COMPARISON Based on Plans of Development (POD) Dated November 26, 2012 and April 23, 2014								
Analysis Categories	**Route 1A**	**Route 1B**	**Route 2A**	**Route 2B**	**Route 3A**	**Route 3B**	**Route 4A (Preferred Route based on analysis in POD)**	**Route 4B**
Route Descriptions	A-B-E-G-I-J1-K	A-B-E-G-I-J2-K	A-B-C-E-H-I-J1-K	A-B-C-E-H-I-J2-K	A-B-C-D-F1-G-H-I-J1-K	A-B-C-D-F2-G-H-I-J1-K	A-B-C-D-F1-G-H-I-J2-K	A-B-C-D-F2-G-H-I-J2-K
Route Length (miles)[1]	20.2	19.7	20.9	20.6	19.9	20.6	19.4	20.2
Estimated Cost	$77.3 million	$75.0 million	$75.5 million	$73.3 million	$73.4 million	$74.6 million	$71.2 million	$72.4 million
Enefit's Recommendation to Retain or Eliminate (based on POD analysis)	Eliminate	Eliminate	Eliminate	Eliminate	Eliminate	Eliminate	**Retain**	Eliminate
Engineering Issues[2]								
Physical Environment Criteria								
All	• More than two gilsonite crossings north of Bonanza, one south of Bonanza • Most severe max/average slopes • Best existing construction access north of Bonanza, worst south of Bonanza • Worst available width • Moderate drainage crossings north and south of Bonanza • No significant difference in BLM-administered land or existing road/utility crossings • Follows DG&T rail road and State Road 45, departs Dragon Road after appx 2 miles at point I	• More than two gilsonite crossings north of Bonanza, one south of Bonanza • Most severe max/average slopes • Best existing construction access north and south of Bonanza • Worst available width • Moderate drainage crossings north and south of Bonanza • No significant difference in BLM-administered land or existing road/utility crossings • Follows DG&T rail road, State Road 45 and Dragon Road to the South Project private property	• One gilsonite crossing north of Bonanza, more than two south of Bonanza • Moderately severe max/average slopes • Moderate existing construction access north of Bonanza, worst south of Bonanza • Moderate available width • Moderate drainage crossings north and south of Bonanza • No significant difference in BLM-administered land or existing road/utility crossings • Does not follow State 45; follows appx 2 miles of Dragon Road	• One gilsonite crossing north of Bonanza, more than two south of Bonanza • Moderately severe max/average slopes • Moderate existing construction access north of Bonanza, best south of Bonanza • Moderate available width • Moderate drainage crossings north and south of Bonanza • No significant difference in BLM-administered land or existing road/utility crossings • Does not follow State Road 45; follows Dragon Road appx 3 miles to South Project private property	• No gilsonite crossings north of Bonanza, more than four south of Bonanza • Less severe max/average slopes • Worst existing construction access north and south of Bonanza • Moderate available width • Moderate drainage crossings north of Bonanza, fewest south of Bonanza • No significant difference in BLM-administered land or existing road/utility crossings • Does not follow any existing named roads	• No gilsonite crossings north of Bonanza, more than four south of Bonanza • Less severe max/average slopes • Worst existing construction access north and south of Bonanza • Moderate available width • Most drainage crossings north of Bonanza, fewest south of Bonanza • No significant difference in BLM-administered land or existing road/utility crossings • Follows Chipeta Wells Road for appx 3.5 miles	• No gilsonite crossings north of Bonanza, more than four south of Bonanza • Least severe max/average slopes • Worst existing construction access north of Bonanza, best south of Bonanza • Best available width • Fewest drainage crossings north and south of Bonanza • No significant difference in BLM-administered land or existing road/utility crossings • Follows Dragon Road appx 3 miles to South Project private property	• No gilsonite crossings north of Bonanza, more than four of Bonanza • Less severe max/average slopes • Worst existing construction access north of Bonanza, best south of Bonanza • Best available width • Most drainage crossings north of Bonanza, fewest south of Bonanza • No significant difference in BLM-administered land or existing road/utility crossings • Follows Chipeta Wells Road for appx 3.5 miles and Dragon Road for appx 3 miles
Environmental Resource Criteria								
Primary	• All routes cross the White River (pikeminnow critical habitat) • No other primary resource criteria	• All routes cross the White River (pikeminnow critical habitat) • No other primary resource criteria	• All routes cross the White River (pikeminnow critical habitat) • No other primary resource criteria	• All routes cross the White River (pikeminnow critical habitat) • No other primary resource criteria	• All routes cross the White River (pikeminnow critical habitat) • No other primary resource criteria	• All routes cross the White River (pikeminnow critical habitat) • No other primary resource criteria	• All routes cross the White River (pikeminnow critical habitat) • No other primary resource criteria	• All routes cross the White River (pikeminnow critical habitat) • No other primary resource criteria
Secondary	• No wetland crossings north of Bonanza, one south of Bonanza • Black-footed ferret in portion of length • UNHP occurrences	• No wetland crossings north of Bonanza, one south of Bonanza • Black-footed ferret in portion of length • UNHP occurrences	• No wetland crossings north of Bonanza, one south of Bonanza • Black-footed ferret in portion of length • UNHP occurrences	• No wetland crossings north of Bonanza, one south of Bonanza • Black-footed ferret in portion of length • UNHP occurrences	• Multiple wetland crossings north of Bonanza, one south of Bonanza • Black-footed ferret in portion of length	• No wetland crossings north of Bonanza, one south of Bonanza • Black-footed ferret in portion of length • UNHP occurrences	• Multiple wetland crossings north of Bonanza, one south of Bonanza • Black-footed ferret in portion of length	• No wetland crossings north of Bonanza, one south of Bonanza • Black-footed ferret in portion of length • UNHP occurrences

ENEFIT ROUTING ALIGNMENT COMPARISON Based on Plans of Development (POD) Dated November 26, 2012 and April 23, 2014								
Analysis Categories	**Route 1A**	**Route 1B**	**Route 2A**	**Route 2B**	**Route 3A**	**Route 3B**	**Route 4A (Preferred Route based on analysis in POD)**	**Route 4B**
	within portion of length • Sage grouse habitat throughout, lek approximately 5 miles to NE • Multiple areas of big game crucial habitat south of Bonanza • Passes adjacent to rural community of Bonanza	within portion of length • Sage grouse habitat throughout, lek approximately 5 miles to NE • Multiple areas of big game crucial habitat south of Bonanza • Passes adjacent to rural community of Bonanza	within portion of length • Sage grouse habitat throughout, no leks within 5 mile buffer • Multiple areas of big game crucial habitat south of Bonanza • Passes greater than 1.5 mile from rural community of Bonanza	within portion of length • Sage grouse habitat throughout, no leks within 5 mile buffer • Multiple areas of big game crucial habitat south of Bonanza • Passes greater than 1.5 mile from rural community of Bonanza	• UNHP occurrences within portion of length • Sage grouse habitat throughout, no leks within 5 mile buffer • Multiple areas of big game crucial habitat south of Bonanza • Passes within appx 0.5 mile of the rural community of Bonanza	within portion of length • Sage grouse habitat throughout, no leks within 5 mile buffer • Multiple areas of big game crucial habitat south of Bonanza • Passes within appx 0.5 mile of the rural community of Bonanza	• UNHP occurrences within portion of length • Sage grouse habitat throughout, no leks within 5 mile buffer • Multiple areas of big game crucial habitat south of Bonanza • Passes within appx 0.5 mile of the rural community of Bonanza	within portion of length • Sage grouse habitat throughout, no leks within 5 mile buffer • Multiple areas of big game crucial habitat south of Bonanza • Passes within appx 0.5 mile of the rural community of Bonanza
Additional Resource Data Received from Bureau of Land Management Vernal Field Office Resource Management Plan								
Water Resources	• Crosses one Source Water Protection Area • No shallow, unconfined aquifers • Third highest use of dust control and hydrostatic testing water due to third longest overall length	• Crosses one Source Water Protection Area • No shallow, unconfined aquifers • Second lowest use of dust control and hydrostatic testing water due to second shortest overall length	• No crossings of Source Water Protection or Drinking Water Protection Areas • No shallow, unconfined aquifers • Highest use of dust control and hydrostatic testing water due to longest overall length	• No crossings of Source Water Protection or Drinking Water Protection Areas • No shallow, unconfined aquifers • Second highest use of dust control and hydrostatic testing water due to second longest overall length	• No crossings of Source Water Protection or Drinking Water Protection Areas • No shallow, unconfined aquifers • Third lowest use of dust control and hydrostatic testing water due to third shortest overall length	• No crossing of Source Water Protection Areas or Drinking Water Protection Areas • No shallow, unconfined aquifers • Second highest use of dust control and hydrostatic testing water due to second longest overall length	• No crossings of Source Water Protection or Drinking Water Protection Areas • No shallow, unconfined aquifers • Lowest use of dust control and hydrostatic testing water due to shortest overall length	• No crossings of Source Water Protection or Drinking Water Protection Areas • No shallow, unconfined aquifers • Third highest use of dust control and hydrostatic testing water due to third longest overall length
Minerals/Geology/Soil Resources	• All routes cross oil and gas lease areas and mineral lease areas	• All routes cross oil and gas lease areas and mineral lease areas	• All routes cross oil and gas lease areas and mineral lease areas	• All routes cross oil and gas lease areas and mineral lease areas	• All routes cross oil and gas lease areas and mineral lease areas	• All routes cross oil and gas lease areas and mineral lease areas	• All routes cross oil and gas lease areas and mineral lease areas	• All routes cross oil and gas lease areas and mineral lease areas
Biological Resources • Vegetation • Special Status Species • Wildlife Note: for all mentions of Beardtongue Penstemon Critical Habitat, both Graham's and White River beardtongues have been removed from consideration for listing under the ESA; therefore, no critical habitat is present. No alternatives cross conservation areas covered under the	• All routes cross Greater sage grouse habitat (winter, occupied, and brooding) • Crosses the Ferret Management Zone in Vernal Field Office Resource Management Plan (RMP) • Crosses White River Beardtongue Penstemon Priority Critical Habitat	• Crosses the Ferret Management Zone in Vernal Field Office RMP • Crosses White River Beardtongue Penstemon Priority Critical Habitat • Crosses Graham's Beardtongue Penstemon Priority Critical Habitat	• Crosses the Ferret Management Zone in Vernal Field Office RMP • Near White River Beardtongue Penstemon Priority Critical Habitat	• Crosses the Ferret Management Zone in Vernal Field Office RMP • Near White River Beardtongue Penstemon Priority Critical Habitat • Crosses Graham's Beardtongue Penstemon Priority Critical Habitat	• Near White River Beardtongue Penstemon Priority Critical Habitat	• Near White River Beardtongue Penstemon Priority Critical Habitat	• Near White River Beardtongue Penstemon Priority Critical Habitat • Crosses Graham's Beardtongue Penstemon Priority Critical Habitat	• Near White River Beardtongue Penstemon Priority Critical Habitat • Crosses Graham's Beardtongue Penstemon Priority Critical Habitat

ENEFIT ROUTING ALIGNMENT COMPARISON Based on Plans of Development (POD) Dated November 26, 2012 and April 23, 2014								
Analysis Categories	**Route 1A**	**Route 1B**	**Route 2A**	**Route 2B**	**Route 3A**	**Route 3B**	**Route 4A (Preferred Route based on analysis in POD)**	**Route 4B**
Penstemon Conservation Agreement.								
Cultural Resources	Not considered – assumed to be completed as Class I evaluation by BLM following selection of alternatives to be carried forward for full analysis.	Not considered – assumed to be completed as Class I evaluation by BLM following selection of alternatives to be carried forward for full analysis.	Not considered – assumed to be completed as Class I evaluation by BLM following selection of alternatives to be carried forward for full analysis.	Not considered – assumed to be completed as Class I evaluation by BLM following selection of alternatives to be carried forward for full analysis.	Not considered – assumed to be completed as Class I evaluation by BLM following selection of alternatives to be carried forward for full analysis.	Not considered – assumed to be completed as Class I evaluation by BLM following selection of alternatives to be carried forward for full analysis.	Four NRHP-eligible sites identified during Class I file search and Class III field survey	Not considered – assumed to be completed as Class I evaluation by BLM following selection of alternatives to be carried forward for full analysis.
Land Use Resources	• Duck Rock Information Kiosk in the vicinity. • All routes cross or are in the vicinity of gilsonite mine leases • All routes cross non-wilderness study area lands with wilderness characteristics inventory areas. No lands with wilderness characteristics appear to be crossed. • North Chapita Wells Oil and Gas Project in the project study area and crossed by all alternative routes. • All routes cross grazing allotments in the Vernal Field Office • All routes cross wild horse herd management areas.	• Duck Rock Information Kiosk in the vicinity. • All routes cross or are in the vicinity of gilsonite mine leases • All routes cross non-wilderness study area lands with wilderness characteristics inventory areas. No lands with wilderness characteristics appear to be crossed. • North Chapita Wells Oil and Gas Project in the project study area and crossed by all alternative routes. • All routes cross grazing allotments in the Vernal Field Office • All routes cross wild horse herd management areas.Duck Rock Information Kiosk in the vicinity.	• Duck Rock Information Kiosk in the vicinity. • All routes cross or are in the vicinity of gilsonite mine leases • All routes cross non-wilderness study area lands with wilderness characteristics inventory areas. No lands with wilderness characteristics appear to be crossed. • North Chapita Wells Oil and Gas Project in the project study area and crossed by all alternative routes. • All routes cross grazing allotments in the Vernal Field Office • All routes cross wild horse herd management areas.	• Duck Rock Information Kiosk in the vicinity. • All routes cross or are in the vicinity of gilsonite mine leases • All routes cross non-wilderness study area lands with wilderness characteristics inventory areas. No lands with wilderness characteristics appear to be crossed. • North Chapita Wells Oil and Gas Project in the project study area and crossed by all alternative routes. • All routes cross grazing allotments in the Vernal Field Office • All routes cross wild horse herd management areas.	• Duck Rock Information Kiosk in the vicinity. • All routes cross or are in the vicinity of gilsonite mine leases • All routes cross non-wilderness study area lands with wilderness characteristics inventory areas. No lands with wilderness characteristics appear to be crossed. • North Chapita Wells Oil and Gas Project in the project study area and crossed by all alternative routes. • All routes cross grazing allotments in the Vernal Field Office • All routes cross wild horse herd management areas.	• Duck Rock Information Kiosk in the vicinity. • All routes cross or are in the vicinity of gilsonite mine leases • All routes cross non-wilderness study area lands with wilderness characteristics inventory areas. No lands with wilderness characteristics appear to be crossed. • North Chapita Wells Oil and Gas Project in the project study area and crossed by all alternative routes. • All routes cross grazing allotments in the Vernal Field Office • All routes cross wild horse herd management areas.	• Duck Rock Information Kiosk in the vicinity. • All routes cross or are in the vicinity of gilsonite mine leases • All routes cross non-wilderness study area lands with wilderness characteristics inventory areas. No lands with wilderness characteristics appear to be crossed. • North Chapita Wells Oil and Gas Project in the project study area and crossed by all alternative routes. • All routes cross grazing allotments in the Vernal Field Office • All routes cross wild horse herd management areas.	• Duck Rock Information Kiosk in the vicinity. • All routes cross or are in the vicinity of gilsonite mine leases • All routes cross non-wilderness study area lands with wilderness characteristics inventory areas. No lands with wilderness characteristics appear to be crossed. • North Chapita Wells Oil and Gas Project in the project study area and crossed by all alternative routes. • All routes cross grazing allotments in the Vernal Field Office • All routes cross wild horse herd management areas.
Visual Resources	Not considered	Not considered	Not considered	Not considered	Not considered	Not considered	Not considered	Not considered

NOTES:
[1]Mileage rounded to the nearest tenth mile
[2] See evaluation criteria for engineering analysis below from Stantec 2012 referenced in the Plan of Development.

GENERAL NOTES:
No Enefit baseline report data is reported in this table because the baseline report data only reflects the surveys for the current Enefit proposed action. Also the way these route segments are discussed in this table is based on the POD. The proposed utility line data do not follow the alternative route data received for the POD preferred route 4A. There is no specific data from the Stantec Evaluation Report in the POD, only the resulting scores from the evaluation.

STANTEC Evaluation Criteria

Existing data used to inform the comparative analysis included physical and environmental information from the Bureau of Land Management (BLM), the Utah Natural Heritage Program, the Utah Automated Geographic Reference Center, the Utah Geological Survey, and Uintah County.

Physical constraints (e.g., topography, construction workspace, etc.) provided a majority of the preliminary route control.

- Following existing features (e.g., roads, pipelines, and transmission lines) where possible.
- Crossing of White River and Evacuation Creek were main construction points considered in the routing. Due to steep canyon walls associated with each, the crossing locations from an engineering standpoint were limited. Two viable options for each feature within the Project study area were available. These crossings did not affect the development of alternatives or preliminary route selection as a whole but did inform the approach angles and departures of the utilities in the vicinity of these crossings.

Physical Environment Criteria

- BLM-administered land, where routes crossing less BLM land were favored
- Existing road crossings, where fewer crossings were favored
- Available width, where adequate space for construction was favored
- Maximum slope, where routes with less severe localized hill slopes were favored
- Average slope, where routes with less severe average slopes over the total length of the segment were favored
- Gilsonite mine crossings, where routes with fewer gilsonite mine trench crossings were favored (gilsonite mine trench crossings may represent areas of specialized construction techniques and/or higher hazard pipe classification due to exposed pipe segments)
- Construction access, where areas with better accessibility via existing roads were favored
- Utility crossings, where segments with fewer crossings of existing pipelines and transmission lines were favored
- Roadway corridors, where segments following existing roadways were favored due to access and minimization of visual disturbance (this category was considered jointly with the construction access category); and
- Drainage crossings, where routes with fewer mapped drainage crossings were favored.

Environmental Resource Evaluation Criteria

Two criteria categories used to evaluate: Primary and Secondary. Primary evaluation criteria defined as those criteria that could represent significant implications on pipeline construction and/or where the area should be avoided altogether to avoid environmental impacts. Secondary criteria were those that should be avoided to the extent practical but do not necessarily represent fatal flaws in the routings.

- **Primary environmental evaluation criteria**
  - High Consequence Areas, which are defined by PHMSA and are areas that must be accounted for in emergency response planning
  - Areas of Critical Environmental Concern, which are BLM-designated lands
  - Wild and Scenic Rivers
  - Large wetland complexes
  - Large water bodies
  - Permit-sensitive lands, such as Department of Defense lands or lands with tribal ownership
  - Properties listed in the National Registry of Historic Properties or identified by the State Historic Preservation Office
  - Habitat for federally-listed threatened and endangered species; and Wildlife refuges

- **Secondary environmental evaluation criteria**
  - Source water or wellhead protection areas
  - Water/river crossings
  - Wetland crossings
  - Sensitive habitats and special-status species mapped occurrences
  - Rural communities
  - Shallow, unconfined aquifers
  - Residences and associated features

Route segments were scored using a weighted quantitative methodology, with each segment score adjusted for total length. This length-weighted score approach allowed a mechanism for favoring shorter routes, which would result in more limited disturbance in most cases. A cost-basis was developed for each of the routes as well, in order to provide a comparative cost-benefit analysis for each route in conjunction with the physical and environmental criteria.

White River Crossing Technical Pre-Feasibility Study

Coordination

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Howard, Stephanie <showard@blm.gov>

Technical Feasibility question

Ryan Clerico <Ryan.Clerico@enefitamericanoil.com> Fri, Jun 5, 2015 at 1:15 PM
To: "Howard, Stephanie" <showard@blm.gov>
Cc: Michael Doyle <mdoyle@epgaz.com>

Hi Stephanie,

Please see responses in red text below, and feel free to call if you'd like to discuss any details.

Kind regards,

Ryan

Ryan Clerico
Head of Development and Environment
Enefit American Oil
Office: +1 801 363 0206
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Skype: Ryan.Clerico
Ryan.Clerico@enefit.com

From: "Howard, Stephanie" <showard@blm.gov>
To: Ryan Clerico <ryan.clerico@enefitamericanoil.com>
Cc: Michael Doyle <mdoyle@epgaz.com>
Date: 06/04/2015 04:58 PM
Subject: Technical Feasibility question

Hi Ryan,

I have a multi-part question for you. We've had some questions on alternatives come up, and I need to know the following administrative/technical feasibility details as I try to figure out how to respond:

- Is it administratively feasible to move Enefit's water right back from the Green River to the White River, specifically to the area where all your utilities will be crossing the river, or to the private land north of the White River Oil Shale Mine? This paperwork is outside BLM's jurisdiction so I have no idea if that is even administratively possible or not. The water right still retains the original approved points of diversion (PODs) on the White River, and most of those are nearby (i.e. within 0.5 mile) the proposed utility crossing location. The PODs on the Green River were added as approved PODs, but the original White River locations were not abandoned. Therefore, administratively, the same water could be withdrawn from the White River from these PODs as it could from the Green River as proposed. However, withdrawal of the same amount of water from the same water right from those White River PODs has a very different technical impact than withdrawal from the Green River PODs, as further discussed below.

With regard to the private land north of the White River Oil Shale Mine, new PODs under this water right would have to be applied for with the Utah Division of Water Rights (UDWRi) in order to relocate to this private land. However, Enefit has no ownership interest in those lands (currently owned by the Pickup family, according to Uintah County Property Appraiser records). It is highly unlikely that the UDWRi would approve any such application for change in POD onto lands in which the applicant has no ownership interest. Therefore, in this case, I would say that it is not administratively possible.

- Is there enough room at the utility crossing site for Enefit to install any necessary water collection facilities (I recognize there is an arc. site and another pipeline there - could those facilities fit in around them or would you have to partially or totally impact them, or could you fit in at all)? The preliminary engineering design for the collector well system on the Green River indicates that up to two acres is required for each collector well. Collection of the 15 cfs water right from the Green River is expected to require at least three, and possibly four, collector wells at the approved Green River PODs, totaling 6-8 acres. However, it is important to note that this design data was based on the flows and other site-specific design criteria for the Green River PODs and will vary by location. There is 6-8 acres available in the White River floodplain adjacent to the proposed crossing location and at the location of the approved White River PODs; however, this would likely require a full relocation of the existing pipelines, as well as the relocation of the proposed Enefit pipelines (inland, with a more significant cut into the cliff) and full disturbance to the White River Stage Station cultural site, and it would result in permanent aboveground structures and fill in the floodplain of the White River. The collector well systems consist of mechanical pumps, filtration systems, etc., and these would need to be elevated above the White River 100-year flood levels via significant fill placement to ensure safe and reliable operation and to prevent discharge of hydraulic fluids, treatment chemicals, etc. from the facilities during flood conditions (this design has already been accounted for at the Green River POD location). Further, the collector system design that requires 3-4 wells is specific for the alluvial groundwater conditions at the Green River POD location. The Green River maintains significantly higher and more reliable flow rates than the White River, and it is likely that a collector well system on the White River would require even more individual wells due to lower flows and different alluvial hydrology, which would in turn require more acerage than the currently anticipated 6-8 acres. The wells need to be adequately spaced along the river, such that withdrawal at one does not negatively effect the yield at another. With the lower flows on the White River when compared to the Green, this would likely require more spacing and result in insufficient lands available. The Green River was specifically chosen over the White River as the preferred POD for reliability purposes and to reduce potential hydrologic and endangered fish impacts from collector well drawdown, which would be more significant on the White than on the Green.
- Is there enough room at the private land north of the White River Oil Shale mine to

install any necessary water collection facilities (I'm making the assumption you could get approval from the surface owner for that - let me know if you don't think approval is likely)? This would depend heavily on the alluvial hydrogeology at the indicated location, as to the number of collector wells required. There appears to be available land; however, whether that amount of land is sufficient is unknown given the unknowns about the hydrology in this location. The same issues associated with permanent fill in a floodplain would occur, and I cannot speak to the presence of other sensitive resources - as indicated above, Enefit does not retain an ownership interest in this land, and thus we have not surveyed it. It would likely be deemed an unacceptable corporate risk to site such critical infrastructure as water supply facilities on land which we did not own. I believe this option is both administratively and technically infeasible.

- What might a water withdrawal facility on the white river look like, besides the water pipeline itself? How many acres would it be, would it just be water wells, or would there be a facility pad with fences, generators, other buildings, etc? As described above, a collector well facility on the White River would be about two acres per well, with the number of wells likely being greater than 3-4, based on the engineering work conducted for the Green River system and the reduced flow in the White. There would be a fenced facility pad for each well that would contain a building with pumps and filtration systems. There is power available at the Green River location, and thus generators are not required. At the White River POD location, power is not currently available, so there would need to be either generators (and fuel source for each) or a new transformer station to step down power off of the new 138-kV transmission lines. If increased well spacing is required to ensure adequate yield, then additional infrastructure requirements may be required that are not considered here.

- Are there any other technical/economic/administrative details about installing a water withdrawal site on the white river that you know of and I need to think about? The year-round flow in the Green River is sufficient to allow for direct flow to the South Project, eliminating the need for construction of a large storage reservoir on the South Project site; surge demands can be addressed by onsite storage in tanks. Due to seasonal flow variation in the White River, however, a large storage reservoir would likely be required in conjunction with a White River withdrawal to ensure reliable, year-round water supply for the South Project. This large storage reservoir would experience evaporative and infiltration losses of transported water, thus making it a less efficient (in terms of water resources) and more costly use of water available under the water right. Also, in contrast to White River, the Green River flows are less susceptible to depletion from Colorado users. From an economic standpoint, diversion from the White River would likely not be comparable to the proposed action - while this option would require 13 less miles of 30-inch-diameter steel pipeline, it would likely require more collector wells and their supporting infrastructure systems, as well as a new dedicated power source, and would certainly require a large onsite storage reservoir, which is not currently contemplated by Enefit. Administratively, it is expected that a collector well system on the White River would require a different (and more extensive) set of authorizations than one on the Green River, both directly and indirectly. Directly speaking, a collector well system on the White River would result in the relocation of a operating regulated interstate natural gas liquids pipeline, full impact of a cultural resource site listed on the National Registry of Historic Places, potentially more POD approvals from UDWRi if the existing ones were not adequately spaced, and would most likely result in formal consultation under Section 7 of the

Endangered Species Act due the drawdown/impact potential of critical habitat for multiple fish species. Indirectly speaking, the large storage reservoir that would be required would have its own independent set of authorizations, such as a dam safety permit from UDWRi. With regard to placing a water withdrawal site adjacent to the proposed crossing location on the White River, I think it is important to note that this option would result in permanent aboveground facilities, on BLM land, in a major river floodplain, at the only location in the project area that was considered an important viewshed, and that would fully impact a cultural resource site. While I recognize that it is the applicant's responsibility to provide technical information and the BLM's responsibility to conduct impact analysis, these were certainly considerations that Enefit made as we did our tradeoff analysis of potential water sources.

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White River Crossing Technical Pre-Feasibility Study

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White River Crossing

Technical Pre-Feasibility Study

September 2014

Prepared by:

Bowen Collins & Associates, Inc.
CONSULTING ENGINEERS

Prepared for:

Enefit

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WHITE RIVER CROSSING

Technical Pre-Feasibility Study

September 2014

Consultant Job No. 393-14-01

Prepared for:

Enefit

REGISTERED PROFESSIONAL ENGINEER
No. 369568
JASON LUETTINGER
09-18-14
STATE OF UTAH

Prepared by:

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TABLE OF CONTENTS

Page No.

TABLE OF CONTENTS (CONTINUED)

Page No.

TABLE OF CONTENTS (CONTINUED)

Page No.

TABLE OF CONTENTS (CONTINUED)

Page No.

TABLE OF CONTENTS
(CONTINUED)

Page No.

TABLE OF CONTENTS (CONTINUED)

Page No.

LIST OF APPENDICES

TABLE OF CONTENTS
(CONTINUED)

LIST OF TABLES

TABLE OF CONTENTS
(CONTINUED)

LIST OF FIGURES

TABLE OF CONTENTS (CONTINUED)

LIST OF PHOTOS

LIST OF ACRONYMS AND ABBREVIATIONS

BC&A	Bowen Collins & Associates
BMP	best management practices
cfs	cubic feet per second
CLSM	controlled low strength material
Corps	US Army Corps of Engineers
DG&T	Deseret Generation and Transmission
EAO	Enefit American Oil
GBR	Geotechnical Baseline Report
HDD	horizontal directional drilling
IF	Importance Factors
MTBM	Microtunneling Boring Machine
NGL	Natural Gas Liquids
NESC	National Electrical Safety Code
O&M	operations and maintenance
OpCC	Opinion of Probable Construction Cost
OUB	Overhead Utility Bridge or Span
ROW	right-of-way
SHPO	State Historic Preservation Office
T&E	threatened and endangered
TM	technical memorandum
UDOT	Utah Department of Transportation
ULT	Ute ladies'-tresses
USFWS	US Fish and Wildlife Service
USGS	United States Geological Survey
WF	weighting factors

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

ES.1.1 BACKGROUND AND PURPOSE

Enefit American Oil (EAO) is in the process of planning for a 21-mile utility corridor to support a planned oil shale mining and shale oil production plant, known as the "South Project", located approximately twelve miles south east of Bonanza in Uintah County, Utah. The utility corridor is currently planned to include three subsurface pipelines and two parallel overhead transmission lines. Utilities would supply natural gas, power, and water, and would also include a pipeline to convey product to market.

Early in the development of the project, EAO identified the White River Crossing as a critical point in the engineering, design and construction of the overall utility corridor. The utility corridor is currently planned to cross the river approximately four miles southeast of Bonanza, Utah. The planned crossing would be complex due to the terrain, environmental issues, and the physical presence of the river. The potential impacts and high costs of this crossing demand that it is planned for in the most cost-effective and environmentally sensitive manner possible. To begin the engineering planning process, EAO hired Bowen Collins & Associates (BC&A) to complete a technical pre-feasibility study for the crossing. It is noted that the scope and associated analysis and costs contained in this report are only associated with the river crossing. The tie-ins and full utility right-of-way routing and construction beyond the crossing are outside the scope of this study.

The purpose of this study is to provide a detailed evaluation of construction methods and crossing locations for the utility corridor within a three mile study area along the White River. The study also includes evaluations of environmental issues, permitting requirements, and risks associated the utility crossing. The study concludes with a recommended crossing location, construction method, and associated preliminary engineering and construction cost estimates.

ES.1.2 PROJECT OBJECTIVES AND GOALS

EAO established objectives for the Technical Pre-Feasibility study in the scope of work for the project. The objectives of the White River Technical Pre-Feasibility Study are to:

- Provide technical understanding of the White River utility corridor crossing by identifying all potential crossing options and locations, shortlisting them to the best suitable options, and performing preliminary engineering and cost estimation with a +/- 30% accuracy of the selected option(s).

- Provide supporting information to supplement EAO's current right-of-way (ROW) application, which shall include narratives about site evaluation, proposed construction methodologies, technology and equipment, estimated construction duration, environmental implications and risk analysis.

This report provides detailed information addressing each of these project objectives. In addition, goals for project success were established by EAO and the team at the beginning of the study. Alignment options were required to meet these goals to be considered feasible. Options that do not meet these goals were eliminated from further study.

Goals for the crossing were defined as follows:

- Provide the best alternative(s) for the crossing that balance cost and risk;
- Minimize the environmental impact and permitting requirements; and
- Provide a crossing design that is reliable and stable to operate and maintain.

All utility corridor options were evaluated against these goals and ranked according to their ability to achieve them.

ES.1.3 UTILITY CORRIDOR

EAO's planned utility corridor would include the following four separate utilities to support the industrial activities planned for the South Project.

- 30-inch diameter Water Pipeline
- 12-inch diameter Natural Gas Pipeline
- 12-inch diameter Product Pipeline
- 138-kV Powerline (2)

The ROW for the utility corridor is planned to vary from 50-feet where a single pipeline would be located, to over 350 feet where the water, gas, and product lines would be located adjacent to the dual overhead power lines. In some locations of the corridor, including at the White River Crossing, the pipeline ROW and power line ROW are separated by a distance of as much as much as 900 feet.

ES.1.4 PRELIMINARY FEASIBILITY STUDY REPORT

This study was divided into five separate topics to address the objectives of the project. The report is divided into chapters which document each of the evaluations that took place, including the following:

- Chapter 1 – Construction Options
- Chapter 2 – Location Options
- Chapter 3 – Evaluation and Screening of Crossing Options
- Chapter 4 – Pre-Engineering of Recommended Alternative
- Chapter 5 – Project Cost Summary

The following sections summarize the key points described in each chapter, including the recommendations and costs associated with the proposed White River Crossing.

ES.2 CHAPTER 1 – CONSTRUCTION OPTIONS

Chapter 1 provides an evaluation of various construction methods that could be used to install the utilities across the White River. A number of different construction methods were considered for the White River crossing in this chapter. Three of these methods were determined to be potentially feasible for this project. These methods include standard open cut excavation, trenchless construction, and overhead utility crossings.

ES.2.1 OPEN CUT CONSTRUCTION

Open cut methods are the most common approach used for installation of buried pipelines. Standard construction equipment is used to excavate a trench, install a pipeline, and then backfill the trench and restore the surface. At a river crossing, open cut methods would require that the river be bypassed around the construction zone. Pipelines are installed in half of the river channel at a time as the river is diverted to the opposite side. Because the river environment is impacted by construction, this method requires more extensive permitting and best management practices to ensure that the crossing is done properly with the least impact possible.

Advantages of this method are that it is a common method used by pipeline contractors in Utah, it presents lower risks, and it is typically lower in cost than alternative methods. The primary disadvantages of this method are that it requires construction within the active river channel with associated temporary impacts to the environment and an increased level of effort for permitting due to the larger area of surface impact required during construction.

ES.2.2 TRENCHLESS CONSTRUCTION

Trenchless construction requires the use of special tunneling equipment to cross beneath the river. There are a number of different methods that can be used to install a trenchless crossing. Chapter 1 reviews these methods, and recommends the use of microtunneling equipment as the most practical method to handle the difficult subsurface conditions that are expected.

Trenchless construction involves higher risks that standard open cut construction, because work must take place beneath the ground using equipment that must cut through materials as the trenchless head is advanced. These methods are best used in materials that are relatively consistent, such as sands and gravels or even bedrock. Problems occur when "mixed" conditions are encountered. Mixed conditions could include sand and gravel, mixed with large boulders or bedrock outcroppings. These materials can interfere with the advancement of tunneling equipment and even render the crossing impossible with these methods.

The primary advantage of this method is that it can significantly reduce, and even eliminate, any impacts to the river environment. Disadvantages include much higher cost and large risks associated with unknown subsurface conditions. These risks can be somewhat managed through the development of a detailed geotechnical baseline study during final engineering. A geotechnical study can be used to determine the feasibility of trenchless methods, and to define the conditions that may be expected so that they can be planned for in advance by a contractor.

ES.2.3 OVERHEAD UTILITY BRIDGE CONSTRUCTION

Overhead utility bridges (OUB) and cable spans can be used for crossing the difficult and steep terrain surrounding the White River in many parts of the study area. An overhead cable span exists within the study area for a small diameter natural gas line crossing. Cable pipeline spans can be used effectively for smaller diameter pipelines (typically 12-inch diameter and less), but for multiple pipelines and/or large diameter pipelines such as those contemplated for this crossing they are not practical due to the size of the support structures that are required.

Conventional utility bridges can be constructed with structures similar to pedestrian or traffic bridge crossings. Utility bridge crossings can use new dedicated utility structures or they can be supported on existing structures, such as the Highway 45 bridge across the White River. Advantages of OUBs are that they can be used to span across difficult or environmentally sensitive terrain. Disadvantages include high costs and size of structures required to support large utilities across long spans, and the visual impacts that are created by permanent utility bridge crossings.

ES.2.4 CONCLUSIONS

BC&A’s evaluation of potential construction methods for the White River Crossing resulted in the following general conclusions:

- Trenchless construction methods would reduce impacts on the river environment and lessen the permitting requirements for the crossing. Chapter 1 recommends that a trenchless microtunneling method be considered further for the crossing pending additional site investigations that would be necessary to determine the feasibility of this technique.
- Open cut construction methods are recommended in the event that further study reveals that the subsurface conditions are not practical for trenchless equipment. Standard open cut construction methods can be used to cross the river using techniques proven to be successful for past crossings in the area, such as the Questar Gas Company crossing that was constructed in 2012 immediately upstream of the EAO study area and the two existing MAPCO natural gas liquid (NGL) lines located immediately adjacent to the proposed crossing.
- OUBs were not recommended for the pipeline crossings due to the high costs and large permanent visual impacts associated with the size of bridge that would be required to support the three pipeline utilities. An exception to this was considered at the Highway 45 Bridge location, where utilities may be supported on or below this existing bridge with minimal additional visual impact.

ES.3 CHAPTER 2 – LOCATION OPTIONS

Chapter 2 addresses the various location options that are available along the White River for a utility crossing. This chapter includes a summary of a site visit that was conducted with EAO and the technical project team on June 4, 2014. Site visit notes and photos are provided for reference in an attachment to this report.

ES.3.1 PROJECT STUDY AREA

A large study area was defined for the White River crossing to ensure that all reasonable options for the crossing were considered. The study area includes approximately 3-miles of river from the Highway 45 bridge east to Hells Canyon. The study area includes high desert terrain consisting of exposed rock outcroppings, drainage washes, and deep canyons cut through the topography by the river. In general, the surrounding terrain gains elevation to the east towards Colorado. The White River cuts much deeper into this rising terrain on the east side of the study area compared to the west. The study area is bounded by the Highway 45 bridge on the west and Hells Canyon on the east. Figure ES-1 illustrates the limits of the study area considered for this project.

The study area was divided into regions of common characteristics. Five separate regions were defined for the project. This was done to allow the project team to evaluate each region separately, and to ensure that the entire study area was considered for the crossing. The five study area regions include:

- #1 – Highway 45 Bridge Region
- #2 – White River Overlook Region
- #3 – Existing Utility Crossing Region
- #4 – Evacuation Creek Region
- #5 – Eastern Study Area Region

This chapter outlines all of the factors that were considered to compare the various crossing locations. Factors included previously defined project success goals, geotechnical factors, river channel hydraulics and geomorphology, constructability issues, operations and maintenance issues, and environmental permitting issues.

Ten crossing alignment alternatives were identified and described in Chapter 2. Advantages and disadvantages of each are discussed in this chapter. This list of ten alignments is described as the “long-list” of alternatives, and was carried forward for further evaluation and shortlisting in Chapter 3 of this report. Figure ES-2 illustrates the five study area regions and long-list of crossing options that were considered.

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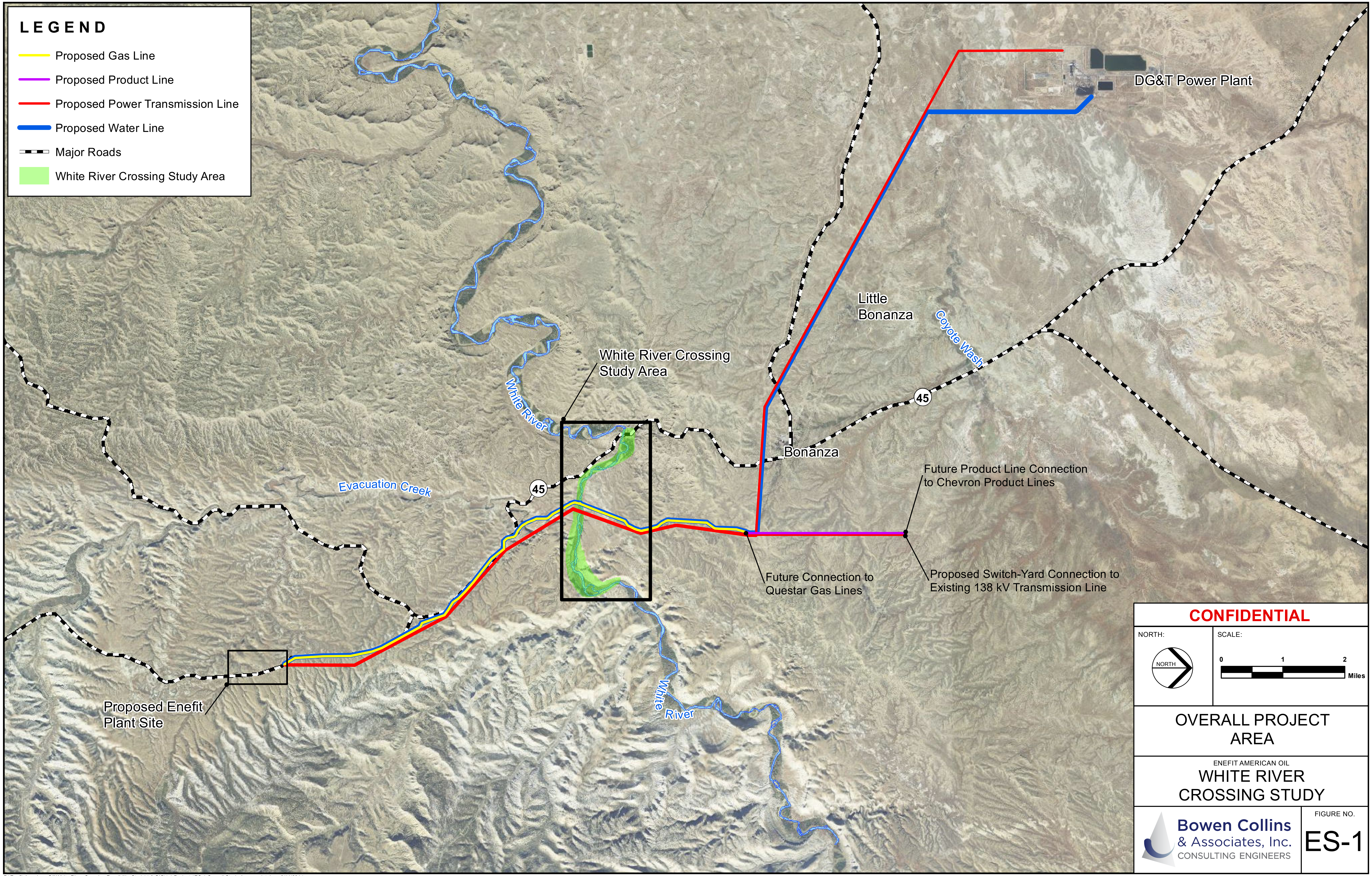

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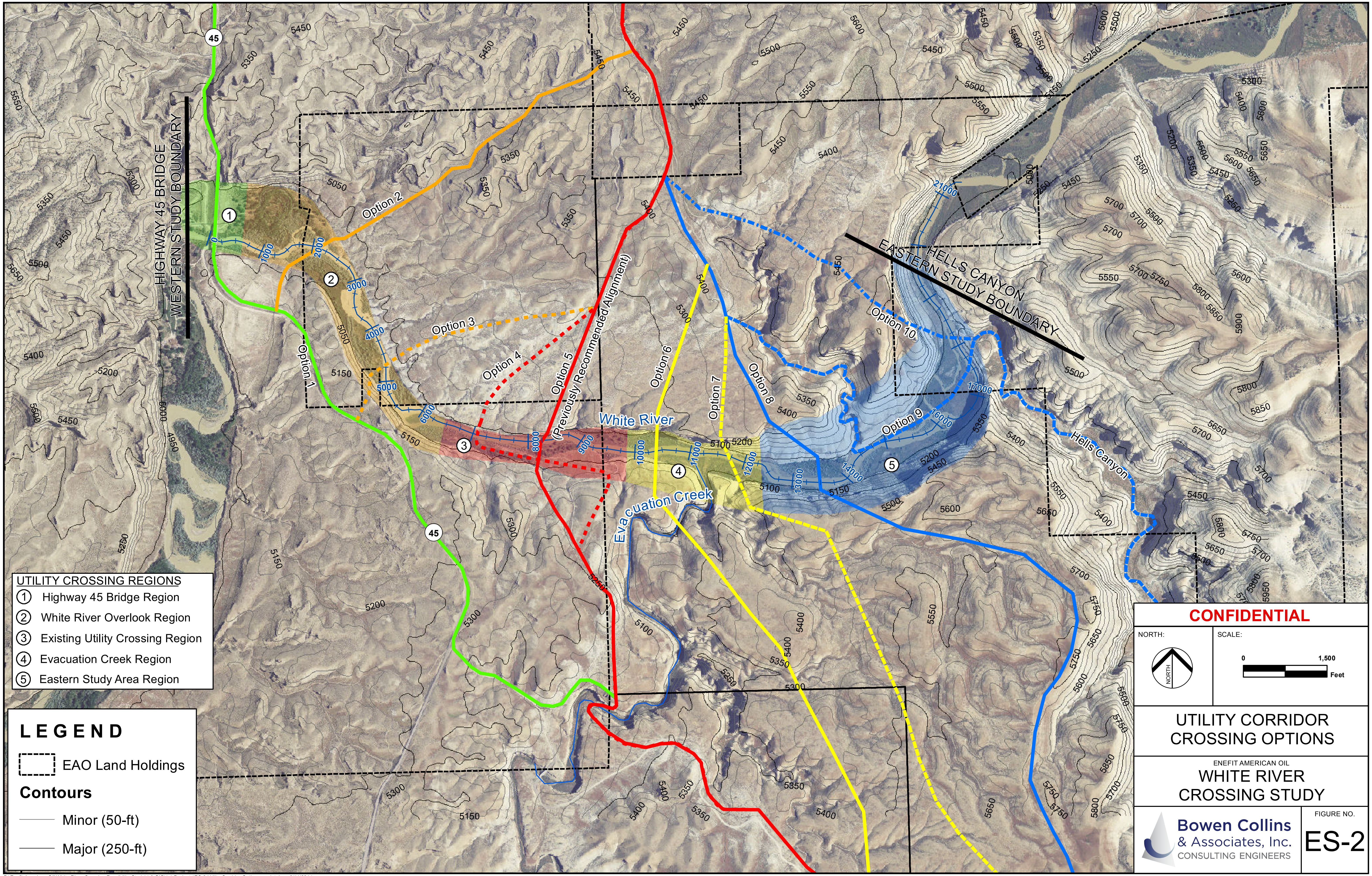

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ES.3.2 CONCLUSIONS

BC&A's evaluation of potential location options for the White River Crossing resulted in the following general conclusions:

- Access to the river generally becomes more difficult as one moves east in the study area due to the rising local terrain and deepening canyon surrounding the White River.
- Visual impacts of construction would be more of a factor on the west end of the study area due to the Highway 45 bridge crossing and White River Overlook.
- The central portion of the study area provides the easiest access to river level from both sides of the channel. This area is also where previous utility companies have chosen to cross the river.
- In general, the overhead power lines can cross the river at almost any location within the study area. Typical span distances between towers can be used to traverse the canyon without difficulty.

ES.4 CHAPTER 3 - EVALUATION AND SCREENING OF CROSSING OPTIONS

Chapter 3 provides a detailed description of the evaluation and screening of the long list of alignments down to a short list and finally to a recommended crossing alternative. The purpose of the screening evaluation was to:

- Provide a justifiable method for eliminating any fatally flawed options from further consideration,
- Develop a feasibility evaluation and screening method for the remaining crossing options considering location and construction methodologies,
- Shortlist options for the utility crossing and provide a recommended final alignment corridor and crossing construction method to move forward with preliminary engineering.

ES.4.1 EVALUATION AND SCREENING PROCESS

BC&A developed a five-step alignment evaluation and screening process for the White River Crossing Study. This process was used to screen a long list of potential alignments down to a short list, and finally to a recommended alignment for the crossing. This qualitative process involved identification of fatal flaws and the ranking of each alignment against a list of twenty different rating factors that were considered important to the project. Figure ES-3 illustrates the five general steps involved in the process.

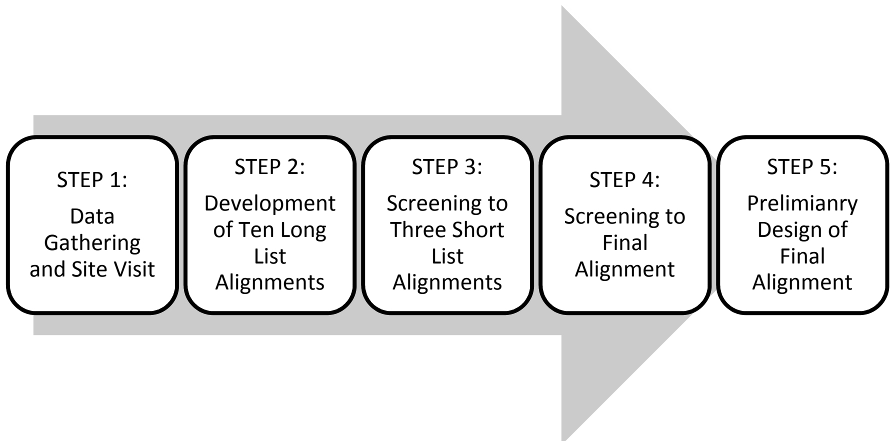


Figure ES-3: *Five Step Alignment Evaluation and Screening Process for the White River Crossing Study*

Chapter 3 includes a detailed description of the evaluation and screening process, ranking of alternatives, and shortlisting of alignments. The process that was used involved a numeric rating of alignments according to factors that the project team determined were important to the crossing. Twenty separate factors were rated for each alignment. These factors were divided into three separate categories, which are summarized below.

Category 1 - Engineering/Construction Factors

1. Length and compatibility with overall corridor
2. Bedrock condition
3. Groundwater/dewatering
4. Slope stability
5. River geomorphology
6. Construction access
7. Constructable with standard methods
8. Construction risk

Category 2 - Environmental/Permitting Factors

1. Aquatic impacts
2. Riparian impacts
3. Bird impacts
4. Wetland impacts
5. Upland impacts
6. Visual impacts
7. Land ownership
8. Permitability

Category 3 - Cost/Operation Factors

1. Construction cost
2. Additional Evacuation Creek crossing
3. Long term stability
4. Operations and maintenance access

ES.4.2 SHORTLISTING OF ALIGNMENTS

The long-list of ten alignment alternatives were scored by the technical project team using the factors listed above. The process resulted in an overall ranking of alternatives from best to worst. The top three alignments in this ranking, considered the short list, were then subjected to further evaluations which weighed different construction methods at each location based upon the recommendations provided in Chapter 1 (i.e. microtunneling was evaluated for the shortlisted alignments because it was considered the best suited trenchless method evaluated for the study area in Chapter 1). Figure ES-4 illustrates the short list of crossing alignments for both the subsurface pipelines and the overhead power lines.

ES.4.3 RECOMMENDED CROSSING ALIGNMENTS

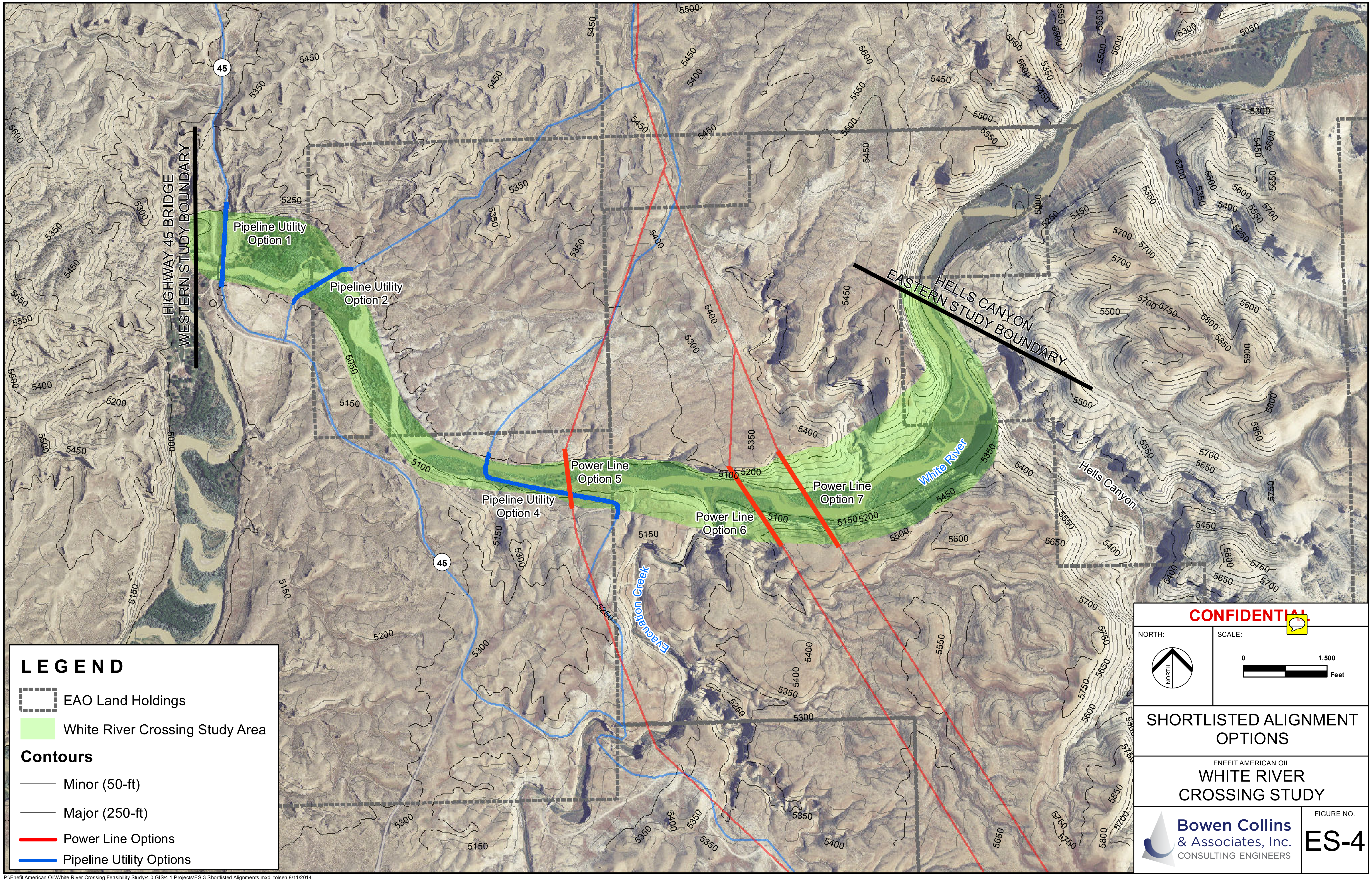
This further evaluation of the short list resulted in the identification of a recommended crossing location and construction method for the pipeline and overhead power line utilities. The overhead power lines and buried pipeline utilities were split into two separate alignments at the White River Crossing. This was done to take advantage of the terrain at the crossing and to accommodate the different construction methods that are planned for these two different types of utilities.

ES.4.3.1 Recommended Pipeline Utility Corridor

Pipeline Utility Crossing Option 4, located adjacent to the existing utility crossings near the center of the study area, was recommended as the preferred alignment for the gas, product, and water lines. This option was ranked first in the evaluation of the alignments, and was again ranked first in the further evaluation of construction methods for the short list alignments.

Option 4 provides a number of advantages for EAO, including:

1. Excellent access for construction and long term operations and maintenance from both sides of the river.
2. Gradual slopes on either side of the White River in this area will provide a stable long term corridor for the buried pipelines.
3. Good compatibility with EAO's overall utility corridor as the crossing is relatively in line with the planned path of the utilities between Bonanza and the future plant site.
4. Finally, this crossing occupies the same general area of the river as previous utilities have used. Consolidating the utility crossings to this common area of the river will



HIGHWAY 45 BRIDGE
WESTERN STUDY BOUNDARY
HELLS CANYON
EASTERN STUDY BOUNDARY
Pipeline Utility Option 1
Pipeline Utility Option 2
Pipeline Utility Option 4
Power Line Option 5
Power Line Option 6
Power Line Option 7
White River
Hells Canyon
Evacuation Creek
45
LEGEND
EAO Land Holdings
White River Crossing Study Area
Contours
Minor (50-ft)
Major (250-ft)
Power Line Options
Pipeline Utility Options
CONFIDENTIAL
NORTH:
SCALE:
0
1,500
Feet
SHORTLISTED ALIGNMENT OPTIONS
ENEFIT AMERICAN OIL
WHITE RIVER CROSSING STUDY
Bowen Collins & Associates, Inc.
CONSULTING ENGINEERS
FIGURE NO.
ES-4
P:\Enefit American Oil\White River Crossing Feasibility Study\4.0 GIS\4.1 Projects\ES-3 Shortlisted Alignments.mxd tolsen 8/11/2014

reduce the additional visual and environmental impacts to other areas of the canyon, and will help to ensure that adequate protections are in place for all of the utilities at this crossing location.

ES.4.3.2 Recommended Overhead Power Line Corridor

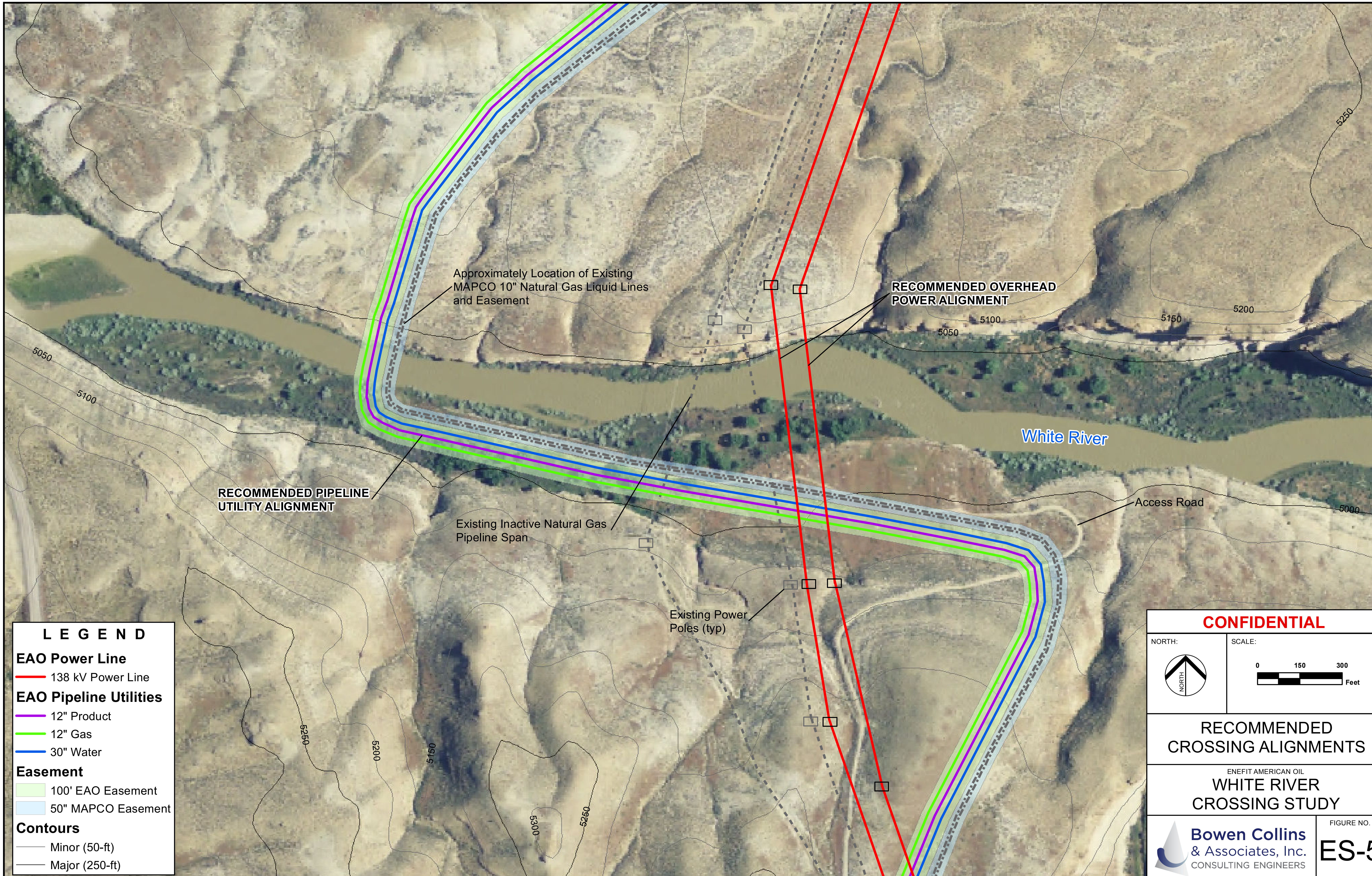
Power Line Option 5 was recommended as the preferred alignment for the overhead crossing of the White River canyon. This overhead power line option was selected because it has the shortest crossing of the White River canyon and parallels the existing overhead utility crossings which helps mitigate the visual and upland impacts. The alignment option also generally follows the shortlisted pipeline utility alignments which will allow EAO to maintain a relatively continuous utility right-of-way.

The top ranked alternatives were carried forward to the preliminary engineering phase. The second and third ranked alternatives in the short list are preserved as backups in the event that unforeseen flaws are identified during design of the top ranked alternative. Detailed descriptions of the recommended alignments, and their associated construction methods, are provided in Chapter 4.

ES.5 CHAPTER 4 – PRE-ENGINEERING OF RECOMMENDED ALTERNATIVE

Chapter 4 describes the preliminary engineering of the recommended pipeline and power line alignments. The preferred alignments are located within the Existing Utility Crossing region, near the approximate center of the study area and adjacent to the location of existing underground and overhead gas pipelines and overhead power line crossings of the river. Figure ES-5 provides an illustration of these alignments, and detailed preliminary engineering plans are provided in an attachment to this report. Photo ES-1 provides a view of the recommended crossing location looking to the west along the White River.

Photo ES-1: *Photo From the North Bank Looking West Along the White River at the Proposed Power Line Crossing.*
The recommended pipeline utility crossing and access road can be seen on the south bank of the river in the background.



CONFIDENTIAL

RECOMMENDED CROSSING ALIGNMENTS

ENEFIT AMERICAN OIL

WHITE RIVER CROSSING STUDY

Bowen Collins & Associates, Inc.
CONSULTING ENGINEERS

FIGURE NO.
ES-5

P:\Enefit American Oil\White River Crossing Feasibility Study\4.0 GIS\4.1 Projects\ES-5 Recommended Alignments.mxd tolsen 9/16/2014

ES.5.1 CONSTRUCTION METHODS

The chapter describes the construction methods that are recommended for the pipeline and power line alignments, as well as the further studies that would be needed to support the final design and permitting phases of the crossing. This chapter recommends that detailed geologic site investigations take place to determine the feasibility of trenchless crossing techniques as the preferred construction method. Trenchless methods are preferred because of the reduced impacts to the aquatic and surrounding environments of the river. The chapter goes on to explain that traditional open cut methods could be used in the event that the subsurface conditions are not conducive to a trenchless crossing.

Two separate crossings are anticipated for the buried pipelines. The smaller lines, including natural gas and product pipelines, can be combined into a single cased crossing to save time and reduce risk. The larger 30-inch water line would require a separate cased crossing. The overhead power lines would utilize standard construction methods to install towers on either side of the canyon adjacent to the existing power line alignments. Power lines would easily span the required distance across the White River canyon.

ES.5.2 PRELIMINARY CONSTRUCTION SCHEDULE

Chapter 4 provides anticipated durations for the planning and construction of the crossings, as well as descriptions of long lead time items that would need to be planned for in advance. The schedule requires that further studies and site investigations take place the year prior to construction in order to provide time for final design and to take advantage of seasonal requirements for environmental site surveys. Construction of the crossings is anticipated to require approximately eight months to complete, the first half of which is required for procurement of long lead time items such as steel pipeline materials.
This study anticipates that all of the buried pipelines will be constructed across the White River at one time in order to minimize the impacts of construction. The water line and overhead power line will be installed along the entire utility corridor in this initial construction effort. The natural gas and product pipelines will be capped on either side of the river crossing for future connection. A second mobilization is anticipated for the future tie-in of the natural gas and product lines when these utilities are needed for EAO's South Project.

ES.5.3 RISK ANALYSIS

The chapter includes an analysis of risks associated with the White River Crossing. The technical project team developed a list of risks ordered from most likely to least likely to occur, as well as the relative magnitude of their associated impacts. Recommendations are provided for ways to reduce and manage the risks. The following list summarizes the largest risks that are foreseen for the crossing in order of priority.

1. Microtunneling risks – Includes the construction cost and schedule risks associated with crossing the White River using trenchless construction methods.
2. Dewatering and bypass risks – Includes the risks associated with bypassing the river around the construction zone within the active river channel.

3. Changing subsurface conditions – Addresses the risks associated with unknowns that may be experienced in the subsurface materials below the river channel, as well as along the open cut areas on both sides of the crossing.
4. Permitting risks – Addresses the risks involved in the permitting process, including schedule delays that may result during the process.
5. Hillside slope stability – Includes risks involved in the stability of the hillsides adjacent to the river, primarily related to location of tower foundations for the overhead power lines.
6. Remoteness factors – Addresses risks involved with the remoteness of the site, primarily related to mobilization of equipment and labor for the contractor during construction.

ES.5.4 RECOMMENDED FURTHER STUDIES

Chapter 4 includes recommendations and details regarding further studies that would be required to support the engineering and planning phases of the project. Recommended further studies include the following.

1. Geotechnical Baseline Report
2. River Hydraulic and Geomorphology Study
3. Underground Utility Search and Potholing Investigation
4. Environmental Surveys to Support Required Permitting Documents, including:
    a. Wetland Delineations
    b. Cultural Resources and Paleontological Report
    c. Biological/Habitat Assessment
5. Field Survey and Property Research

ES.5.4.1 Environmental Implications

The chapter concludes with a discussion of the environmental implications of the crossing, including anticipated permits that would be required, and best management practices that outline techniques to be followed throughout the lifecycle of the project to mitigate the negative environmental impacts associated with construction.

Anticipated permits required for crossing of the White River include a State of Utah Stream Alteration Permit and a US Army Corps of Engineers Permit (Nationwide Permit #12). Details regarding these permits and their associated requirements are included in the chapter.

ES.6 CHAPTER 5 – PROJECT COST SUMMARY

Chapter 5 includes an opinion of probable construction cost prepared by the project team based upon current Cost Estimate Classification System, Class 4 Study – Feasibility Cost

Estimation (AACE International – formerly American Association of Cost Engineering – Recommended Practice No. 18R-97).

Preliminary estimates are based upon the 30-percent complete design drawings and material assumptions provided in Chapter 4 and were also developed using information from recent bids on similar projects, information obtained from suppliers, coordination with the project team, and estimating guides. Estimates also include a construction contingency of 15-percent to allow for project elements not specified in detail at the conceptual level. The expected accuracy range of this level of estimate is between a low of -20% to a high of +30%.

Table ES-1 provides a summary of all projected costs that are anticipated to be required to design and construct all of the buried pipelines and overhead power lines anticipated at the White River Crossing. The table includes all site investigations and studies, engineering, bid period services, construction administration and direct construction costs. Detailed breakdowns of the construction costs associated with this estimate are included in an Attachment to this report.

Table ES-1
Total Project Cost Summary

Item	Estimated Cost
Geotechnical Baseline Reports	$77,600
Field Survey	$12,500
Potholing Investigation	$10,000
River Hydraulics and Geomorphology Study	$30,000
Environmental Permitting Studies	$25,800
Final Engineering Services	$299,000
Bid Period Services	$7,500
Construction Administration Services	$348,750
Opinion of Probable Construction Cost	$4,982,130
TOTAL PROJECT COST SUMMARY	**$5,793,280**

ES.7 ACKNOWLEDGEMENTS

A number of individuals contributed to this Technical Pre-Feasibility Study. Members of the project team included EAO staff, BC&A staff, and project subconsultants from Gerhart Cole, ICPE, and Whitaker Construction. BC&A wishes to thank the following individuals for their valued contribution to this report.

Enefit American Oil

- Rikki Hrenko-Browning, Chief Executive Officer
- Alfredo Gonzalez, Civil Engineer Project Manager
- Ryan Clerico, Head of Development and Environment
- Ben France, Mine Engineer

Bowen Collins & Associates

- Jason Luettinger, Project Manager
- Todd Olsen, Lead Pipeline Engineer
- Jamie Tsandes, Environmental and Permitting
- Rodolfo Garcia, CADD Design Manager
- Angela Hansen, Word Processing and Production

Subconsultants

- Ryan Cole, Geotechnical Engineer (Gerhart Cole)
- Travis Gerber, Geotechnical Engineer (Gerhart Cole)
- Les Bell, Electrical Engineer (ICPE)
- Craig Mechalis, Electrical Engineer (ICPE)
- Judd Hamsen, Construction Expert (Whitaker Construction)

ES.7.1 OFFICE LOCATION AND QUESTIONS

The project is being delivered from BC&A's Draper, Utah office. Questions may be addressed to:

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Data Gap Tracking Table – Plan of Development

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Comment Tracking Table for
Enefit American Oil Utility Corridor Project EIS
Detailed Plan of Development

Submitted to BLM/Enefit on June 24, 2014
EPG Revised July 18, 2014
Data Gap Responses Received from Enefit on October 13, 2014
EPG Revised November 12, 2014
Data Gap Responses Received from Enefit on January 30, 2015
EPG Revised February 17, 2015

Section	Line Number	Page Number	Commenter	EPG Comment or Text Revision	Enefit Response (reference to Enefit Data Gap Response added by EPG)/ EPG Comment or Text Revision to Enefit Response
General			BLM	Data gaps have been identified by the BLM for the gas compressor station that would tie into Questar's line. Please provide information for this portion of the project description.	***Note: This data gap was identified during the August 5, 2014 cooperating agency meeting.*** **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 5** As of February 20, 2015, data gap addressed. No further action required.
General		-	EPG	In the Data Gap Analysis dated August 29, 2013, we identified the need for the Traffic and Transportation Report (Plan) to be included in the POD. It is not in this version of the document and the information is needed for the EIS.	***Notes from July 10, 2014 Coordination Call:*** *Enefit is working on the Traffic and Transportation study and will be included as part of the Dragon Road engineering study. This report will include traffic counts and other pertinent traffic and transportation information.* **See *EAO Response to Data Gaps* – Data Gap No. 10** Data gap is addressed. No further action required.
4.1.1		13	EPG	Data gaps occur with respect to analyzing impacts to water resources. For direct and indirect impacts, we need to know the following: • How much water is needed for installation of the various pipelines and other infrastructure within the requested BLM right-of-way? • Regarding the water source, we understand that Enefit plans to use excess water from the Deseret Power Plant, but how much water is available? • Does water availability change during the year? • Is there anyone else currently using the excess Deseret water? • Is the watershed fully allocated? What other uses are permitted in the watershed and Groundwater Basin?	***Notes from July 10, 2014 Coordination Call:*** *Enefit to provide response that includes more description of how water will be used on the project (e.g., hydrotesting, etc.).* **See *EAO Response to Data Gaps* – Data Gap Nos. 11, 12, 13, 14, and 15** Data gaps are addressed. No further action required.
4.1.1		13	EPG	Regarding cumulative impacts, we need to know the following: • How much water is needed for various activities associated with the mining project? Construction? Operations? Sanitary facilities? Timing for water needs? • Where will this water be sourced? Deseret Power Plant? Again, same questions as above. How much water is available? Does water availability change during the year. • What other uses are permitted in the watershed? Pending permits? • What reasonably foreseeable future actions are proposed in the watershed? Groundwater Basin? • Will water need to be treated before use? After use? • How will wastewater be treated? Disposed of?	***Notes from July 10, 2014 Coordination Call:*** *Enefit to provide well-founded assumptions on the range and/or quantity of water usage for the proposed action. Enefit to disclose high-level and qualitative scenario information (e.g., scenario using on-site and scenario using utility corridor).* **See *EAO Response to Data Gaps* – Data Gap Nos. 16, 17, 18, 19, and 20** Data gaps are addressed. No further action required.

Comment Tracking Table for
Enefit American Oil Utility Corridor Project EIS
Detailed Plan of Development

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Section	Line Number	Page Number	Commenter	EPG Comment or Text Revision	Enefit Response (reference to Enefit Data Gap Response added by EPG)/ EPG Comment or Text Revision to Enefit Response
4.1.1, 4.1.2, 4.1.3		13, 14	EPG	In the July 31, 2013 comments on the Preliminary Draft Chapter 2 – Proposed Action and Alternatives text that were provided to Enefit by the BLM, temporary acres of disturbance were requested along with permanent acres of disturbance for the water, gas, product supply pipelines. Tables 4-1, 4-2, and 4-3 only address permanent disturbance for each pipe at 50 feet wide. Please confirm that all temporary disturbance for the pipelines will occur within the 50-100 ft wide permanent right-of-way grant for the pipelines.	***Notes from July 10, 2014 Coordination Call:*** *Enefit to provide response. BLM will need info in order to issue a temporary use permit for construction.* **See *EAO Response to Data Gaps* (October 13, 2014) – Data Gap No. 21** More information from right-of-way engineering required. **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 6** As of February 20, 2015, data gap addressed. No further action required.
4.2		16	EPG	When the pipeline segments of the utility corridor are built, it is understood that a construction access road will be developed in the ROW. In areas where the transmission line will be built parallel to the pipeline, is it the intent to use the same access roads as well? In areas where only the transmission line will be built, how does Enefit plan to access those areas without spur roads or new access? The existing access roads on the Appendix B map do not cover all segments of the utility corridors, so either new roads or spur roads will need to be built. To clarify, please provide the following: • More detailed information on access in areas where the pipeline/transmission line will be built together. • Access road plans in areas where only the transmission line will be constructed.	***Notes from July 10, 2014 Coordination Call:*** *Enefit to provide clarification and understands the comment.* **See *EAO Response to Data Gaps* (October 13, 2014) – Data Gap No. 22** More information from right-of-way engineering required. **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 7** As of February 20, 2015, data gap addressed. No further action required.
4.3		16	EPG	Please provide temporary laydown yard dimensions and acreage for each site.	***Notes from July 10, 2014 Coordination Call:*** *Enefit to provide response. BLM will need info in order to issue a temporary use permit for construction.* *No response in EAO Response to Data Gaps received October 13, 2014* **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 10** As of February 20, 2015, data gap addressed. No further action required.
4.4			EPG	If the new alignment of Dragon Road is built, what will happen to the old alignment and pavement – left in place or ripped and restored? If the later, please describe the acreages involved and restoration process to be used.	***Notes from July 10, 2014 Coordination Call:*** *The Dragon Road engineering study will be available in October 2014 and will help determine reclamation and identify pavement methods. Enefit will coordinate with county and BLM to establish reclamation procedures.* *BLM will begin process of getting cooperators involved and identify the alignment of Dragon Road as a pending item. The cooperators may have opinions about Dragon Road as well.* **See *EAO Response to Data Gaps* – Data Gap No. 25** Data gap addressed, no further action required. As of February 20, 2015, data gap addressed. No further action required.

Comment Tracking Table for Enefit American Oil Utility Corridor Project EIS Detailed Plan of Development *Submitted to BLM/Enefit on June 24, 2014* *EPG Revised July 18, 2014* *Data Gap Responses Received from Enefit on October 13, 2014* *EPG Revised November 12, 2014* *Data Gap Responses Received from Enefit on January 30, 2015* *EPG Revised February 17, 2015*					
Section	**Line Number**	**Page Number**	**Commenter**	**EPG Comment or Text Revision**	**Enefit Response (reference to Enefit Data Gap Response added by EPG)/ EPG Comment or Text Revision to Enefit Response**
4.2		16	EPG	In the July 31, 2013, comments on the Preliminary Draft Chapter 2 – Proposed Action and Alternatives text that were provided to Enefit by the BLM, the following information was requested from Enefit and is missing from this version of the document: • Additional information on typical transmission line specifications: height of structures, width, diameter; conductor materials and specs; acres of temporary and permanent disturbance associated with pulling and tensioning sites, wire splicing sites, structure work areas, communication sites, and substations. (Please refer to Table 2-1 in Preliminary Draft Chapter 2 dated July 31, 2013 for an example of how this information could be outlined.) • Tower structure material is referred to as steel in the POD – please clarify if it is galvanized steel or self-weathering steel. In addition, information on the 8.44-acre switchyard on BLM-administered land needs to be detailed and described. Information should include: • Approximate site size (dimensions that equate to 8.44 acres) • Equipment in the yard • Access roads required for construction, operation, and maintenance • Fire protection facilities • Grounding • Acres of permanent and temporary disturbance • Voltage	***Notes from July 10, 2014 Coordination Call:*** *Enefit to coordinate with Moonlake Electric to obtain this information.* **See *EAO Response to Data Gaps* (October 13, 2014) – Data Gap No. 23** More information from right-of-way engineering required. **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 8** As of February 20, 2015, data gap addressed. No further action required. **See *EAO Response to Data Gaps* (October 13, 2014) – Data Gap No. 24** More information from right-of-way engineering required. **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 9** As of February 20, 2015, data gap addressed. No further action required.
4.5		18	EPG	We question the assumption that there will be no upgrade or improvements to existing roads for construction access. Please provide more information on the existing access road plan to verify no upgrades or improvements will be needed. Information in a table format should include: • Proposed access road numbering system (or some sort of identification system) • Current access road base material (i.e., paved, gravel, dirt) • Land ownership • Road length (miles) • Road width and acreage • Adequacy to handle construction traffic (i.e., cranes, lowboy trailers, etc.) and if improvements are required	***Notes from July 10, 2014 Coordination Call:*** *Enefit to provide clarification and understands the comment.* **See *EAO Response to Data Gaps* (October 13, 2014) – Data Gap No. 26** More information from right-of-way engineering required. **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 11** As of February 20, 2015, data gap addressed. No further action required.
4.6	Last Paragraph	18	EPG	Of the utilities identified for relocation, are any historic resources?	***Notes from July 10, 2014 Coordination Call:*** *From this comment on, Enefit was clear on the data gaps and will provide responses accordingly.* **See *EAO Response to Data Gaps* – Data Gap No. 27** Data gap is addressed. No further action required.

Comment Tracking Table for **Enefit American Oil Utility Corridor Project EIS** **Detailed Plan of Development** *Submitted to BLM/Enefit on June 24, 2014* *EPG Revised July 18, 2014* *Data Gap Responses Received from Enefit on October 13, 2014* *EPG Revised November 12, 2014* *Data Gap Responses Received from Enefit on January 30, 2015* *EPG Revised February 17, 2015*					
Section	**Line Number**	**Page Number**	**Commenter**	**EPG Comment or Text Revision**	**Enefit Response (reference to Enefit Data Gap Response added by EPG)/ EPG Comment or Text Revision to Enefit Response**
4.6	Last Paragrap h	18	EPG	How would inspection and reclamation be carried out for the relocated sections of these utilities? Would cultural resource monitoring occur during these activities?	**See *EAO Response to Data Gaps* – Data Gap No. 28** Data gap is addressed. No further action required. However, suggest Enefit strike last parenthetical statement from Data Gap No. 28 Response, which reads "although effects of utility relocations on private land as a result of South Project development are beyond the scope of this EIS". This statement is incorrect. Doing so is not critical to preparation of the EIS or to Section 106 consultation.
4.7.1		19	EPG	When the location and construction method of crossing the White River is determined, will there be consideration of resource effects from different options? For visual resources, an underground option would be preferred over the utility bridge option due to the visual sensitivity of this area.	**See *EAO Response to Data Gaps* – Data Gap No. 29** Data gap is addressed. No further action required.
5		20	EPG	Please describe the activities planned for geotechnical investigations of the pipelines and transmission line, as requested in July 2013.	**See *EAO Response to Data Gaps* – Data Gap No. 30** Data gap is addressed. No further action required.
5.1		20-28	ERM	Need corridor construction phase information on a periodic basis for the number, type, type of fuel, monthly level of use (e.g., hours or days/month) and approximate horsepower of each category of construction equipment and vehicles	**See EAO Response to Data Gaps (October 13, 2014)– Data Gap No. 31** Adequate information for *criteria pollutants* provided in Tables A1-1, A1-2, A1-6 to A1-8. What engine emission specification (e.g., Tier II, Tier III) is assumed? **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 12** As of February 20, 2015, data gap addressed. No further action required.
5.1		20-28	ERM	Need corridor construction phase information for number and horsepower for planned crushers, screeners, and material stockpiling equipment.	**See EAO Response to Data Gaps (October 13, 2014)– Data Gap No. 32** Adequate information for *criteria pollutants* provided in Tables A1-1, A1-2, A1-6 to A1-8. What engine emission specification (e.g., Tier II, Tier III) is assumed? **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 12** As of February 20, 2015, data gap addressed. No further action required.
5.1		20-28	ERM	Need corridor construction phase information for tons per hour capacity and periodic operating schedule for planned fuel-fired crushers, screeners, and material stockpiling equipment.	**See EAO Response to Data Gaps (October 13, 2014)– Data Gap No. 33** Adequate information for *criteria pollutants* provided in Tables A1-1, A1-2, A1-6 to A1-8. What engine emission specification (e.g., Tier II, Tier III) is assumed? **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 12** As of February 20, 2015, data gap addressed. No further action required.
5.1		20-28	ERM	Need corridor construction phase information on number of construction works and staff, per month or per construction phase, for commute vehicle emission estimates.	**See EAO Response to Data Gaps (October 13, 2014)– Data Gap No. 34** Adequate information for *criteria pollutants* provided in Tables A1-1, A1-2, A1-6 to A1-8. What engine emission specification (e.g., Tier II, Tier III) is assumed? **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 12** As of February 20, 2015, data gap addressed. No further action required.
5.1		20-28	ERM	Need corridor construction phase information on number, type, type of fuel, monthly level of use (e.g., hours or days/month) for non-vehicle fuel fired equipment (e.g., generators, pumps).	**See EAO Response to Data Gaps (October 13, 2014)– Data Gap No. 35** Adequate information provided in Tables A1-1, A1-2, A1-6 to A1-8. Verify that non-vehicle engines will not be used for construction, or provide information for such engines. **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 13** As of February 20, 2015, data gap addressed. No further action required.

Comment Tracking Table for Enefit American Oil Utility Corridor Project EIS Detailed Plan of Development *Submitted to BLM/Enefit on June 24, 2014* *EPG Revised July 18, 2014* *Data Gap Responses Received from Enefit on October 13, 2014* *EPG Revised November 12, 2014* *Data Gap Responses Received from Enefit on January 30, 2015* *EPG Revised February 17, 2015*					
Section	**Line Number**	**Page Number**	**Commenter**	**EPG Comment or Text Revision**	**Enefit Response (reference to Enefit Data Gap Response added by EPG)/ EPG Comment or Text Revision to Enefit Response**
5.1		20-28	ERM	If a working busing program is planned, the number of buses and estimated route lengths and trips per day.	**See *EAO Response to Data Gaps* – Data Gap No. 36** Data gap is addressed. No further action required.
5.1		20-28	ERM	Identify planned fugitive dust mitigation measures for construction roadways, stockpiles, and material transfer points (e.g., watering, suppressants, vehicle speed limits, etc.)	**See EAO Response to Data Gaps (October 13, 2014)– Data Gap No. 37** 1) Describe how the dust control measures identified in the Dust Control Plan are accounted for in Table A1-4. 2) Fugitive construction dust emissions are usually related to acres disturbed, not only the VMT of the construction equipment. Document which fugitive sources are included in the factors in Table A1-4. 3) Clarify how the VMT and acreage values in Tables A1-15 and A1-16 were estimated. **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 14** As of February 20, 2015, data gap addressed. No further action required.
5.1.3 5.1.10.1		22 27	EPG	Will there be any level of standardized cultural resource monitoring during trenching and excavation activities for the Project as a whole? (not just in proximity to known sites)	**See *EAO Response to Data Gaps* – Data Gap No. 38** Data gap is addressed. No further action required.
5.1.8		24	EPG	What is the water discharge plans for hydrostatic testing of the pipelines? This can be a significant volume of water and needs to be addressed in the EIS.	**See *EAO Response to Data Gaps* – Data Gap No. 39** Data gap addressed, no further action required.
5.1.10.1		27	EPG	Self-supporting steel towers and guyed structures are mentioned in this section but not previously as part of the project description. Please provide diagrams and details in Section 4.2.	**See EAO Response to Data Gaps (October 13, 2014) – Data Gap No. 40** More information from right-of-way engineering required. **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 15** As of February 20, 2015, data gap addressed. No further action required.
5.2.2		29	ERM	Need corridor construction phase information on number of personnel that will be on the site during different phases of construction, (for estimates of food waste, trash, etc?)	**See *EAO Response to Data Gaps* – Data Gap No. 41** Data gap is addressed. No further action required.
5.2.2		29	ERM	Need corridor construction information on the plan for trash receptacles or contract services.	**See EAO Response to Data Gaps (October 13, 2014) – Data Gap No. 42** Detailed information not available yet, please forward information when available **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 16** As of February 20, 2015, data gap addressed. No further action required.
5.2.2		29	ERM	Need corridor construction information on packaging materials anticipated to become solid wastes (i.e. cardboard boxes, filters, conduit, wire, welding rods and other discarded construction materials, etc.).	**See *EAO Response to Data Gaps* – Data Gap No. 43** Detailed information not available yet, please forward information when available **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 17** As of February 20, 2015, data gap addressed. No further action required.
5.2.2		29	ERM	Need corridor construction information on procedure, containers and plan for disposition of used oil.	**See *EAO Response to Data Gaps* – Data Gap No. 44** Data gap is addressed. No further action required.
5.2.2		29	ERM	Need corridor construction plan for disposition of construction fill or removed solid materials.	**See *EAO Response to Data Gaps* – Data Gap No. 45** Data gap is addressed. No further action required.

Comment Tracking Table for Enefit American Oil Utility Corridor Project EIS Detailed Plan of Development *Submitted to BLM/Enefit on June 24, 2014* *EPG Revised July 18, 2014* *Data Gap Responses Received from Enefit on October 13, 2014* *EPG Revised November 12, 2014* *Data Gap Responses Received from Enefit on January 30, 2015* *EPG Revised February 17, 2015*					
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5.2.2 and 5.2.3		29	ERM	Need corridor construction information on quantities and container sizes (where applicable) of all products/materials used, stored or produced during construction.	**See EAO Response to Data Gaps (October 13, 2014) – Data Gap No. 46** Detailed information not available yet, please forward information when available **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 18** As of February 20, 2015, data gap addressed. No further action required.
5.2.2 and 5.2.3		29	ERM	Need corridor construction information on estimated monthly throughput and maximum amounts of products/materials stored at any one time. Categories of materials anticipated include: a. Fuels, gasoline, diesel b. Herbicides/pesticides c. Solvents d. Oils, lubricants used in machinery maintenance e. Coolants/antifreeze f. Batteries g. Paints and adhesives	**See *EAO Response to Data Gaps* – Data Gap No. 47** Data gap is addressed. No further action required.
5.2.2 and 5.2.3		29	ERM	Need corridor construction information on anticipated maintenance areas and description of activities, i.e. oil changes, lube, repair, etc.	**See *EAO Response to Data Gaps* – Data Gap No. 48** Data gap is addressed. No further action required.
5.2.2 and 5.2.3		29	ERM	Provide any other relevant and available information pertaining to hazardous materials and solid wastes.	**See *EAO Response to Data Gaps* – Data Gap No. 49** Data gap is addressed. No further action required.
5.2.3		29	ERM	Need corridor construction information on the plan/procedure for the delivery, storage and dispensing of hazardous material at construction sites.	**See *EAO Response to Data Gaps* – Data Gap No. 50** Data gap is addressed. No further action required.
5.2.3		29	ERM	Need corridor construction information on the plan/procedure for profiling solid waste to determine hazardous/nonhazardous status	**See *EAO Response to Data Gaps* – Data Gap No. 51** Data gap is addressed. No further action required.
5.2.2 and 5.2.3		29	ERM	Need corridor construction information on the anticipated fueling stations or above ground storage tanks for fuel.	**See *EAO Response to Data Gaps* – Data Gap No. 52** Data gap is addressed. No further action required.
5.2.2 and 5.2.3		29	ERM	Need corridor construction information on the number, size, and approximate placement of above ground storage tanks, secondary containment sizes and liquid transfer capacities.	**See *EAO Response to Data Gaps* – Data Gap No. 53** Data gap is addressed. No further action required.
9.1.1	General	37	EPG	Only two potentially eligible sites were identified in the Utility Corridor Project, including the remains of the White River Stage Station. Is there no remaining evidence of the associated stage road in the Project area?	**See *EAO Response to Data Gaps* – Data Gap No. 54** Data gap is addressed. No further action required.
9.1.1	Bullet Point 1	37	EPG	Please correct White River <u>State </u>Station to read White River <u>Stage</u> Station.	**See *EAO Response to Data Gaps* – Data Gap No. 55** Data gap is addressed. No further action required.
9.1.1	Last Paragrap h	37	EPG	Are both of these sites located on lands under the sole jurisdiction of the BLM?	**See *EAO Response to Data Gaps* – Data Gap No. 56** Data gap is addressed. No further action required.
9.1.1	Last Paragrap h	37	EPG	*". . . EAO would work in consultation with the BLM VFO to determine appropriate mitigation activities to document these sites prior to construction . . ."* Why is the Utah State Historic Preservation Office (SHPO) not included in this consultation? Determination of effects and the identification of appropriate mitigation efforts are the responsibility of the lead federal agency in consultation with the land-management agency and the SHPO. The Project Proponent is not involved in making any form of determination regarding cultural resources or the appropriate treatment thereof.	**See *EAO Response to Data Gaps* – Data Gap No. 57** Data gap is addressed. No further action required.

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9.1.1	Last Paragraph	37	EPG	"Because of the relatively small area occupied by both of these sites, it is anticipated that the utility corridor could be micro-sited to fully avoid impacts to either." This statement is misleading, Site 42UN2558 (White River Stage Station) is actually a relatively large site at greater than 1,516 feet east-west by 576 feet north-south.	**See *EAO Response to Data Gaps* – Data Gap No. 58** Data gap is addressed. No further action required.
9.1.1	Overall	37-38	EPG	The absence of any mention of the Utah SHPO in this section is of concern. The SHPO is a part of the Section 106 review process and must be consulted regarding Project effects and mitigation strategies. Though the lead federal agency is legally responsible for compliance with Section 106, consultation with other cooperating agencies, tribes, and the SHPO is required under the law.	**See *EAO Response to Data Gaps* – Data Gap No. 59** Data gap is addressed. No further action required.
9.1.1	First Paragraph	38	EPG	Why are vertebrate and plant fossils called out specifically in this section rather than stating something more inclusive (e.g. significant paleontological materials)?	**See *EAO Response to Data Gaps* – Data Gap No. 60** Data gap is addressed. No further action required.
9.1.1	Second Paragraph, 1st Sentence	38	EPG	How will the 200+ person workforce referenced earlier in the document be educated regarding the relevant federal regulations applicable to cultural and paleontological resource protection? Will there be a formal training provided by Enefit that all workers would be required to attend before beginning work on the Project? How will this process take place and how will this training be documented?	**See *EAO Response to Data Gaps* – Data Gap No. 61** Data gap is addressed. No further action required.
9.1.1	Second Paragraph	38	EPG	*"In the even unanticipated discovery of cultural or paleontological resources occurs, operations in the immediate area would be suspended* . . . "It is important to define specific buffer requirements for protection of inadvertent discoveries. The *immediate area* is too open to interpretation.	**See *EAO Response to Data Gaps* – Data Gap No. 62** Data gap is addressed. No further action required.
9.1.1	Second Paragraph	38	EPG	". . . until written authorization to proceed is issued by the appropriate surface management agency AO" If the BLM is acting as lead federal agency then BLM would be involved in any authorization to proceed issued for the project. Authorization to proceed would be issued in consultation with the land managing agency.	**See *EAO Response to Data Gaps* – Data Gap No. 63** Data gap is addressed. No further action required.
9.1.1	Second Paragraph	38	EPG	*"Appropriate mitigation measures would be determined by EAO in consultation with the BLM"* Similar to above comment - Determination of appropriate mitigation in the event of an unanticipated discovery is the responsibility of the lead federal agency in consultation with the land-management agency and the SHPO. The Project Proponent is not involved in making any form of determination regarding cultural resources or the appropriate treatment thereof.	**See *EAO Response to Data Gaps* – Data Gap No. 64** EPG still suggests revision of POD text and Data Gap No. 64 Response to make clear the responsibility of the lead federal agency in determining the appropriate treatment of cultural resources. However, doing so is not critical to preparation of the EIS or to Section 106 consultation. If necessary, BLM can specifiy any mitigation requiremetns as conditions of the Record of Decision or a Notice to Proceed. No further action required.
9.1.2		38	EPG	Section 9.1.2 does not reference proposed critical habitat for the beardtongue species. Does proposed critical habitat occur in or in proximity to the proposed ROW corridor or other parts of the project area (or access roads)? If so, are mitigation measures developed for these areas?	**See *EAO Response to Data Gaps* – Data Gap No. 65** Data gap is addressed. No further action required.
Appendix A			EPG	No comments.	No further action required.
Appendix B			EPG	See comments on Section 4.	No further action required.
Appendix C			EPG	Please provide a GIS shapefile of the Dragon Road improvement alignment.	**See *EAO Response to Data Gaps* – Data Gap No. 66** Data gap is addressed. No further action required.
Appendix D			EPG	No comments.	No further action required.

Comment Tracking Table for Enefit American Oil Utility Corridor Project EIS Detailed Plan of Development *Submitted to BLM/Enefit on June 24, 2014* *EPG Revised July 18, 2014* *Data Gap Responses Received from Enefit on October 13, 2014* *EPG Revised November 12, 2014* *Data Gap Responses Received from Enefit on January 30, 2015* *EPG Revised February 17, 2015*					
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Appendix E and Section 5.1.9.2			EPG	Please provide detail on what sorts of BLM approved herbicides could be considered for use on the ROW.	**See *EAO Response to Data Gaps* – Data Gap No. 67** Data gap is addressed. No further action required.
Appendix F			EPG	No comments.	No further action required.
Appendix G			EPG	What is the data source of the “future power corridor” data layer shown on the map? Is this part of Enefit’s proposal?	**See *EAO Response to Data Gaps* – Data Gap No. 68** Data gap is addressed. No further action required.

Data Gap Tracking Table – Baseline Reports

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Comment Tracking Table for
Enefit American Oil Utility Corridor Project EIS
Enefit Baseline Reports - EPG Data Gap Analysis
Submitted to BLM/Enefit on August 29, 2013
EPG Updated June 24, 2014
EPG Revised July 18, 2014
Data Gap Responses Received from Enefit on October 13, 2014
EPG Updated November 12, 2014
EPG Updated (based on BLM Comments) December 29, 2014
Data Gap responses Received from Enefit on January 30, 2015
EPG Updated February 20, 2015

Section	Line Number	Page Number	Commenter	EPG Comment or Text Revision	Enefit / SWCA Responses (reference added by EPG)/ EPG Comment or Text Revision to Enefit Response
***Traffic and Transportation Plan for Enefit American Oil's Utility Corridor Project* (SWCA, October 10, 2014)**					
			EPG	What are the estimated daily trip generation rates for the utility corridor project and South Project relative to the current roadway capacity? Should we use Annex 1, Table A1-9. "Commuter and delivery vehicle daily emissions" for the trip count rates? The rest of the Plan appears sufficient for the utility corridor aspect of the proposed action, but what about the transportation plan for the connected action, South Project? Is it similar to the utility corridor plan?	**See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 1** As of February 20, 2015, data gap addressed. No further action required.
***White River Crossing Technical Pre-Feasibility Study* (Bowen Collins & Associates, September 2014)**					
			EPG	In the Executive Summary (no other chapters were provided to BLM/EPG) there are several items that need clarification: 1. Which location option is Enefit proposing – Option #4 for the pipelines and Option #5 for the powerline? 2. Which construction methods are being proposed specifically for the project? 3. Please provide an updated GIS shapefile of the alignments for each segment.	**See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 1** As of February 20, 2015, data gap addressed. No further action required.
***Fugitive Dust Control Plan* (SWCA, October 10, 2014)**					
				No data gaps identified.	
***Enefit American Oil Hydrology Baseline Field Sampling Program, Year One, Second Quarter 2013* (Walsh Environmental, August 2013) and *Enefit American Oil Hydrology Baseline Field Sampling Program, Year One, Fourth Quarter 2013* (Walsh Environmental, March 2014)**					
Data gaps associated with water resources are addressed in the comment tracking table for the *Enefit American Oil Detailed Plan of Development* - dated July 18, 2014.					
***Baseline Community Analysis – Enefit American Oil* (GSB Richman Consulting, April 2014)**					
BCA General Comments			EPG	There is no assessment of the location of environmental justice populations in proximity to the project. This may be undertaken as a separate evaluation from socioeconomics, but regardless, would need to be evaluated, especially due to the presence of the Uintah and Ouray Indian Reservation. To identify potential minority and poverty populations within a specified proximity to the project area, it is necessary to provide an evaluation at a finer geographic detail (e.g., Census blocks, block groups, Tracts) in the Affected Environment.	**See *EAO Response to Data Gaps* (October 13, 2014) – Data Gap No. 1** While EOA did provide additional information on low income populations in Uintah County in their response, it is not sufficient to determine if there are EJ populations that may be impacted by the project. In order to make this determination it is necessary to examine the Census data at a finer scale (track, blocks, or block groups) closest to the project area and compare the percentage of minority or low income individuals with percentage in the state or county. This is analysis is necessary in order to conclude whether or not there are potential EJ populations in the study area which then can be used evaluate whether these populations will be impacted disproportionately by the proposed project. Note: This comment also was submitted by EPA during scoping. **See *EAO Response to Data Gaps* (January 30, 2015) – Data GAP No. 1** As of February 20, 2015, data gap addressed. No further action required.
BCA General Comments			EPG	The baseline community analysis lacks any geographic descriptions of the study area, which should include land area, population density, and land ownership (i.e., federal, state, private, Native American).	**See *EAO Response to Data Gaps* (October 13, 2014)– Data Gap No. 2** Data gap addressed. No further action required.
BCA General Comments			EPG	The baseline community analysis lacks any description of fiscal resources in the study area. The development and operations of this project could result in property	**See *EAO Response to Data Gaps* (October 13, 2014) – Data Gap No. 3** EAO did provide additional information on property taxes in their response, including a description of how property is taxed

Section	Line Number	Page Number	Commenter	EPG Comment or Text Revision	Enefit / SWCA Responses (reference added by EPG)/ EPG Comment or Text Revision to Enefit Response
				taxes to the study area. The Affected Environmental should include a description of the appropriate taxes to which the utility corridor project would be subject (e.g., property taxes) as well as the typical approach to estimate these taxes. Current property taxes levied or received by county should also be provided. For cumulative effects, a description of the taxes to which the South Project would be subject and approach to estimate these taxes should be provided.	in Uintah County. However, the discussion only considered the property taxes of the private land within the corridor and not of the transmission line. The valuation of the transmission line would be undertaken using the centrally assessed property rules provided by the Property Tax Division of the Utah State Tax Commission. Property taxes for the transmission line would be centrally assessed and collected annually by Uintah County. This information should be included in the baseline report. Additional information was provided on the sales and use tax and property tax that would result from the South Project. Additional information is needed on the approach used to estimate these taxes in order to evaluate whether or not that are reasonable. A discussion should be included in the baseline study on the tax revenues generated in Uintah county for each type of tax (e.g. sales and use, property, etc.). **See *EAO Response to Data Gaps* (January 30, 2015) – Data Gap No. 2** As of February 20, 2015, data gap addressed. No further action required.
BCA Section 2		4	EPG	Although the introduction section of Section 2 provides some description of the historic and cultural context of the region, BLM Land Use Planning Handbook Appendix D provides guidance on including social organization and institutions and attitudes and meanings. There is some description about how the communities have evolved with boom/bust cycles, but additional information could be provided on social organizations (e.g., stakeholders), interactions among various stakeholders and communities of interests (e.g., extraction and recreation), and how the communities have learned from and/or remain vulnerable to these economic cycles.	**See *EAO Response to Data Gaps* (October 13, 2014) – Data Gap No. 4** EAO indicates in their response that the BCA (Section 1.1) provides an "extensive list" of stakeholders which they have coordinated with. The list is one page and is primarily general in nature. In addition, EAO does not identify Tribes as stakeholders or if any agricultural interests were consulted. More context is needed to address how these stakeholder groups view the project, how will the project affect their way of life, and have any conflicts been identified. For instance, EAO indicated that 60% of land ownership is with the Federal government in Uintah County. Does this fact influence the opinion of any of the stakeholder groups? **See *EAO Response to Data Gaps* (January 30, 2015) – Data Gap No. 3** As of February 20, 2015, data gap addressed. No further action required.
BCA 2-6 Housing		16-17	EPG	This housing section presents relevant information to the analysis. However, the section should focus on the numbers (not percentages) of currently available housing units (for rent or for sale) for the potential construction and operational workforce. Communities in close proximity to the project location should be highlighted in terms of the number of available housing units. Additionally, this section should also provide some information on temporary lodging (i.e., RV parks, motels, and hotels) availability and the impact of the tourism season on the lodging availability. This would be relevant for housing the construction workforce.	**See *EAO Response to Data Gaps* – Data Gap No. 5** EPG will update the number of vacant housing units for each county in the EIS using the most current data available (2013 American Community Survey 3-year estimates from the Census for Uintah and Duchesne counties and 5-year estimate for Rio Blanco county). Data gap addressed. No further action required.
BCA 2-7-1 Education		20	EPG	Current enrollment in schools within the study area is provided in the assessment. However, to better understand the potential impacts to schools, additional information on enrollment relevant to school capacity in proximately schools and/or districts should be provided.	**See *EAO Response to Data Gaps* – Data Gap No. 6** EAO in their response to the request to provide additional information on the capacity of schools (districts) that may be impacted by the increase in population caused by the project did estimate that an additional 2,200 students would be expected with the operation of the South Project. In addition, they indicated that the increase in enrollment would require 95 additional teachers. However, EAO also indicated that it would be impossible to say where these students would reside and which districts would be affected. However, we believe reasonable assumptions can be made on where families of workers would reside given that very rural area which the facility would be located. It is likely that families would relocate to either Vernal (Utah) or Rangely (Colorado). EPG will evaluate the impacts on education and other socioeconomic resources in each of these communities. Data gap addressed. No further action required.

Comment Tracking Table for
Enefit American Oil Utility Corridor Project EIS
Enefit Baseline Reports - EPG Data Gap Analysis
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***Enefit American Oil Meteorological and Air Quality Monitoring Report* (TetraTech, October 2013)**					
There were no specific data gaps to note for the *Enefit American Oil Meteorological and Air Quality Monitoring Report* (TetraTech, October 2013). General data gaps associated with air quality have been identified in the comment tracking table for the *Enefit American Oil Detailed Plan of Development* (dated June 24, 2014, Pages 5-8) which accompanies this table. In addition to the comments located in the tracking table for the *Enefit American Oil Detailed Plan of Development* the BLM requests the following: • BLM requests emissions inventory information for the (1) right-of-way project and (2) surface mine and processing plant (South Project), if available. If not available, please advise BLM when Enefit expects the information to be available (even it if it is years down the road, long past the completion of the BLM EIS). BLM requires the information to determine the level of analysis in indirect/cumulative effects adequate for NEPA compliance in accordance with BLM NEPA Handbook section 6.85.2 and 40 CFR 1502.22. • BLM requests information from Enefit regarding the timing of Prevention of Significant Deterioration (PSD) modeling anticipated to be performed to support permitting for the surface mine and processing plant. BLM requests the information to determine whether the timing of the PSD modeling could be such to allow the modeling results to be referenced (and potentially support analysis) in the EIS.					**See *EAO Response to Data Gaps* – Data Gap No. 7** Data gap addressed. No further action required. **See *EAO Response to Data Gaps* – Data Gap No. 8** Data gap addressed. No further action required.
***Enefit American Oil Meteorological and Air Quality Monitoring Report* (TetraTech, March 2013)**					
			EPG	Based on an email from Enefit on August 12, 2013, a final ambient air quality modeling report is expected be received in early September. At that time, EPG will review all provided baseline information and prepare a data gap analysis.	Comment noted. The final ambient air quality report will be provided in October 2013. As of February 20, 2015, data gap addressed. No further action required.
***Preliminary Conceptual Site Model for Enefit Property, Uintah County, Utah* (CH2M Hill, January 30, 2013)**					
All	General comment		EPG	Memo identified data gaps in surface and groundwater studies. Once complete – these should be made available for review. Need to quantify the amount of water required during construction (all project components, including water pipeline and other utility lines, water treatment facilities, etc.), operation (during each stage), and ultimately, amount needed during decommissioning.	Comment noted. Data gaps identified in the CH2M Hill Conceptual Site Model are being addressed via Enefit's ongoing surface water and groundwater monitoring program. Quarterly monitoring reports, beginning with Q2 2013 for surface water and Q3 2013 for groundwater and continuing through Q1 and Q2 2014, respectively, will be submitted to the BLM as they become available. Water usage description pending Scoping Report inquiry. As of February 20, 2015, data gap addressed. No further action required.
***25-Year and 10-year Peak Flow Rates at the Enefit Site, Utah* (CH2M Hill, November 5, 2012)**					
				No data gaps identified.	
***Delineation of Waters of the U.S. and State of Utah for Enefit Oil Shale Mining and Production Complex, Uintah County, Utah* (SWCA, July 23, 2013)**					
4.2.2		9	EPG	How does a volumetric estimation of 2-year flood flow events result in information adequate to conclude the estimated OHWM height was accurate? Vegetation and erosional patterns should be adequate to determine where the OHWM is located. Was the gauge height used as a comparison such that the estimated 2-year flood flow velocity was X feet above mean sea level and flows at the time of survey were X feet above mean sea level and thus the difference in height at the gauge was then applied at the survey point to confirm field estimates? If this was the methodology used, please state that, if not, please provide a description of the methodology used. Additionally, the difference between height at the gauge and at time of surveys could be substantially different at the sample site. If the thalwag geometry at the gauge differed from the sample location, the height would also differ between the two sites. This paragraph represents inconclusive evidence to support the estimated OHWM and should potentially be omitted from the report or further clarified to support the estimate.	The 2-year flood discharge was estimated for the White River to get a rough understanding of what the discharge might look like in terms of stage. As described in the third paragraph of this section, the statistical analysis was used to determine the discharge of the 2-year flood flow, compare it to the flow at the time of the field work, and compare it to our field identification of the OHWM. For example, if the White River was flowing at 3,270 cfs at the gage on the day of field work, one could assume that the elevation of the river in the survey area would be close to the OHWM. If it was well above 3,270 cfs, the OHWM might not have been visible. SWCA recognizes that the channel geometry at the gage and survey site are different, and the statistical analysis completed by SWCA was not used as a substitute for field indicators of OHWM or a definitive identification of the discharge or stage associated with the OHWM of the White River in the survey area. As of February 20, 2015, data gap addressed. No further action required.

Section	Line Number	Page Number	Commenter	EPG Comment or Text Revision	Enefit / SWCA Responses (reference added by EPG)/ EPG Comment or Text Revision to Enefit Response
Section 5.1.1, 5.2.1, 5.3.1, 5.4.1, and 5.5.1		16–18	EPG	The State of Utah takes jurisdiction over the natural stream environment, which consists of the stream, the conveyed water, and the abutting riparian zone (upland or wetland, up to 30 feet from the bank full channel). As stated in the delineation report, the State usually assumes jurisdiction over blue-line streams which, as also indicated in the delineation report are not always jurisdictional under CWA standards. Not all waters of the State are inherently jurisdictional waters of the U.S. Additionally, if stream alteration permits have been submitted to the State Engineer and permits have not been authorized, he is still reviewing the applications and Coyote Wash may not be determined a water of the State but is likely a potentially jurisdictional water of the U.S. This section is contradictory and should be revised.	BLM: Note that the entire project area is located in Indian Country where the USACE has jurisdiction. No changes will be made to the report, which has already been submitted to USACE for their review. Enefit will also work with the State Engineer to secure relevant permits. Matters of jurisdiction may be addressed in the EIS once the USACE have issued a formal determination on the project. The EIS may acknowledge that not all waters of the State are inherently waters of the U.S. The lower reaches of the Sevier River are an example because it is considered isolated. Similarly, not all waters of the U.S. are waters of the State, especially small ephemeral streams. It is correct that the permit for Coyote Wash could have been processed as a GP 40, which applies to WOUS. However, Coyote Wash meets the definition of a water of the State and, in a situation where both a NWP and Steam Alteration permit are required, impacts to Coyote Wash in the area of jurisdiction described by EPG should be quantified for UDWRi to be processed as a State-only permit. The EIS may clarify this sentence: "They are both waters of the U.S. and waters of the State, but they are most likely regulated by the UDWRi under the Stream Alteration Program." This could be clarified in the EIS by explaining the specific conditions under which the USACE authorizes UDWRi to process permits. For example, stream bank impacts of less than 300 ft (hardened) or 500 ft (bio-engineered), no impacts to cultural resource impacts, no impacts to threatened or endangered species, and no impacts to wetlands are all conditions that, if met by the project, allow for a permit processing by UDWRi. As of February 20, 2015, data gap addressed. No further action required.
Section 5.1.1, 5.2.1, 5.3.1, 5.4.1, and 5.5.1		16–18	EPG	Apparent Jurisdictional Status: It is the authority of the USACE and UDWRi to ascertain jurisdiction of any water, not us. Using the term "potentially jurisdictional" rather than "apparently jurisdictional" is not only more accurate but also preferred by the USACE since they are acknowledged as the authorized agency in charge of making that determination. Consider revising to read "potentially jurisdictional" and let the USACE make the formal determination. Also, it is mentioned that the UDWRi has authority over RPWs and not the USACE. Ultimately, the USACE has jurisdiction over a water of the US *or* the State unless it is determined by the USACE that the water in question is not a water of the U.S., in which case the USACE would not be involved in the permitting process. All RPWs would be considered jurisdictional under the CWA and thus the USACE would hold primacy over those waters. In Utah the two agencies commonly take a cooperative role in regulating a water and can allow duel administration; such is the case of permitting impacts to waters of the US and waters of the State with the PGP40 permit. These sections should be revised.	**See *EAO Response to Data Gaps* (October 13, 2014)– Data Gap No.** The report does not authorize or make a determination. It has been submitted to the USACE for their consideration in making a final determination of jurisdictional status. We expect a conclusion will be made after the USACE reviews the delineation report. Future permit applications (to the State and the USACE) will be made on the basis of that final determination. *Comment noted. Once a final jurisdictional determination is received, please submit to BLM/EPG.* **See *EAO Response to Data Gaps* (January 30, 2015) – Data Gap No. 4** As of February 20, 2015, data gap addressed. No further action required.
Map sets			EPG	It would be beneficial to the reader to have a map tile index to refer to.	While it would be beneficial, no reissuance of the report will be made for this purpose. As of February 20, 2015, data gap addressed. No further action required.
Map 8 of 33	A-31		EPG	Map 8 of 33 shows that there could potentially be wetlands on the other side of the White River at White River 1 and 2. I didn't see a discussion in the delineation report suggesting that there could be wetlands, only that the OHWM had been estimated. This is incomplete information in the delineation report.	The report does not authorize or make a determination. It has been submitted to the USACE for their consideration in making a final determination of jurisdictional status. We expect a conclusion will be made after the USACE reviews the delineation report. Future permit applications (to the State and the USACE) will be made on the basis of that final determination. As of February 20, 2015, data gap addressed. No further action required.
Maps 9 and 10 of 33	A-33 and A-35		EPG	It appears that Evacuation Creek has a fairly developed riparian corridor but I don't see any wetland/upland sample sites to confirm that there are or are not wetlands present in the riparian corridor. This is incomplete information in the delineation report.	The report does not authorize or make a determination. It has been submitted to the USACE for their consideration in making a final determination of jurisdictional status. We expect a conclusion will be made after the USACE reviews the delineation report. Future permit applications (to the State and the USACE) will be made on the basis of that final determination.

Comment Tracking Table for Enefit American Oil Utility Corridor Project EIS Enefit Baseline Reports - EPG Data Gap Analysis *Submitted to BLM/Enefit on August 29, 2013* *EPG Updated June 24, 2014* *EPG Revised July 18, 2014* *Data Gap Responses Received from Enefit on October 13, 2014* *EPG Updated November 12, 2014* *EPG Updated (based on BLM Comments) December 29, 2014* *Data Gap responses Received from Enefit on January 30, 2015* *EPG Updated February 20, 2015*					
Section	**Line Number**	**Page Number**	**Commenter**	**EPG Comment or Text Revision**	**Enefit / SWCA Responses (reference added by EPG)/ EPG Comment or Text Revision to Enefit Response**
					As of February 20, 2015, data gap addressed. No further action required.
General			EPG	Will this report be submitted to the USACE for a jurisdictional or pre-jurisdictional determination?	BLM: Report has been submitted to USACE. Comment noted, the BLM has responded. No further response from Enefit. As of February 20, 2015, data gap addressed. No further action required.
Appendix D	D-61 and D-72		EPG	W48 and W66 photographs are the same	Comment noted. No edit will be made because this does not materially affect the content of the document. As of February 20, 2015, data gap addressed. No further action required.
Map set			EPG	It would be helpful to the reader to differentiate project facilities with separate colors to identify whether the facility in the ROW is for the transmission line, water line, oil line, NG line, etc.	This is a baseline report for the full survey area; individual utilities were not considered during the delineation effort. This should be address in the EIS. As of February 20, 2015, data gap addressed. No further action required.
Baseline data			EPG	Has a flood analysis been completed or has FEMA data been collected? I did not see those data in the Baseline Report. This is a data gap issue that needs to be included in baseline data set.	A technical memorandum entitled *25-year and 100-year Peak Flow Rates at the Enefit Site, Utah* has been prepared and will be submitted to the BLM. FEMA floodplain data should be readily available as a public data source and should be acquired by the BLM as part of the EIS drafting process. As of February 20, 2015, data gap addressed. No further action required.
Baseline data			EPG	There was no information or data on State-listed impaired waters. Evacuation creek and tributaries are impaired waters. Please include missing data.	As with FEMA floodplain data, data about State-listed impaired waters are readily available public information and should be acquired by the BLM as part of the EIS drafting process. As of February 20, 2015, data gap addressed. No further action required.
***Soils and Geology Technical Report* (SWCA, May 29, 2013)**					
1	1	1	EPG	Since the pipeline will be buried, the soils need to be evaluated to the depth of burial not just surface (A Horizon) features. Since trenching is going to be completed the review of B and C soil horizons is likely the most important feature to evaluate when determining potential site impacts.	Per the approved study plan (where five of the eight parameters specifically referenced the surface layer or measurements from the surface), the report focused on the surface soil conditions and geology. Reviewing the available data, evaluation of lower horizons may only be possible for salinity, SAR, pH, and water erosion hazard. Depending on applicant committed measures and/or mitigation (such as topsoil stockpiling), evaluation of subsurface conditions may not be needed, so no change has been made at this time, pending further BLM direction. As of February 20, 2015, data gap addressed. No further action required.
2.1	Table 1	2	EPG	Table needs to define if this is pre-disturbance or post-disturbance values. The suitability assessment will be slightly different based on timing of sampling. Please indicate the test methods that should be used to predict parameters (i.e. EC (Saturated Paste)). Different test methods can lead to different results and conclusions.	Per the description of methods in Section 2.1, this was a baseline assessment of existing condition using NRCS soils data. No field methods were used or proposed to predict parameters or conditions. No change made to report. As of February 20, 2015, data gap addressed. No further action required.
2.1	Table 1	2	EPG	Kw is the correct erosional factor to use if we are reviewing non-disturbed adjacent properties. Kf should be evaluated to predict potential impacts of the disturbed soils since the rock content may be different in the disturbed soils especially under the pipeline installation scenario. Please provide appropriate Kf values for disturbed sites.	As noted above, this report provided only baseline values for the existing condition (undisturbed), based on available NRCS data. It is expected that the EIS will predict values post-disturbance. This approach is consistent with the “Enefit American Oil Baseline Surveys: Geology and Soils Study Plan” reviewed and approved by the BLM in March 2013. As of February 20, 2015, data gap addressed. No further action required.
2.1	Table 1	2	EPG	Please update the pH, EC, SAR, Soil Texture, Saturation %, CaCO3 %, Coarse Fragments % Erosion Factor, Boron, and Selenium, parameters to a citable and	The report uses the parameter values stipulated in the “Enefit American Oil Baseline Surveys: Geology and Soils Study Plan” reviewed and approved by the BLM in March 2013. These values were based on the referenced extension (SSE), which is no

Section	Line Number	Page Number	Commenter	EPG Comment or Text Revision	Enefit / SWCA Responses (reference added by EPG)/ EPG Comment or Text Revision to Enefit Response
				scientifically justifiable soil characterization source such as the Office of Surface Mining, Reclamation and Enforcement on Federal Lands. These non-referenced numbers cannot be adequately reviewed, please provide the entire reference for these parameters. I could not find the cited source and could not confirm the numbers. Please provide source and scientific justification for values used.	longer active/available but was developed and used by the BLM. Here is a more complete reference for the SSE tool: *Bureau of Land Management (BLM). 2000. Soils Suitability Extension (SSE), v1.0. An ArcView tool developed by the BLM for the management of soils. BLM National Science and Technology Center, Denver, Colorado.* This tool is described and can be accessed at www.blm.gov/nstc/resourcenotes/respdf/RN49.pdf As of February 20, 2015, data gap addressed. No further action required.
2.1	Table 1	2	EPG	Footnote 1 cannot be located. We will need SWCA to provide this extension if desired. The extension does not appear to contain scientifically justifiable data based on other governmental sources obtained from the Office of Surface Mining or US Forest Service therefore I suggest not using the extension at this time.	SWCA has provided the base data used per the approved study plan. The EIS may use a different approach if the BLM determines that is needed. See response immediately above that makes the point that the extension itself was not used; the parameters specified in the study plan and used in the report were based on the extension. As of February 20, 2015, data gap addressed. No further action required.
2.1	Table 1	2	EPG	The droughtiness restrictive feature does not make sense as it appears that they are talking about the total water holding capacity to 100 cm but both the footnote and parameter column are discussing AWHC in terms of cm/cm. Need to clarify. If it is total available water holding capacity to 100 cm, 10 cm is not likely to be sufficient in this climate. Please provide references for this 10 cm number.	As specified in Table 1, the values are based on AWS. AWS was calculated to 100 cm. From the NRCS: *Available water supply (AWS) is the total volume of water (in centimeters) that should be available to plants when the soil, inclusive of rock fragments, is at field capacity. It is commonly estimated as the amount of water held between field capacity and the wilting point, with corrections for salinity, rock fragments, and rooting depth. AWS is reported as a single value (in centimeters) of water for the specified depth of the soil. AWS is calculated as the available water capacity times the thickness of each soil horizon to a specified depth.* Please see responses above regarding the methods and identification of parameters (in the study plan phase). As of February 20, 2015, data gap addressed. No further action required.
2.1	Table 1	2	EPG	Please define what was used to determine the “Reclamation Potential” parameter. Need to make sure that SWCA changes the “co**u**rse” fragments to “co**a**rse” fragments. This is just a typo.	The reclamation potential parameter could no longer be considered since the SSE is no longer active and was included in Table 1 in error. Please note that it was not included in Table 3 (results) and should not be used for evaluation in the EIS. Other parameters were calculated using the data ranges from the SSE, but were evaluated without the extension itself. Thank you for catching the typo. Please address it in the EIS. As of February 20, 2015, data gap addressed. No further action required.
2.3	6	11	EPG	Most of the individual reclamation limitation parameters are either low or moderate but most of the soil map units have at least one parameter in the table that is High which would make the entire soil High. The report needs to update to account for the most limiting parameter in the table.	The statement identified is meant to be general, and is made more specific by the information in Table 3 and the maps. No change has been made to the report. Additional detail from the table and maps can be added to the EIS. As of February 20, 2015, data gap addressed. No further action required.
2.3	Table 3	13	EPG	Minor soil map unit components need to be evaluated as a portion of this table. In instances where there is a map unit “Walknolls-Bullpen association” both the Walknolls and Bullpen soil series need to be evaluated against the suitability criteria.	Per the approved study plan, all mapping and analysis was done at the map/soil unit scale, rather than by series. This is the most discrete unit of mapping we had available, and thus the most site-specific for this project. As of February 20, 2015, data gap addressed. No further action required.
2.3	Table 3	13	EPG	The data in Table 3 is suspect and needs to be reevaluated, most evident by the soil unit “water” had some categories calculated. This indicates that the database is possibly corrupt and the entire table is therefore suspect. The table needs to be recalculated	The presence of restrictiveness ratings for “water” is not an indication of corruption; rather it is because the NRCS provides depth and water supply values for water polygons. It can be omitted from the EIS.

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				using soil science reclamation standards. The current soil suitability as identified in Table 3 is not sufficient as noted previously.	Please see responses above related to the methodology and selection of parameter values. As of February 20, 2015, data gap addressed. No further action required.
***2012 Raptor Nest Survey Utah Oil Shale Project* (CH2MHill October 11, 2012)**					
1.0	N/A	1	EPG	Please add more detail on habitat as the reviewer or reader may not have access to the cited report 2012 Greater Sage-Grouse Lek Survey Report (CH2M Hill 2012).	The cited report has been submitted to the BLM as part of Enefit's baseline data collection and therefore should be part of the administrative record. No edits will be made to the submitted CH2M Hill report. As of February 20, 2015, data gap addressed. No further action required.
1.0	N/A	1	EPG	It appears that the entire analysis area was not surveyed and some of the utility corridors were excluded. Please clarify why. As it stands, this is a significant data gap that needs to be addressed.	The data gap identified in the cited (CH2M Hill) report was addressed in SWCA's 2013 raptor nest surveys, which were inclusive of all ROW areas (see Raptor Analysis Area in figure C-5 of the *Special Status Wildlife Species Technical Report*. As of February 20, 2015, data gap addressed. No further action required.
2.0	N/A	2	EPG	Did the team encounter any flushing by the nesting raptors when approached by the helicopter? If so, it should likely be discussed if observed.	The cited report has been submitted to the BLM as part of Enefit's baseline data collection and therefore should be part of the administrative record. No edits will be made to the submitted CH2M Hill report. As of February 20, 2015, data gap addressed. No further action required.
***General Vegetation Characterization and Noxious Weeds Inventory Technical Report* (SWCA, July 26, 2013)**					
	Throughout	All	EPG	Recommend using consistent terminology for "vegetation communities." The terms 'vegetation types', 'habitat types', 'land cover types', 'land cover classes', 'cover types', etc. are used nearly interchangeably. If these various terms are to be used, they should be defined more precisely (e.g., "land cover classes" for when SWReGAP is referenced, "vegetation communities" for what was actually mapped at the site, etc.) There is probably no need to use the word "habitat" since this document is not reporting results of species-specific surveys.	Report has been revised with clear terminology and definitions for SWReGAP versus actual mapped vegetation throughout. As of February 20, 2015, data gap addressed. No further action required.
2.2.1	First paragraph	4	EPG	Recommend elaborating on how, specifically, "land cover, terrain, and existing disturbance and development" was used to determine potential for weed occurrences.	As stated in the report, potential weed locations were identified based on the assumption that noxious weed infestations predominate along roadways are in proximity to areas of disturbance. For this reason, aerial imagery (terrain) and SWReGAP disturbed land cover types were targeted specifically for noxious weeds. Nevertheless, noxious weed surveys were conducted throughout the vegetation analysis area. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
3.1.2	Second paragraph	6	EPG	Why state that "white shale badlands were characterized as part of SSS documentation"? The significance of this statement is unclear, as is its intended meaning. Also- should "white shale badlands" be capitalized as it is one of the SWReGAP land cover types?	The vegetation characterization report provides information that supports the *Special Status Plants Species Technical Report*, so the methods for delineation of white shale badlands and resulting distributions need to be included in the document. White shale badlands is not a SWReGAP cover type. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
3.2.1 and 3.2.2	Table 4 on page 8; last paragraph on page 10	8 and 10	EPG	The stated number of weed species with potential to occur in the analysis area is different in these two areas.	The report has been revised with the correct number of potential weed species throughout. As of February 20, 2015, data gap addressed. No further action required
***Revised General Vegetation Characterization and Noxious Weeds Inventory Technical Report* (SWCA, November 2013)**					
			EPG	All data gaps have been addressed in revised report. No additional data gaps identified.	

Comment Tracking Table for
Enefit American Oil Utility Corridor Project EIS
Enefit Baseline Reports - EPG Data Gap Analysis

Submitted to BLM/Enefit on August 29, 2013
EPG Updated June 24, 2014
EPG Revised July 18, 2014
Data Gap Responses Received from Enefit on October 13, 2014
EPG Updated November 12, 2014
EPG Updated (based on BLM Comments) December 29, 2014
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EPG Updated February 20, 2015

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***Wildlife Habitat Characterization Technical Report* (SWCA, July 26, 2013)**					
3.1.2	Table 3	8	EPG	There are several bat species not listed on this table. I would recommend a table for Reptiles and Amphibians; and Fish.	Comment noted. This should be addressed in the EIS, as this type of information can be included in Chapter 3 Affected Environment. No revision to the report will be made. As of February 20, 2015, data gap addressed. No further action required.
			EPG	General observation: This report seems more geared towards wildlife species over habitat.	Comment noted. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
Greater Sage-grouse Lek and Habitat Survey EAO Oil Shale Project (CH2M Hill, April 2012)					
CH2M Hill Report	NA	NA	EPG	The background outline of the "Project Area" that it appears to be based on does not match my understanding of the project area we are evaluating in the EIS, and notably they did not survey the utility corridor. I compared the survey area with the UDWR/BLM maps of priority habitat, and it appears that surveys were conducted outside of the area identified by BLM and UDWR as sage-grouse habitat (which probably explains some of their observations about suitability)… but they also did not survey areas that have been identified as suitable habitat crossed by and adjacent to the utility corridor. They appear to have used the correct shapefiles to identify priority habitat (looking at the figures). This is a significant data gap issue.	This study was completed in 2012, prior to Enefit establishing the proposed utility corridors and/or defining the project. It was provided for informational purposes only, as it covers the Enefit South area and parts of the proposed utility corridor. The 2013 survey was specific to this application. No edits to the 2012 study will be made. As of February 20, 2015, data gap addressed. No further action required.
CH2M Hill Report	NA	NA	EPG	There is a historic lek on the Enefit property. It seems like this lek site should at least have been investigated in the survey, and it does not appear that it was. No discussion as to why or why not provided.	See above response.
CH2M Hill Report	NA	NA	EPG	The survey was only performed within 2 miles of the project. BLM has required 4 miles on other projects, provided suitable habitat exists. The BLM Vernal RMP states 2 miles is the requirement, but BLM has been informally been using 4 miles. Plus, BLM will require the impact analysis to go out 4 miles, at a minimum.	See above response. Also, the 2013 survey covered a 4-mile buffer. As of February 20, 2015, data gap addressed. No further action required.
SWCA	NA	NA	EPG	It appears that SWCA did a sage-grouse survey in 2013, that was based on the correct buffers, but there appears to be no report provided, just GIS data.	The SWCA sage-grouse survey completed in 2013 is addressed in the document *Special Status Wildlife Species Technical Report*. As of February 20, 2015, data gap addressed. No further action required.
***Special Status Plant Species Technical Report* (SWCA, July 26, 2013)**					
	Throughout	All	EPG	The recent USFWS proposed rule to list Graham's and White River beardtongues states that "The (Enefit) project area overlaps 19 percent of all known Graham's beardtongue plants and 26 percent of all known White River beardtongue plants." This is not consistent with findings of these surveys- 117 Graham's beardtongue individuals is only 0.4% of all known individuals and 413 White River beardtongue individuals is only 3.6% of all known individuals (as reported in the proposed rule to list). This is a large discrepancy and a significant data gap. The proposal to list these species cites a document that described GIS analysis of occurrences of these species: Service, U.S. Fish and Wildlife. 2013. *Penstemon grahamii* and *Penstemon scariosus* var. *albifluvis* GIS Analysis Vernal, Utah: Utah Ecological Services Field Office, Energy Pilot Office: U.S. Fish and Wildlife Service. 14 pages.	The recent USFWS proposed rule clearly does not contemplate Enefit's/SWCA's recently completed surveys and reporting. Enefit believes the proposed rule was drafted before the survey and reporting were completed and submitted to the BLM and the Utah Natural Heritage Program. Enefit recommends that the BLM contact the USFWS to address this data gap, because Enefit does not currently have access to the sensitive species locational data used in the proposed rule. As of February 20, 2015, data gap addressed. No further action required.

Section	Line Number	Page Number	Commenter	EPG Comment or Text Revision	Enefit / SWCA Responses (reference added by EPG)/ EPG Comment or Text Revision to Enefit Response
				The data used for the USFWS analysis should be consulted to better determine extents of occurrences of these species in the analysis area, which are likely to be very different than the results of these surveys.	
2	4	3	EPG	Recommend either 1) replacing the word "ranges" with "occurrences" as UNHP data is discreet points, not extents of habitat, or 2) clarifying that ranges were identified using UNHP occurrence data.	The term "range" is used in reference to the geographical distribution of the species; the term "occurrence" is used in reference to a specific location of the species. The terms are not used interchangeably. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
2	5, throughout	3	EPG	"Potential habitats" are referenced throughout the document. How were potential habitats determined? It is not clear from the document whether: a) known occurrences (UNHP) were overlain with SWReGAP cover types and geology layers to determine which of these constituted potential habitat (as it seems in the second sentence of the last paragraph of page 3), b) habitat descriptions from literature (i.e. UNPS 2003-2013, USFWS 2011, Barneby 1989, Welsh et al. 2008, Goodrich and Neese 1986) were used to determine which SWReGAP vegetation categories and geology layers constituted potential habitat (as it seems from Table 1 and other places), c) habitat layers (known, potential, etc.) were provided by the agencies (as it seems from Table 2 and other places), or d) a combination of the above. Recommend making explicit statements regarding methods for determining "potential habitat," especially if methods varied by species. This information might be well-suited to a table.	As stated in the results and discussion sections, SWReGAP does not recognize white shale habitats or surrounding shale badlands. The results also state that geology and soils layers, while generally predictive, did not precisely predict distributions of occupied or potential habitat areas. Potential habitats were determined based on a combination of pre-field desktop analyses of available land cover and species occurrence data and field surveys of known locations and white shale badlands (and surrounding habitats) based on: 1) the SWCA field botanist's expertise and field experience with these species and 2) definitions of habitat associations from the literature and agency documents. Section 2.1 states how potential habitats were determined during pre-field analyses. Section 2.2 states that potential habitat areas were visually assessed. See BLM 2012a and BLM 2012b (as cited in the technical report) or the Vernal RMP (BLM 2008) for more detailed discussion of potential habitat definitions for the target species. This response should be sufficient to support EIS analyses. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
2.1	Approx. 25	3	EPG	Is UNHP data the only data referenced for this area? What about BLM data?	SWCA used the UNHP data. The BLM data are submitted to UNHP, so the two data sets should reflect largely the same distributions except for minor potential differences due to limited recent updates to the UNHP data. SWCA also relied on known locations mapped as part of services to other clients. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
3.1	Table 3	6	EPG	Uinta Basin hookless cactus is spelled incorrectly.	Comment noted. No revisions have been made to the report to address this typographical error. As of February 20, 2015, data gap addressed. No further action required.
3.1	Table 3	6	EPG	Where is the location of the known occurrence(s) of Uinta Basin hookless cactus? This species was not present in the analysis area using the UNHP data I explored.	The cited species occurrence is from previous surveys conducted by SWCA for other clients. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
2.1	Second-to-last sentence, last paragraph	3	EPG	The text "compiled in a GIS" should be changed to "compiled using GIS technology" or similar. Doesn't make sense to say "compiled in a Geographic Information Systems."	The acronym GIS is not necessarily plural in all cases. In this instance, the data was compiled in a geographic information system. Regardless, the comment is noted and does not warrant a revision to the original report, as is it editorial in nature and does not affect the overall usability of the document. As of February 20, 2015, data gap addressed. No further action required.
2.1	Second-to-last sentence, last paragraph	3	EPG	Is "additional data from previous rare plant surveys" different than UNHP occurrence data? If not, use consistent terminology.	Yes. See comment above. SWCA possesses data from survey work that has not been updated in the UNHP database since 2010. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.

Comment Tracking Table for Enefit American Oil Utility Corridor Project EIS Enefit Baseline Reports - EPG Data Gap Analysis *Submitted to BLM/Enefit on August 29, 2013* *EPG Updated June 24, 2014* *EPG Revised July 18, 2014* *Data Gap Responses Received from Enefit on October 13, 2014* *EPG Updated November 12, 2014* *EPG Updated (based on BLM Comments) December 29, 2014* *Data Gap responses Received from Enefit on January 30, 2015* *EPG Updated February 20, 2015*					
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2.2	1–2, throughout	4	EPG	Recommend providing greater specificity of how survey locations (habitat areas) were determined (roughly the same comment as #3 above).	See response to #3 *Special Status Plant Species Technical Report* above. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
2.2	1–2, throughout	4	EPG	Recommend changing “known species distributions” to “known species occurrences.”	Recommendation noted. This can be addressed in the EIS because it does not materially affect the content of the report. As of February 20, 2015, data gap addressed. No further action required.
2.2	1–2, throughout	4	EPG	Expound on “habitat mapping”- is this agency-provided habitat mapping, and if so, for which species? Recommend making the distinction between “habitat mapping” as provided by agencies and “habitat” that is only called “habitat” because it matches descriptions of vegetation communities, geology, etc. in relevant literature.	No agency-provided habitat mapping was used. The term “habitat mapping” as used in the technical report refers to mapping habitat during on-the-ground surveys, in other words, the act of delineating the distribution of a particular habitat based on the vegetation community, bedrock geology, slope, aspect, or other defining features. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
2.2	First paragraph, throughout	4	EPG	The term “general vegetation habitat characterization” is used. Recommend substituting “general vegetation characterization” to be consistent with general vegetation technical report.	Recommendation noted. This can be addressed in the EIS because it does not materially affect the content of the report. As of February 20, 2015, data gap addressed. No further action required.
2.2	Approx. 16	4	EPG	The text “digitized in a GIS” should be changed to “digitized using GIS technology” or similar.	See comment above. No change made. As of February 20, 2015, data gap addressed. No further action required.
2.2	Approx. 19	4	EPG	When was negative species occurrence data collected? Opportunistically throughout potential habitat (however that was determined), or at UNHP sites that were unoccupied, or both? Recommend stating explicitly.	All species occurrences were documented. Negative species occurrence data = previously documented occurrences (UNHP) in the survey area that were not occupied at the time of survey. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
3.1	Table 1	5	EPG	Recommend showing how habitat descriptions from literature translated into geology types, SWReGAP land cover classifications, etc. IF this is the method that was used to determine potential habitat (perhaps in a new column at the end of the table).	As stated in the results and discussion, SWCA did not find publically available geology or soils data to be useful in predicting occupancy. Furthermore, SWReGAP land cover was not used to delineate habitat. See potential habitat discussion above. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
3.2	Table 4	8	EPG	This table is what makes me think that agency-provided habitat shapefiles were used to determine survey areas, but it would be good to make this clearer if it is the case. Or were UNHP data points used to determine “occupied habitat,” and this is the extents presented in Column 4? Needs to be clarified.	There are no unbuffered shapefiles of potential habitat available for these species. Potential habitat acres were based on field-mapped vegetation types and land cover. Occupied habitat areas comprise field-verified habitat polygons occupied by the target species. In some cases, a given habitat polygon contained more than one target species. Occupied habitat areas reflect a 300-foot buffer around plant locations identified during field surveys. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
3.2	Table 4	8	EPG	It is apparent that USFWS *Sclerocactus* habitat polygons were used to determine potential habitat for Uinta Basin hookless cactus (though this is not stated explicitly in the document). Were known occurrences of this species found throughout the polygon? If not, how can the same number be in both the “known-occupied areas” column and the “potential habitat” column?	The USFWS 2013 *Sclerocactus* habitat polygon is cited as the source used to define potential habitat for the species (Section 3.2.6). No cacti were found during surveys of *Sclerocactus* habitats in the vegetation analysis area, but the USFWS defines the entirety of the *Sclerocactus* habitat polygon as “known occupied,” so the acres surveyed fit both categories. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
3.2	First paragraph	9	EPG	Recommend moving this paragraph to the beginning (in place of the second paragraph) of this section. Also, recommend stating explicitly why this cover type was the focus of surveys (matches descriptions in literature, as a result of GIS overlay of known locations [probably not, since SWReGAP info was so incorrect], as a result of agency consultation, etc.?). Can refer to Table 1 if the new column is added as recommended.	Paragraph will be moved as requested. See discussion of potential habitat determination in comments above. Per responses above, Table 1 has not been revised. As of February 20, 2015, data gap addressed. No further action required.
3.2.1	Last paragraph	9	EPG	Is “white shale potential habitat” the same as “White Shale Badlands”? If so, recommend using consistent terminology.	All white shale badlands were treated as potential habitats for the target special status plant species for purposes of field surveys. No revisions have been made to the report.

Comment Tracking Table for Enefit American Oil Utility Corridor Project EIS Enefit Baseline Reports - EPG Data Gap Analysis *Submitted to BLM/Enefit on August 29, 2013* *EPG Updated June 24, 2014* *EPG Revised July 18, 2014* *Data Gap Responses Received from Enefit on October 13, 2014* *EPG Updated November 12, 2014* *EPG Updated (based on BLM Comments) December 29, 2014* *Data Gap responses Received from Enefit on January 30, 2015* *EPG Updated February 20, 2015*					
Section	**Line Number**	**Page Number**	**Commenter**	**EPG Comment or Text Revision**	**Enefit / SWCA Responses (reference added by EPG)/ EPG Comment or Text Revision to Enefit Response**
					As of February 20, 2015, data gap addressed. No further action required.
3.2.6	Last paragraph	22	EPG	Were known UNHP occurrences shown to exist in this area? If so, recommend stating that these sites were visited and no individuals were located.	Yes. UNHP records of plant occurrences were revisited as part of special status plant species surveys. In some cases, the occurrence was not re-located. The results maps submitted to the agency can be compared to the UNHP data to reflect those findings. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
3.2.6	Last paragraph	22	EPG	Recommend elaborating on the specifics of "one hundred percent surveys".	As noted in the methods section, field surveys for special status plant species followed the guidelines defined in USFWS 2011. Surveys covering 100% of the USFWS habitat polygon are required, per the 2011 guidelines. Further elaboration is available in that document. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
3.2.6	Last paragraph	22	EPG	An explanation of having used the 2013 USFWS Sclerocactus habitat polygon to determine potential habitat for this species should be given earlier in the document, perhaps as a table that presents this information for all species.	USFWS 2011 survey requirements are cited throughout the document. The USFWS 2011 guidelines detail the survey requirements for each species, including *Sclerocactus*. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
4	First paragraph	23	EPG	Recommended rewording of paragraph for clarity: One federally listed plant species (*Sclerocactus wetlandicus*), two plant species proposed for federal listing (*Penstemon grahamii*, *P. scariosus* var. *albifluvis*), and three BLM sensitive plant species (*Cryptantha barnebyi*, *Townsendia strigosa* var. *prolixa*, and *Yucca sterilis*) were determined by SWCA to have the potential to occur in the analysis area. Occurrences of *Cryptantha barnebyi*, *P. grahamii*, *P. scariosus* var. *albifluvis*, and *Sclerocactus wetlandicus* have been previously reported in the analysis area (UNHP 2010). Habitat for *Cryptantha barnebyi*, *Townsendia strigosa* var. *prolixa*, and *Yucca sterilis* was determined to occur in the analysis area despite occurrences of these species not having been previously reported.	The recommendation is noted; however, this can be addressed in the EIS. No report revisions have been made. As of February 20, 2015, data gap addressed. No further action required.
4	First paragraph	23	EPG	The document does not ever go into detail about what was found on-the-ground when known occurrences were visited. Recommend adding this information.	The habitat conditions for each species are summarized in the associated tables. The data sheets for each documented occurrence with site-specific information are included in the appendices. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
4	Last paragraph	23	EPG	Content seems out of place- this level of detail would be better suited to the results section. May be more appropriate after the paragraph describing White Shale Badlands (currently on page 9).	Comment noted. This can be addressed in the EIS because it does not materially affect the content of the report. As of February 20, 2015, data gap addressed. No further action required.
***Revised Special Status Plant Species Technical Report* (SWCA, November 2013)**					
			EPG	All data gaps have been addressed in revised report. No additional data gaps identified.	
***Special Status Wildlife Species Technical Report* (SWCA, July 26, 2013)**					
2.1	N/A	3	EPG	General Vegetation Characterization report not provided.	The report titled *General Vegetation Characterization and Noxious Weeds Inventory Technical Report* was provided as part of the baseline dataset. As of February 20, 2015, data gap addressed. No further action required.
2.2	N/A	5	EPG	Has the additional reports for big free-tailed bat been completed? If so, can a copy be provided? There is also reference to an addendum to the SSS report. Is that completed and if so is it available?	The addendum report consists of the methodology and results of the big free-tailed bat survey. This was provided to the BLM on 8/13/13, along with an updated geodatabase that included the relevant spatial data.

Comment Tracking Table for Enefit American Oil Utility Corridor Project EIS Enefit Baseline Reports - EPG Data Gap Analysis *Submitted to BLM/Enefit on August 29, 2013* *EPG Updated June 24, 2014* *EPG Revised July 18, 2014* *Data Gap Responses Received from Enefit on October 13, 2014* *EPG Updated November 12, 2014* *EPG Updated (based on BLM Comments) December 29, 2014* *Data Gap responses Received from Enefit on January 30, 2015* *EPG Updated February 20, 2015*					
Section	**Line Number**	**Page Number**	**Commenter**	**EPG Comment or Text Revision**	**Enefit / SWCA Responses (reference added by EPG)/ EPG Comment or Text Revision to Enefit Response**
					As of February 20, 2015, data gap addressed. No further action required.
5.1	Table 6	12–13	EPG	Difficult to determine "bolded" species in .pdf table	Comment noted. No change made. As of February 20, 2015, data gap addressed. No further action required.
5.2.2	Table 7	15–16	EPG	Were raven nests included in Raptor nest table? Recommend those be excluded.	Table 7 displays nests that were inactive at the time of survey, so it is unknown whether they would be used by ravens at some future date. Inactive nests were assigned to size classes (described in Section 5.2.1), one of which was Buteo/Raven. As described in Section 5.2 of the report, "nests occupied by raven and Canada goose have potential for raptor species to use the nest locations in subsequent years, and were therefore documented in the survey." In other words, because raptors may use these nest locations in the future, they are considered to be potential raptor nesting habitat. They are included so that they can be resurveyed as appropriate during the breeding season immediately prior to construction to confirm that they are not being used by raptors. As of February 20, 2015, data gap addressed. No further action required.
5.2.2	Table 8	18	EPG	Recommend removing Canada goose from table.	Recommendation noted. This can be addressed in the EIS because it does not materially affect the content of the report. Also, see response above regarding nests occupied by raven and Canada goose. As of February 20, 2015, data gap addressed. No further action required.
***Visual and Noise Resources Technical Report* (SWCA, July 23, 2013)**					
2.1		2	EPG	Need to describe what criteria the 10 mile "survey area" for visual resources was based upon for defensibility. Was it based on the mine facilities, the t-line, etc.?	The report has been revised to include the criteria for the survey area boundaries. As of February 20, 2015, data gap addressed. No further action required.
2.2.		2	EPG	This technical report does not describe the affected environment associated with scenery potentially affected by the Project (i.e., Scenic Quality Rating Units) or the other components of the Vernal Field Office's Visual Resource Inventory. This is a significant data gap that needs to be addressed. It appears that due to the limited number of viewing locations in this area, the KOPs could cover off on analyzing impacts on viewing locations with the addition of a KOP at Duck Rock recreation site.	The technical report references the VRI, which is available for use in the EIS. The technical report was developed before scoping was conducted. It was assumed that additional/alternate KOPs might be identified during scoping and following the finalization of alternatives to be added at a later date. This information could then be reflected in the EIS. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
2.2		3	EPG	"Visual simulations may be helpful for making a final determination on project visibility, especially if the project is in the background or 5 or more miles from the KOP" Typically, simulations are developed to display potential effects resulting from a project as well as confirming compliance with BLM VRM Class objectives and supports/augments the contrast assessment. The assessment of visibility at this distance with visual simulations is usually reserved for viewpoints of national significance such as National Parks, National Monuments, National Scenic or Historic Trails, etc.	Comment noted. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
2.2		3	EPG	Due to the inaccessibility of the Rector Ridge KOP, has this been removed from analysis of the project?	Yes, it was removed from analysis in this report. However, after assessing the scoping material, there can be discussions with Enefit about collecting additional data. Additional KOPs could be added and could include Rector Ridge if safe access can be identified. As of February 20, 2015, data gap addressed. No further action required.
2.2		3	EPG	The identification of KOPs, and the contrast rating analysis, is first and foremost to	The KOPs were selected based on discussions with the BLM. These discussions did not identify Duck Rock as a desired

Section	Line Number	Page Number	Commenter	EPG Comment or Text Revision	Enefit / SWCA Responses (reference added by EPG)/ EPG Comment or Text Revision to Enefit Response
				identify compliance or noncompliance with BLM VRM Class objectives. As such, why was there no KOP identified at the Duck Rock recreation site (and overlook) on the White River which would have unobstructed views of the Project traversing BLM VRM Class II lands from approximately 0.75 mile away? This KOP could also be used to aid in the discussion of impacts on the White River SQRU (Class A) since the river crossing would be visible from this location.	location for a KOP. As noted before, additional/alternate KOPs can be evaluated based on scoping and alternatives development. As of February 20, 2015, data gap addressed. No further action required.
2.3.3		10	EPG	"…include very distant views of cliffs that create a very weak contrast due to the color and line". Visual contrast, as described from KOP locations, is based on the level of modification to the existing landscape's form, line, color, and texture resulting from a project. Existing features could not "contrast" with the other existing features in the landscape since they are the basis for analyzing the project's level of impact (contrast). Revise incorrect text.	Report has been revised to eliminate any suggestion of contrast. As of February 20, 2015, data gap addressed. No further action required.
2.3.3		10	EPG	"This KOP was selected because it is one of the few accessible points to the northwest of the survey area, is a former IOP, and was recommended by the BLM" <u>Global Comment for All KOP descriptions</u> There needs be a more definitive discussion of why this KOP (and others throughout this report) was selected. Typically the selection of a KOP is based on usage of the road(s) or viewing feature (i.e. recreation land use, residence, etc.) in context with the sensitivity of the viewer's using the using the feature. Also, the number of users and management of a feature plays into the selection of KOPs. This is key to set up the context for the contrast and impact assessment. Since this is for a BLM EIS there is no need to say the BLM recommended the KOP as all KOPs should be approved by the BLM (including non-BLM KOPs as well [i.e., on private or state-administered lands]). IOPs are used for inventory purposes only and do not reflect impacts associated with a particular project (see VRM training manual).	Each KOP description includes a sentence documenting the rationale for its selection. This effort was a preliminary look by Enefit at likely KOPs. This survey was conducted before scoping and without alternatives. It was always understood that these initial KOPs would need to be refined. All of the KOPs were selected based on the usage of the roads, viewing features, and the number of users, as per discussions with the BLM. Because this was a stand-alone baseline data report prepared under contract to Enefit (and not the third-party EIS), we felt it important to note that the BLM had been involved in the selection of the KOPs. No change made. As of February 20, 2015, data gap addressed. No further action required.
2.3.4		11	EPG	<u>Global Comment</u> KOPs are not designated with or as a VRM class. KOPs occur within a landscape unit that has been assigned a management class and associated objective. The KOPs are used to assess whether a project is in compliance with the VRM Class for which is located. The fact that the KOP is on Class II designated lands is inconsequential. If the KOP has views of Class II lands on which the project is located would be of consequence and should be documented as such. The text is not clear regarding which project element may be visible and what VRM Class that visible element would be located on. Please review and revise text descriptions accordingly for inventory section.	The text has been revised to show that the KOPs "occur" in a particular VRM class and are not "designated" as that class. It would be out of process (and out of the scope of this report) to try and determine which project elements may be visible. This is reserved for the EIS. As of February 20, 2015, data gap addressed. No further action required.
2.3.6		13	EPG	<u>Global Comment</u> "…Goblin City, there is a remote possibility that the survey area would be visible in	This preliminary statement regarding visibility and contrast was intended to describe the utility of this KOP and to assist the EIS writer with analysis. This information should be used with discretion, and it is understood that formal impact statements will be developed for the EIS.

Section	Line Number	Page Number	Commenter	EPG Comment or Text Revision	Enefit / SWCA Responses (reference added by EPG)/ EPG Comment or Text Revision to Enefit Response
				the distance. However, it is anticipated that because the survey area is 10 miles away and any contrasts created by the project would be weak, it would be virtually undetectable." Impact statements should not be made in the inventory. If the project may be seen than an explanation of the landscape and its condition should be described. Saying contrast would be weak at this point is premature (i.e., before an assessment has been conducted and described) and should be described in the impact assessment portion of this report.	As of February 20, 2015, data gap addressed. No further action required.
2.3.7		15	EPG	When a BLM VRM Class was identified for each KOP, was that based on the location of the KOP itself or does it correspond with the area potentially crossed by the Project viewed from the KOP? The latter is what should be used to identify compliance with BLM VRM Class objectives.	Please see the response to the comment in Section 2.3.4 As of February 20, 2015, data gap addressed. No further action required.
2.3.7		15	EPG	<u>Global Comment</u> KOPs can be static or linear. In this regard, does the road that this KOP represents get closer to the utility corridor or other areas of the Project? If so the description for the road should be further developed to account for a characterization of other points of the road (unless the roads views and setting don't change in context of the visibility of the project). This comment is relevant to all road KOPs.	As recorded, each of the documented KOPs was considered to be a static point. However, the report has been revised to include a more developed description of the roads, where applicable. As of February 20, 2015, data gap addressed. No further action required.
Appendix B			EPG	If available, please provide the KOP contrast rating worksheets in a digital format.	They are attached to the PDF version of the report as Appendix B. As of February 20, 2015, data gap addressed. No further action required.
Appendix B			EPG	The location sketch is typically a plan view graphic that displays the KOP location and the project in context with local landscape features (i.e., USGS topographic map).	This is a baseline characterization. It would have been out of process to attempt to incorporate the project in context with the local landscape features. The BLM and the contractor will tackle that task after the alternatives are finalized. The coordinates for each KOP were provided in a GIS format, as well as mapped (in plan view) in the report. As of February 20, 2015, data gap addressed. No further action required.
Appendix B			EPG	"Visual simulation are necessary for verification" Is the plan to develop these simulations? If not, this text should be removed to avoid confusion to the reader.	Comment noted. No report revisions have been made because this does not materially affect the content of the report. This can be addressed in the EIS. As of February 20, 2015, data gap addressed. No further action required.
	NA	NA	EPG	Noise resources baseline report - no comments. Information in report is adequate for use in EIS.	Comment noted. No response required. As of February 20, 2015, data gap addressed. No further action required.
Appendix B			EPG	Please have Enefit remove my name and replace it with my position within the Visual and Noise resources Technical Report.	"Jason West" has been replaced with "Recreation Specialist" in the sentence in question. However, as per reference protocol, his name has been retained in the personal communication reference. As of February 20, 2015, data gap addressed. No further action required.
Appendix B			EPG	Rector Ridge is not a dangerous road and a secondary effort should be made to incorporate it as a KOP with an additional field visit.	The decision whether to incorporate Rector Ridge as a KOP can be determined by the BLM and Enefit per the responses above about adding/revising KOPs following scoping and alternatives development. We would want to work with the BLM to ensure that we understand the best route to ensure crew safety. As of February 20, 2015, data gap addressed. No further action required.
***Revised Visual and Noise Resources Technical Report* (SWCA, November 2013)**					
3 and 4		throughout	EPG	After review of the revised *Visual and Noise Resources Technical Report* (SWCA, November 2013), all data gaps identified in August 2013 have been addressed except	**See *EAO Response to Data Gaps* – Data Gap No. 9** Data gap addressed. No further action required.

Section	Line Number	Page Number	Commenter	EPG Comment or Text Revision	Enefit / SWCA Responses (reference added by EPG)/ EPG Comment or Text Revision to Enefit Response
				the following: "The identification of KOPs, and the contrast rating analysis, is first and foremost to identify compliance or noncompliance with BLM VRM Class objectives. As such, why was there no KOP identified at the Duck Rock recreation site (and overlook) on the White River which would have unobstructed views of the Project traversing BLM VRM Class II lands from approximately 0.75 mile away? This KOP could also be used to aid in the discussion of impacts on the White River SQRU (Class A) since the river crossing would be visible from this location." This data gap has been included in the data gap analysis until confirmation can be received from the BLM regarding inclusion of this KOP in the EIS.	
***Class III Cultural Resources Inventory of the Utah Oil Shale Project, in Uintah County, Utah* (SWCA, July 24, 2013)**					
Abstract – Project Description	First paragraph	i	EPG	What does the statement "located primarily on private land" mean in the context of the mining and processing complex. Are these facilities not located entirely on private lands? If they are not, what is the nature of the jurisdiction?	The mining and processing complex is located entirely on private lands. No revisions have been made to the report. As of February 20, 2015, data gap addressed. No further action required.
			EPG	Information in report is adequate for use in EIS.	Comment noted. No response required. As of February 20, 2015, data gap addressed. No further action required.
***Paleontological Technical Report for the Enefit Utah Oil Shale Project, Bureau of Land Management Lands, Uintah County, Utah* (SWCA, July 26, 2013)**					
3 and 4		throughout	EPG	No Comments. Information in report is adequate for use in EIS. However, we need the GIS fossil locality data. SWCA identified 81 fossil localities within 1 mile of their Paleontological Analysis Area (450'-1200') including 8 localities within the PAA. During the survey they discovered 62 non-significant fossils and 24 significant fossils within the PAA. They have recommended monitoring for several areas of the project where ground disturbance will occur.	GIS fossil locality data were provided to the BLM via the geodatabase. The agency geodatabase contained a feature class called "Previously_Documented_Paleo_Locality_within_1mile." Those are the localities we received for Duchesne and Uintah Counties. The localities identified by SWCA are called "Fossil_Point" and "Fossil_Line." As of February 20, 2015, data gap addressed. No further action required.

NOTES:

August 29, 2013: Several Enefit baseline reports that were due on July 31, 2013 are still outstanding as of August 20, 2013. These are as follows:

- Final ambient air quality monitoring report **– Submitted November 18, 2013.**
- Air dispersion modeling report – **Pending Scoping Report response.**
- Surface water and groundwater baseline reports **– Q2 2013 surface water (Walsh) submitted November 18, 2013; Q3 2013 surface water (Walsh) and Q3 2013 groundwater (Norwest) anticipated submittal by December 13, 2013.**
- Water resources impact report – **Pending Scoping Report response.**
- Geochemical and leaching report – **Pending Scoping Report response.**
- Socioeconomic report – **Anticipated Q1 2014.**
- Traffic and transportation report – **To be included with Detailed Plan of Development, which is pending Scoping Report response.**
- Revised Plan of Development **– Pending Scoping Report response.**

June 24, 2014: The following is an update to the report status as of June 24, 2014.

Received

- Final ambient air quality monitoring report
- Surface water and groundwater baseline reports
- Water resources impact report **– Will not be submitted by Enefit as part of the EIS analysis.**
- Geochemical and leaching report – **Will not be submitted by Enefit as part of the EIS analysis.**
- Socioeconomic Baseline Community Analysis
- Revised Plan of Development

Pending

- Air dispersion modeling report – **Enefit has noted that this will not be submitted as part of the EIS analysis. However, pending coordination with EPA, additional air reports may be required to analyze cumulative effects.**
- Socioeconomic impact analysis report – **Outstanding.**
- Traffic and transportation report **– Outstanding.**
- SWCA 2013 Survey Report for Greater Sage Grouse Lek Surveys **– Outstanding.**
- General Vegetation and Noxious Weeds Inventory Report – **Revisions to report not received.**
- Visual Resources Report **– Revisions to report not received and methodology issues not in compliance with BLM guidelines and manuals.**
- Socioeconomic Impact Analysis Report **– Outstanding; was scheduled for April 2014.**

Baseline Data Items Requested from BLM

- Copy of the draft USFWS Candidate Conservation Agreement on Graham's and White River Beardtongue penstemon species.

July 18, 2014: The following is an update to the report status as of July 18, 2014.

Received

- SWCA 2013 Survey Report for Greater Sage Grouse Lek Surveys **– Provided previously in Wildlife Report.**
- General Vegetation and Noxious Weeds Inventory Report – **Received revised report.**
- Visual Resources Report **– Received revised report.**
- Draft USFWS Candidate Conservation Agreement on Graham's and White River Beardtongue penstemon species – EPG to download from *Federal Register*.

Pending

- Socioeconomic impact analysis report – **Outstanding.**
- Traffic and transportation report **– Outstanding.**

November 7, 2014: The following is an update to the report status as of November 7, 2014.

Received

- Traffic and transportation report **– October 13, 2014.**

Pending

- Socioeconomic impact analysis report – **Outstanding.**

February 20, 2015: The following is an update to the report status as of February 20, 2015.

Received

- No new reports received

Pending

- None; Enefit clarified that there would be no additional socioeconomic reports received at this time.

Appendix E
Construction Emissions Calculations Supporting Data

Appendix E – Construction Emissions Calculations Supporting Data

Table E-1
GHC Emission Calculations

Phase	$PM_{2.5}$	PM_{10}	NO_X	CO	VOC	SO_2	GHG
First Mobilization	26.70	126.07	19.16	13.65	2.67	0.03	2,640.48
Second Mobilization	18.96	87.00	34.20	28.36	5.17	0.05	4,536.32
Project Wide Totals	45.65	213.08	53.36	42.01	7.85	0.09	7,117.00

SOURCE: Estimates based on Applicant prepared roster of construction equipment and vehicles.

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Table E-2
Particulate Matter Emission Estimation – Construction Equipment, 1st Construction Mobilization

Mobilization Duration: 12 Months			Active Construction Acres: 437				Fraction of Equipment in Use: 0.70[1] Fraction of Acreage Actively Disturbed: 0.25[1]			Maximum Operation Schedule Hrs/Day: 10			
Construction Emission Sources		Particulate Control	Nominal Area or Unit Operation Days[3]		PM_{10} Uncontrolled Emission Factor		PM Control Efficiency[4]	Peak Unit No. per Mob[5]	Controlled PM_{10} Emission Rates[6]		Ratio: $PM_{2.5}$ to PM_{10}	Controlled $PM_{2.5}$ Emission Rates	
Number of Unit-Months[2]	Description[2]		Value	Units	Value	Units	Percent	h/month	PM_{10} (peak lb/h)	PM_{10} (ton/Mob)	Frac of PM_{10}[8]	$PM_{2.5}$ (peak lb/h)	$PM_{2.5}$ (ton/Mob)
	Water Supply Pipeline – 19.1 miles	Watering/Veh. Speeds	116	acres/Mob	0.19	ton PM_{10}/acre-month[7]	50%	–	100.2	33.1	0.208	20.8	6.9
	Transmission Line No. 1 – 10.4 miles	Watering/Veh. Speeds	187.9	acres/Mob	0.19	ton PM_{10}/acre-month[7]	50%	–	162.3	53.6	0.208	33.8	11.1
	Colocated Lines No. 1 and No. 2 – 8.6 miles (assume 1/2 acreage)	Watering/Veh. Speeds	130.6	acres/Mob	0.19	ton PM_{10}/acre-month[7]	50%	–	112.8	37.2	0.208	23.5	7.7
	Temporary Access Roads	Watering/Veh. Speeds	2.5	acres/Mob	0.42	ton PM_{10}/acre-month[7]	50%	–	4.8	1.6	0.208	1.0	0.33
								SUBTOTALS	380.0	125.4		79.0	26.1
Construction Equipment Emission Sources													
9	Rock Trenchers	Engine Design	216	Unit-Days/Mob	0.04534	lb/hr/unit	Incl.	3	0.14	0.034	0.92	0.13	0.032
36	Side Boom Trackers	Engine Design	864	Unit-Days/Mob	0.05458	lb/hr/unit	Incl.	12	0.65	0.165	0.92	0.60	0.152
9	Rock Crusher – Track	Engine Design	216	Unit Days/Mob	0.06695	lb/hr/unit	Incl.	3	0.20	0.051	0.92	0.18	0.047
9	Portable Compaction Rollers	Engine Design	216	Unit Days/Mob	0.03533	lb/hr/unit	Incl.	3	0.11	0.027	0.92	0.10	0.025
9	Bulldozer	Engine Design	216	Unit Days/Mob	0.07831	lb/hr/unit	Incl.	3	0.23	0.059	0.92	0.22	0.054
20	Motor Graders	Engine Design	480	Unit Days/Mob	0.04411	lb/hr/unit	Incl.	3	0.13	0.074	0.92	0.12	0.068
9	HDPE Fusion Machine	Engine Design	216	Unit Days/Mob	0.02337	lb/hr/unit	Incl.	3	0.07	0.018	0.92	0.06	0.016
27	Crane, Mobile – 50 ton	Engine Design	648	Unit Days/Mob	0.03878	lb/hr/unit	Incl.	3	0.12	0.088	0.92	0.11	0.081
11	Pole Drilling Machine	Engine Design	264	Unit Days/Mob	0.01596	lb/hr/unit	Incl.	1	0.02	0.015	0.92	0.01	0.014
6	Backhoe	Engine Design	144	Unit Days/Mob	0.03324	lb/hr/unit	Incl.	1	0.03	0.017	0.92	0.03	0.015
5	Ditchwitch	Engine Design	120	Unit Days/Mob	0.01058	lb/hr/unit	Incl.	1	0.01	0.004	0.92	0.01	0.004
11	Forklift – All terrain	Engine Design	264	Unit Days/Mob	0.03720	lb/hr/unit	Incl.	1	0.04	0.034	0.92	0.03	0.032
0	Welding Machines	Engine Design	0	Unit Days/Mob	0.01682	lb/hr/unit	Incl.	0	0.00	0.000	0.92	0.00	0.000
								SUBTOTALS	1.749	0.586		1.609	0.539
On-Site Mobile Sources													
80	Truck, 3/4 Pickup	Engine Design	1,920	Unit Days/Mob	0.04174	lb/hr/unit	Incl.	12	0.50	0.280	0.92	0.46	0.258
9	Service Truck	Engine Design	216	Unit Days/Mob	0.02904	lb/hr/unit	Incl.	3	0.09	0.022	0.92	0.08	0.020
6	Concrete Truck	Engine Design	144	Unit Days/Mob	0.00229	lb/hr/unit	Incl.	2	0.00	0.001	0.92	0.00	0.001
22	Line Truck	Engine Design	528	Unit Days/Mob	0.01500	lb/hr/unit	Incl.	2	0.03	0.028	0.92	0.03	0.026
48	Cable Pull/Tension Truck	Engine Design	1,152	Unit Days/Mob	0.01500	lb/hr/unit	Incl.	8	0.12	0.060	0.92	0.11	0.056
14	Bucket Truck	Engine Design	336	Unit Days/Mob	0.01500	lb/hr/unit	Incl.	2	0.03	0.018	0.92	0.03	0.016
14	Water Truck	Engine Design	6	Unit Days/Mob	0.00686	lb/hr/unit	Incl.	1	0.01	0.000	0.92	0.01	0.000
								SUBTOTALS	0.157	0.078		0.144	0.072
								TOTAL EMISSIONS	381.93	126.07		80.80	26.70

NOTES:
[1]Due to the linear nature of the construction areas, only a portion will be under active construction during any month of the mobilization. This factor reflects the assumed active fraction during a given month.
[2]Number of unit-months is based on the presence of construction equipment units for each month of the mobilization. The description of the equipment types obtained from Enefit project description.
[3]Size of active construction zone at a given time during the mobilization, and number of unit operating hours for the mobilization, based on Project Description.
[4]Minimum control efficiency for PM_{10} and $PM_{2.5}$ from watering of active construction zones and wet drilling activity set at 50%, based on AP-42 and other references.
[5]Peak unit count of equipment present during the mobilization, used to determine maximum hourly emissions.
[6]Hourly and monthly emission rates calculated for 10 hours per day and over the entire duration of the mobilization.
[7]Emission factor for construction activity from AP-42 section on Heavy Construction. Equipment exhaust emission factors reflect a composite of equipment power ratings except as noted. Factors obtained from SCAQMD Calif. Environ. Quality Act (CEQA) handbook, for 2016 operating year scenario.
[8]Ratio of $PM_{2.5}$ to PM_{10} obtained from SCAQMD, 2006.

Table E-3
Particulate Matter Emission Estimation – Construction Equipment, 2nd Construction Mobilization

Mobilization Duration: 18 Months			Active Construction Acres: 298				Fraction of Equipment in Use: 0.70[1] Fraction of Acreage Actively Disturbed: 0.25[1]			Maximum Operation Schedule Hrs/Day: 10			
Construction Emission Sources		**Particulate Control**	**Nominal Area or Unit Operation Days[3]**		**PM_{10} Uncontrolled Emission Factor**		**PM Control Efficiency[4]**	**Peak Unit No. per Mob[5]**	**Controlled PM_{10} Emission Rates[6]**		**Ratio: $PM_{2.5}$ to PM_{10}**	**Controlled $PM_{2.5}$ Emission Rates**	
Number of Unit-Months[2]	**Description[2]**		**Value**	**Units**	**Value**	**Units**	**Percent**	**h/month**	**PM_{10} (peak lb/h)**	**PM_{10} (ton/Mob)**	**Frac of PM_{10}[8]**	**$PM_{2.5}$ (peak lb/h)**	**$PM_{2.5}$ (ton/Mob)**
	Natural Gas Pipeline – 8.7 miles	Watering/Veh. Speeds	52.6	acres/Mob	0.19	ton PM_{10}/acre-month[7]	50%	–	45.4	15.0	0.208	9.4	3.1
	Product Delivery Pipeline – 11.3 miles	Watering/Veh. Speeds	68.3	acres/Mob	0.19	ton PM_{10}/acre-month[7]	50%	–	59.0	19.5	0.208	12.3	4.0
	Transmission Line No. 2 – 2.4 miles	Watering/Veh. Speeds	44	acres/Mob	0.19	ton PM_{10}/acre-month[7]	50%	–	38.0	12.5	0.208	7.9	2.6
	Colocated Lines No. 1 and No. 2 – 8.6 miles (assume 1/2 acreage)	Watering/Veh. Speeds	130.6	acres/Mob	0.19	ton PM_{10}/acre-month[7]	50%	–	112.8	37.2	0.208	23.5	7.7
	Temporary Access Roads	Watering/Veh. Speeds	2.5	acres/Mob	0.42	ton PM_{10}/acre-month[7]	50%	–	4.8	1.6	0.208	1.0	0.33
								SUBTOTALS	260.0	85.8		54.1	17.8
Construction Equipment Emission Sources													
20	Rock Trenchers	Engine Design	480	Unit-Days/Mob	0.04534	lb/hr/unit	Incl.	2	0.09	0.076	0.92	0.08	0.070
80	Side Boom Trackers	Engine Design	1,920	Unit-Days/Mob	0.05458	lb/hr/unit	Incl.	8	0.44	0.367	0.92	0.40	0.337
20	Rock Crusher – Track	Engine Design	480	Unit Days/Mob	0.06695	lb/hr/unit	Incl.	2	0.13	0.112	0.92	0.12	0.103
20	Portable Compaction Rollers	Engine Design	480	Unit Days/Mob	0.03533	lb/hr/unit	Incl.	2	0.07	0.059	0.92	0.07	0.055
20	Bulldozer	Engine Design	480	Unit Days/Mob	0.07831	lb/hr/unit	Incl.	2	0.16	0.132	0.92	0.14	0.121
29	Motor Graders	Engine Design	696	Unit Days/Mob	0.04411	lb/hr/unit	Incl.	2	0.09	0.107	0.92	0.08	0.099
0	HDPE Fusion Machine	Engine Design	0	Unit Days/Mob	0.02337	lb/hr/unit	Incl.	0	0.00	0.000	0.92	0.00	0.000
36	Crane, Mobile – 50 ton	Engine Design	864	Unit Days/Mob	0.03878	lb/hr/unit	Incl.	2	0.08	0.117	0.92	0.07	0.108
9	Pole Drilling Machine	Engine Design	216	Unit Days/Mob	0.01596	lb/hr/unit	Incl.	1	0.02	0.012	0.92	0.01	0.011
5	Backhoe	Engine Design	120	Unit Days/Mob	0.03324	lb/hr/unit	Incl.	1	0.03	0.014	0.92	0.03	0.013
5	Ditchwitch	Engine Design	120	Unit Days/Mob	0.01058	lb/hr/unit	Incl.	1	0.01	0.004	0.92	0.01	0.004
9	Forklift – All terrain	Engine Design	216	Unit Days/Mob	0.03720	lb/hr/unit	Incl.	1	0.04	0.028	0.92	0.03	0.026
80	Welding Machines	Engine Design	1,920	Unit Days/Mob	0.01682	lb/hr/unit	Incl.	4	0.07	0.113	0.92	0.06	0.104
								SUBTOTALS	1.219	1.143		1.121	1.051
On-Site Mobile Sources													
152	Truck, 3/4 Pickup	Engine Design	3,648	Unit Days/Mob	0.04174	lb/hr/unit	Incl.	8	0.33	0.533	0.92	0.31	0.490
20	Service Truck	Engine Design	480	Unit Days/Mob	0.02904	lb/hr/unit	Incl.	2	0.06	0.049	0.92	0.05	0.045
40	Concrete Truck	Engine Design	960	Unit Days/Mob	0.00229	lb/hr/unit	Incl.	4	0.01	0.008	0.92	0.01	0.007
18	Line Truck	Engine Design	432	Unit Days/Mob	0.01500	lb/hr/unit	Incl.	2	0.03	0.023	0.92	0.03	0.021
40	Cable Pull/Tension Truck	Engine Design	960	Unit Days/Mob	0.01500	lb/hr/unit	Incl.	8	0.12	0.050	0.92	0.11	0.046
14	Bucket Truck	Engine Design	336	Unit Days/Mob	0.01500	lb/hr/unit	Incl.	1	0.02	0.018	0.92	0.01	0.016
35	Water Truck	Engine Design	15	Unit Days/Mob	0.00686	lb/hr/unit	Incl.	1	0.01	0.000	0.92	0.01	0.000
								SUBTOTALS	0.142	0.068		0.131	0.063
								TOTAL EMISSIONS	261.34	87.00		55.33	18.96

NOTES:
[1]Due to the linear nature of the construction areas, only a portion will be under active construction during any month of the mobilization. This factor reflects the assumed active fraction during a given month.
[2]Number of unit-months is based on the presence of construction equipment units for each month of the mobilization. The description of the equipment types obtained from Enefit project description.
[3]Size of active construction zone at a given time during the mobilization, and number of unit operating hours for the mobilization, based on Project Description.
[4]Minimum control efficiency for PM_{10} and $PM_{2.5}$ from watering of active construction zones and wet drilling activity set at 50%, based on AP-42 and other references.
[5]Peak unit count of equipment present during the mobilization, used to determine maximum hourly emissions.
[6]Hourly and monthly emission rates calculated for 10 hours per day and over the entire duration of the mobilization.
[7]Emission factor for construction activity from AP-42 section on Heavy Construction. Equipment exhaust emission factors reflect a composite of equipment power ratings except as noted. Factors obtained from SCAQMD Calif. Environ. Quality Act (CEQA) handbook, for 2016 operating year scenario.
[8]Ratio of $PM_{2.5}$ to PM_{10} obtained from SCAQMD, 2006.

Table E-4 Gaseous Pollutant Emission Estimation – Construction Equipment, 1st Mobilization															
Mobilization Duration: 18 Months					Fraction of Equipment in Operation: 0.7[1]						Maximum Operation Schedule Hrs/Day: 10[2]				
Construction Emission Sources		Peak No. of Units[3]	Unit-Days per Mob[4]	NO_X Emission Factor[5]	Controlled NO_X Emissions[6]		CO Emission Factor[5]	Controlled CO Emissions[6]		VOC Emission Factor[6]	Controlled VOC Emissions[6]		SO_2 Emission Factor[5]	Controlled SO_2 Emissions[6]	
Number of Unit-Months[7]	Description[8]		Unit-days/Mob	lb/hr/unit	Max. lb/hr	Ton/Mob	lb/hr/unit	Max. lb/hr	Ton/Mob	lb/hr/unit	Max. lb/hr	Ton/Mob	lb/hr/unit	Max. lb/hr	Ton/Mob
Construction Equipment Emission Sources															
9	Rock Trenchers	3	216	0.5719	1.20	0.43	0.4479	0.94	0.34	0.12	0.25	0.09	6.96E-04	1.46E-03	5.26E-04
36	Side Boom Trackers	12	864	0.9315	7.82	2.82	0.5549	4.66	1.68	0.1335	1.12	0.40	1.26E-03	1.06E-02	3.81E-03
9	Rock Crusher – Track	3	216	1.411	2.96	1.07	0.7067	1.48	0.53	0.1803	0.38	0.14	1.67E-03	3.51E-03	1.26E-03
9	Portable Compaction Rollers	3	216	0.5273	1.11	0.40	0.3944	0.83	0.30		0.00	0.00	7.70E-04	1.62E-03	5.82E-04
9	Bulldozer	3	216	1.902	3.99	1.44	0.9053	1.90	0.68	0.2383	0.50	0.18	2.69E-03	5.65E-03	2.03E-03
20	Motor Graders	3	480	0.8866	1.86	1.49	0.5883	1.24	0.99	0.1197	0.25	0.20	1.50E-03	3.15E-03	2.52E-03
9	HDPE Fusion Machine	3	216	0.568	1.19	0.43	0.3602	0.76	0.27	0.072	0.15	0.05	1.27E-03	2.67E-03	9.60E-04
27	Crane, Mobile – 50 ton	3	648	0.9387	2.82	2.13	0.4263	1.28	0.97	0.1137	0.34	0.26	1.38E-03	4.14E-03	3.13E-03
11	Pole Drilling Machine	1	264	0.534	0.53	0.49	0.5016	0.50	0.46	0.0623	0.06	0.06	1.75E-03	1.75E-03	1.62E-03
6	Backhoe	1	144	0.6603	0.66	0.33	0.5213	0.52	0.26	0.0988	0.10	0.05	1.32E-03	1.32E-03	6.65E-04
5	Ditchwitch	1	120	0.2044	0.20	0.09	0.2184	0.22	0.09	0.0305	0.03	0.01	3.75E-04	3.75E-04	1.58E-04
11	Forklift – All terrain	1	264	0.5104	0.51	0.47	0.4549	0.45	0.42	0.0775	0.08	0.07	8.16E-04	8.16E-04	7.54E-04
0	Welding Machines	0	0	0.2173	0.00	0.00	0.1951	0.00	0.00	0.0482	0.00	0.00	3.18E-04	0.00E+00	0.00E+00
				SUBTOTALS	24.9	11.6		14.8	7.0		3.3	1.52		0.0370	0.0180
On-Site Mobile Sources															
80	Truck, 3/4 Pickup	12	1,920	0.7647	9.18	5.14	0.7552	9.06	5.07	0.1164	1.40	0.78	1.41E-03	1.69E-02	9.48E-03
9	Service Truck	3	216	0.8678	2.60	0.66	0.3651	1.10	0.28	0.1179	0.35	0.09	1.87E-03	5.61E-03	1.41E-03
6	Concrete Truck	2	144	0.0542	0.11	0.027	0.0418	0.08	0.021	0.0088	0.02	0.004	1.09E-04	2.18E-04	5.49E-05
22	Line Truck	2	528	0.2482	0.50	0.46	0.1801	0.36	0.33	0.0397	0.08	0.07	3.99E-04	7.98E-04	7.37E-04
48	Cable Pull/Tension Truck	8	1,152	0.2482	1.99	1.00	0.1801	1.44	0.73	0.0397	0.32	0.16	3.99E-04	3.19E-03	1.61E-03
14	Bucket Truck	2	336	0.2482	0.50	0.29	0.1801	0.36	0.21	0.0397	0.08	0.047	3.99E-04	7.98E-04	4.69E-04
14	Water Truck	1	6	0.2021	0.20	0.004	0.3474	0.35	0.007	0.0442	0.04	0.0009	1.27E-03	1.27E-03	2.67E-05
				SUBTOTALS	15.10	7.60		12.7	6.65		2.3	1.16		0.0288	0.0138
				TOTAL EMISSIONS	39.90	19.20		27.5	13.6		5.6	2.7		0.0658	0.0318

NOTES:
[1]Less than 100 percent of the equipment will be in operation at one time, this factor reflects the expected utilization of the roster of equipment per day
[2]Maximum daily operating schedule is 10 hours, per the Enefit Project Description.
[3]Peak unit count of equipment present during the mobilization, used to determine maximum hourly emissions.
[4]Unit-operating days are the combined total of unit-days involved in the Mobilization for each class of equipment.
[5]Gaseous emission factors for construction equipment obtained from South Coast AQMD California Environmental Quality Act Handbook for emission factors, the vehicle population is set for the 2016 operating year.
[6]Hourly and monthly emission rates calculated for 10 hours per day and over the entire duration of the mobilization.
[7]Number of unit-months is based on the presence of construction equipment units for each month of the mobilization. The description of the equipment types obtained from Enefit project description.
[8]The units are as described in the Enefit Project Description.

Table E-5
Gaseous Pollutant Emission Estimation – Construction Equipment, 2nd Mobilization

Mobilization Duration: 12 Months | **Fraction of Equipment in Operation: 0.7[1]** | **Maximum Operation Schedule Hrs/Day: 10[2]**

Construction Emission Sources		Peak No. of Units[3]	Unit-Days per Mob[4]	NO_X Emission Factor[5]	Controlled NO_X Emissions[6]		CO Emission Factor[5]	Controlled CO Emissions[6]		VOC Emission Factor[6]	Controlled VOC Emissions[6]		SO_2 Emission Factor[5]	Controlled SO_2 Emissions[6]	
Number of Unit-Months[7]	Description[8]		Unit-days/Mob	lb/hr/unit	Max. lb/hr	Ton/Mob	lb/hr/unit	Max. lb/hr	Ton/Mob	lb/hr/unit	Max. lb/hr	Ton/Mob	lb/hr/unit	Max. lb/hr	Ton/Mob
Construction Equipment Emission Sources															
20	Rock Trenchers	2	480	0.5719	0.80	0.96	0.4479	0.63	0.75	0.12	0.17	0.20	6.96E-04	9.74E-04	1.17E-03
80	Side Boom Trackers	8	1,920	0.9315	5.22	6.26	0.5549	3.11	3.73	0.1335	0.75	0.90	1.26E-03	7.06E-03	8.47E-03
20	Rock Crusher – Track	2	480	1.411	1.98	2.37	0.7067	0.99	1.19	0.1803	0.25	0.30	1.67E-03	2.34E-03	2.81E-03
20	Portable Compaction Rollers	2	480	0.5273	0.74	0.89	0.3944	0.55	0.66	0.0792	0.11	0.13	7.70E-04	1.08E-03	1.29E-03
20	Bulldozer	2	480	1.902	2.66	3.20	0.9053	1.27	1.52	0.2383	0.33	0.40	2.69E-03	3.77E-03	4.52E-03
29	Motor Graders	2	696	0.8866	1.24	2.16	0.5883	0.82	1.43	0.1197	0.17	0.29	1.50E-03	2.10E-03	3.65E-03
0	HDPE Fusion Machine	0	0	0.568	0.00	0.00	0.3602	0.00	0.00	0.072	0.00	0.00	1.27E-03	0.00E+00	0.00E+00
36	Crane, Mobile – 50 ton	2	864	0.9387	1.88	2.84	0.4263	0.85	1.29	0.1137	0.23	0.34	1.38E-03	2.76E-03	4.17E-03
9	Pole Drilling Machine	1	216	0.534	0.53	0.40	0.5016	0.50	0.38	0.0623	0.06	0.047	1.75E-03	1.75E-03	1.32E-03
5	Backhoe	1	120	0.6603	0.66	0.28	0.5213	0.52	0.22	0.0988	0.10	0.041	1.32E-03	1.32E-03	5.54E-04
5	Ditchwitch	1	120	0.2044	0.20	0.09	0.2184	0.22	0.09	0.0305	0.03	0.013	3.75E-04	3.75E-04	1.58E-04
9	Forklift – All terrain	1	216	0.5104	0.51	0.39	0.4549	0.45	0.34	0.0775	0.08	0.084	8.16E-04	8.16E-04	6.17E-04
80	Welding Machines	4	1,920	0.2173	0.87	1.46	0.1951	0.78	5.24	0.0482	0.19	0.46	3.18E-04	1.27E-03	2.14E-03
				SUBTOTALS	17.3	21.3		10.7	16.9		2.5	3.22		0.0256	0.0309
On-Site Mobile Sources															
152	Truck, 3/4 Pickup	8	3,648	0.7647	6.12	9.76	0.7552	6.04	9.64	0.1164	0.93	1.49	1.41E-03	1.13E-02	1.80E-02
20	Service Truck	2	480	0.8678	1.74	1.46	0.3651	0.73	0.61	0.1179	0.24	0.20	1.87E-03	3.74E-03	3.14E-03
40	Concrete Truck	4	960	0.0542	0.22	0.182	0.0418	0.17	0.140	0.0088	0.04	0.030	1.09E-04	4.36E-04	3.66E-04
18	Line Truck	2	432	0.2482	0.50	0.38	0.1801	0.36	0.27	0.0397	0.08	0.06	3.99E-04	7.98E-04	6.03E-04
40	Cable Pull/Tension Truck	8	960	0.2482	1.99	0.83	0.1801	1.44	0.61	0.0397	0.32	0.13	3.99E-04	3.19E-03	1.34E-03
14	Bucket Truck	1	336	0.2482	0.25	0.29	0.1801	0.18	0.21	0.0397	0.04	0.047	3.99E-04	3.99E-04	4.69E-04
35	Water Truck	1	15	0.2021	0.20	0.011	0.3474	0.35	0.018	0.0442	0.04	0.0023	1.27E-03	1.27E-03	6.67E-05
				SUBTOTALS	11.0	12.9		9.3	11.50		1.7	1.96		0.0211	0.0240
				TOTAL EMISSIONS	28.3	34.2		20.0	28.4		4.2	5.2		0.0467	0.0549

NOTES:
[1]Less than 100 percent of the equipment will be in operation at one time, this factor reflects the expected utilization of the roster of equipment per day
[2]Maximum daily operating schedule is 10 hours, per the Enefit Project Description.
[3]Peak unit count of equipment present during the mobilization, used to determine maximum hourly emissions.
[4]Unit-operating days are the combined total of unit-days involved in the Mobilization for each class of equipment.
[5]Gaseous emission factors for construction equipment obtained from South Coast AQMD California Environmental Quality Act Handbook for emission factors, the vehicle population is set for the 2016 operating year.
[6]Hourly and monthly emission rates calculated for 10 hours per day and over the entire duration of the mobilization.
[7]Number of unit-months is based on the presence of construction equipment units for each month of the mobilization. The description of the equipment types obtained from Enefit project description.
[8]The units are as described in the Enefit Project Description.

Table E-6
Greenhouse Gas Emission Estimation - Construction Equipment, 1st Construction Mobilization

Fraction of Equipment in Operation: 0.7 | **Max Operation Schedule Hrs/Day: 10**

Construction Emission Sources		Operating Days per Mob [1]	Peak Unit No.[1]	CO_2 Emission Factor[2]	Ce CO_2 Emissions[3]	Ce CO_2 Emissions[4]	CH_4 Emission Factor[5]	CH_4 Emissions[3]	Ce CH_4 Emissions[4]	N_2O Emission Factor[5]	N_2O Emissions[3]	Ce N_2O Emissions[4]	Total GHG emissions
Unit-Months per Mob [1]	**Description [1]**	**Unit-Days/Mob**	**Units**	**lb CO_2/hr**	**Max. MT/hr**	**MT Ce/Mob**	**lb CH_4/hr**	**Max. kg/hr**	**MT Ce/Mob**	**lb N_2O/hr**	**Max. kg/hr**	**MT Ce/Mob**	**MT CO_2e/Mon**
Earthmoving Equipment Emission Sources													
9	Rock Trenchers	216	3	58.71	0.39	40.3	0.0033	0.022	0.056	1.50E-03	0.010	0.31	
36	Side Boom Trackers	864	12	114.02	3.01	313.5	0.0064	0.168	0.437	2.90E-03	0.077	2.38	
9	Rock Crusher - Track	216	3	151.42	1.00	104.1	0.0085	0.056	0.145	3.86E-03	0.025	0.79	
9	Portable Compaction Rollers	216	3	87.05	0.57	59.8	0.0049	0.032	0.084	2.22E-03	0.015	0.45	
9	Bulldozer	216	3	262.49	1.73	180.4	0.0147	0.097	0.252	6.68E-03	0.044	1.37	
20	Motor Graders	480	3	132.74	0.88	202.7	0.0074	0.049	0.283	3.38E-03	0.022	1.54	
9	HDPE Fusion Machine	216	3	122.56	0.81	84.2	0.0068	0.045	0.118	3.12E-03	0.021	0.64	
27	Crane, Mobile - 50 ton	648	3	128.63	0.85	265.2	0.0072	0.047	0.370	3.28E-03	0.022	2.01	
11	Pole Drilling Machine	264	1	164.91	0.36	138.5	0.0092	0.020	0.193	4.20E-03	0.0092	1.05	
6	Backhoe	144	1	110.58	0.24	50.7	0.0062	0.014	0.071	2.82E-03	0.0062	0.38	
5	Ditchwitch	120	1	30.28	0.067	11.6	0.0017	0.0037	0.016	7.71E-04	0.0017	0.09	
11	Forklift - All terrain	264	1	70.28	0.15	59.0	0.0039	0.0086	0.082	1.79E-03	0.0039	0.45	
0	Welding Machines	0	0	25.6	0.00	0.0	0.0014	0.000	0.000	6.52E-04	0.000	0.00	
				Equipment Subtotals	10.1	1510.1		0.562	2.11		0.256	11.46	1,523.62
On-Site Non Road Vehicles													
80	Truck, 3/4 Pickup	1,920	12	125.09	3.30	764.2	0.0070	0.1844	1.067	3.19E-03	0.0841	5.80	
9	Service Truck	216	3	166.55	1.10	114.5	0.0093	0.0614	0.160	4.24E-03	0.0280	0.87	
6	Concrete Truck	144	2	7.25	0.03	3.3	0.0004	0.0018	0.0046	1.85E-04	0.0008	0.025	
22	Line Truck	528	2	34.72	0.15	58.3	0.0019	0.0085	0.081	8.84E-04	0.0039	0.44	
48	Cable Pull/Tension Truck	1,152	8	34.72	0.61	127.3	0.0019	0.0341	0.178	8.84E-04	0.0156	0.97	
14	Bucket Truck	335	2	34.72	0.15	37.0	0.0019	0.0085	0.052	8.84E-04	0.0039	0.28	
14	Water Truck	6	1	122.5	0.27	2.3	0.0068	0.0150	0.0033	3.12E-03	0.0069	0.018	
				Vehicle Subtotals	5.6	1106.9		0.3137	1.545		0.143	8.400	1,116.86
				TOTAL GHG EMISSIONS	15.7	2617.0		0.88	3.7		0.40	19.9	2,640.48

NOTES:
[1]Number and description of construction equipment units and unit-days per Mobilization were obtained from Project Description and emission estimates provided by Enefit.
[2] For construction equipment and mobile sources (Diesel) the CO_2 emission factors (lb/hr operation) were obtained for a 2016 operating year from SCAQMD CEQA Handbook; *Off-Road Mobile Source Emission Factors* (http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook)
[3]Maximum hourly emissions based on peak unit number on-site, assuming all units may be in operation for the highest impact hour
[4]Total emissions for the duration of the mobilization estimated for the total number of operating days X peak equip. no. X fraction of units in continual operation.
[5]Emission factors for CH_4 and N_2O derived from the CO_2 factor from SCAQMD, scaled by the ratio of the factors for CH_4 and N_2O relative to CO_2 in USEPA, *Emission Factors for Greenhouse Gas Emissions* (April 2014 version)

Table E-7
Greenhouse Gas Emission Estimation - Construction Equipment, 2ndt Construction Mobilization

Fraction of Equipment in Operation: 0.7										Max Operation Schedule Hrs/Day: 10			
Construction Emission Sources		Operating Days per Mob [1]	Peak Unit No.[1]	CO_2 Emission Factor[2]	Ce CO_2 Emissions[3]	Ce CO_2 Emissions[4]	CH_4 Emission Factor[5]	CH_4 Emissions[3]	Ce CH_4 Emissions[4]	N_2O Emission Factor[5]	N_2O Emissions[3]	Ce N_2O Emissions[4]	Total GHG emissions
Unit-Months per Mob [1]	Description [1]	Unit-Days/Mob	Units	lb CO_2/hr	Max. MT/hr	MT Ce/Mob	lb CH_4/hr	Max. kg/hr	MT Ce/Mob	lb N_2O/hr	Max. kg/hr	MT Ce/Mob	MT CO_2e/Mon
Earthmoving Equipment Emission Sources													
20	Rock Trenchers	480	2	262.49	1.15	400.9	0.0147	0.064	0.56	6.68E-03	0.029	3.04	
80	Side Boom Trackers	696	2	132.74	0.58	294.0	0.0074	0.033	0.41	3.38E-03	0.015	2.23	
20	Rock Crusher - Track	0	0	122.56	0.00	0.0	0.0068	0.00	0.00	3.12E-03	0.000	0.00	
20	Portable Compaction Rollers	864	2	128.63	0.57	353.6	0.0072	0.032	0.49	3.28E-03	0.014	2.68	
20	Bulldozer	216	1	164.91	0.36	113.3	0.0092	0.020	0.16	4.20E-03	0.0092	0.86	
29	Motor Graders	120	1	110.58	0.24	42.2	0.0062	0.014	0.059	2.82E-03	0.0062	0.32	
0	HDPE Fusion Machine	120	1	30.28	0.067	11.6	0.0017	0.0037	0.016	7.71E-04	0.0017	0.09	
36	Crane, Mobile - 50 ton	216	1	70.28	0.15	48.3	0.0039	0.0086	0.07	1.79E-03	0.0039	0.37	
9	Pole Drilling Machine	1,920	4	25.6	0.23	156.4	0.0014	0.013	0.22	6.52E-04	0.0057	1.19	
5	Backhoe	480	2	262.49	1.15	400.9	0.0147	0.064	0.56	6.68E-03	0.029	3.04	
5	Ditchwitch	696	2	132.74	0.58	294.0	0.0074	0.033	0.41	3.38E-03	0.015	2.23	
9	Forklift - All terrain	0	0	122.56	0.00	0.0	0.0068	0.00	0.00	3.12E-03	0.000	0.00	
80	Welding Machines	864	2	128.63	0.57	353.6	0.0072	0.032	0.49	3.28E-03	0.014	2.68	
				Equipment Subtotals	6.7	2570.7		0.372	3.59		0.170	19.51	2,593.81
On-Site Non Road Vehicles													
152	Truck, 3/4 Pickup	3,648	8	125.09	2.20	1452.0	0.0070	0.123	2.026	3.19E-03	0.056	11.02	
20	Service Truck	480	2	166.55	0.73	254.4	0.0093	0.041	0.355	4.24E-03	0.019	1.93	
40	Concrete Truck	960	4	7.25	0.06	22.1	0.0004	0.0036	0.0309	1.85E-04	0.0016	0.168	
18	Line Truck	432	2	34.72	0.15	47.7	0.0019	0.0085	0.067	8.84E-04	0.0039	0.36	
40	Cable Pull/Tension Truck	960	8	34.72	0.61	106.1	0.0019	0.034	0.148	8.84E-04	0.0156	0.80	
14	Bucket Truck	336	1	34.72	0.08	37.1	0.0019	0.0043	0.052	8.84E-04	0.0019	0.28	
35	Water Truck	15	1	122.5	0.27	5.8	0.0068	0.015	0.0082	3.12E-03	0.0069	0.044	
				Vehicle Subtotals	4.1	1925.2		0.2293	2.687		0.105	14.610	1,942.51
				TOTAL GHG EMISSIONS	10.8	4495.9		0.60	6.27		0.27	34.1	4,536.32

NOTES:
[1]Number and description of construction equipment units and unit-days per Mobilization were obtained from Project Description and emission estimates provided by Enefit.
[2] For construction equipment and mobile sources (Diesel) the CO_2 emission factors (lb/hr operation) were obtained for a 2016 operating year from SCAQMD CEQA Handbook; *Off-Road Mobile Source Emission Factors* (http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook)
[3]Maximum hourly emissions based on peak unit number on-site, assuming all units may be in operation for the highest impact hour
[4]Total emissions for the duration of the mobilization estimated for the total number of operating days X peak equip. no. X fraction of units in continual operation.
[5]Emission factors for CH_4 and N_2O derived from the CO_2 factor from SCAQMD, scaled by the ratio of the factors for CH_4 and N_2O relative to CO_2 in USEPA, *Emission Factors for Greenhouse Gas Emissions* (April 2014 version)

Table E-8
Gaseous Pollutant Emission Estimation - No Action Alternative[1]

				Assumed avg speed of On-Road Vehicles: 50[2]					Days Operation per Year : 365[3]						
Construction Emission Sources	**Peak No. of Units[4]**	**VMT/day[5]**	**NO_X Emission Factor[6]**	**Tailpipe NO_X Emissions[7]**		**CO Emission Factor[6]**	**Tailpipe CO Emissions[7]**		**VOC Emission Factor[6]**	**Tailpipe VOC Emissions[7]**		**SO_2 Emission Factor[6]**	**Tailpipe SO_2 Emissions[7]**		
Description[8]			**lb/VMT**	**Max. lb/hr**	**Ton/Yr**	**lb/VMT**	**Max. lb/hr**	**Ton/Mob**	**lb/VMT**	**Max. lb/hr**	**Ton/Yr**	**lb/VMT**	**Max. lb/hr**	**Ton/Yr**	
Tanker Trucks (Product)	50	20,100	0.01887	47.18	69.22	0.00705	17.63	25.86	0.00161	4.03	5.91	3.95E-05	9.88E-02	0.14	
Truck Driver Commute Veh.	200	40,200	0.000556	5.56	4.08	0.00576	57.60	42.26	0.000633	6.33	4.64	1.07E-05	1.07E-01	0.08	
			SUBTOTALS	52.7	73.3		75.2	68.1		10.4	10.55		0.2058	0.2234	

NOTES:
[1]No Action Alternative assumes that the South Project is constructed and operates without the utility corridors. Involves truck shipment of product and additional commute for drivers.
[2]Assumed average speed on the road for trucks and commuter vehicles, used only to estimate hourly emission rates.
[3]Maximum annual emissions assume that product shipment by tanker truck may occur up to 365 days per year.
[4]Peak unit count of equipment is estimated from the number of daily trips required, and used only to determine maximum hourly emissions.
[5]Vehicle Miles Traveled (VMT) per day based on 201 truck trips, of 100 miles round trip for product shipment. Drivers assumed to operate in 2, 12-hour shifts and travel daily round trips of 100 miles to Vernal, UT.
[6]Gaseous emission factors for tanker trucks (heavy trucks) and commuter vehicles (light trucks) obtained from CARB EMFAC11, updated 2013 (CARB 2013).
[7]Hourly and Annual emission rates calculated for 24 hour per day tanker truck operation, and 2 shifts of up to 100 drivers.
[8]The description of the vehicle types obtained from Enefit project description.

Table E-9
Particulate Matter Emission Estimation - No Action Alternative[1]

				Assumed avg speed of On-Road Vehicles: 50[2]							Days Operation per Year: 365[2]	
Construction Emission Sources	**Peak No. of Units[3]**	**VMT/day[4]**	**PM_{10} Emission Factor[5]**	**Tailpipe PM_{10} Emissions[6]**		**PM2.5 Emission Factor[5]**	**Tailpipe PM2.5 Emissions[6]**		**PM_{10} Emission Factor[5]**	**PM2.5 Emission Factor[5]**	**Road Entrainment Emissions[7]**	
Description[8]			**lb/VMT**	**Max. lb/hr**	**Ton/Yr**	**lb/hr/unit**	**Max. lb/hr**	**Ton/Yr**	**lb/VMT**	**lb/VMT**	**PM_{10} Ton/yr**	**PM2.5 Ton/Yr**
On-Road Vehicles - Product Shipment Emission Sources												
Tanker Trucks (Product)	50	20,100	0.00183	4.58	6.71	0.0016	4.00	5.87	0.01633	0.00401	59.91	14.70
Truck Driver Commute Veh.	200	40,200	0.0000939	0.94	0.69	0.0000613	0.61	0.45	0.00156	0.00038	11.44	2.81
			SUBTOTALS	5.5	7.4		4.6	6.3			71.3	17.5
									Silt	0.2	Table 13.2.1 ADT 500 to 5000	
									Veh wt	30	Tons	Trucks
										3	Tons	Worker Veh

NOTES:
[1]No Action Alternative assumes that the South Project is constructed and operates without the utility corridors. Involves truck shipment of product and additional commute for drivers.
[2]Assumed average speed on the road for trucks and commuter vehicles, used only to estimate hourly emission rates. Maximum annual emissions assume that product shipment by tanker truck may occur up to 365 days per year.
[3]Peak unit count of equipment is estimated from the number of daily trips required, and used only to determine maximum hourly emissions.
[4]Vehicle Miles Traveled (VMT) per day based on 201 truck trips, of 100 miles round trip for product shipment. Drivers assumed to operate in 2, 12-hour shifts and travel daily round trips of 100 miles to Vernal, UT.
[5]Particulate matter emission factors for tanker trucks (heavy trucks) and commuter vehicles (light trucks) obtained from CARB EMFAC11, updated 2013 (CARB 2013).
[6]Hourly and Annual emission rates calculated for 24 hour per day tanker truck operation, and 2 shifts of up to 100 drivers.
[7]Road dust entrainment emission factors calculated using information and equations in USEPA Document AP-42, Section 13.2 Paved Roads. Parameters provided in bottom table section.
[8]The description of the vehicle types obtained from Enefit project description.

Table E-10
Greenhouse Gas Emission Estimation - No Action Alternative[1]

		Assumed avg speed of On-Road Vehicles: 50[2]						Days Operation per Year: 365[3]				
Construction Emission Sources	**VMT/Oper Day[4]**	**Peak Unit No.[5]**	**CO_2 Emission Factor[6]**	**Ce CO_2 Emissions[7]**	**Ce CO_2 Emissions[7]**	**CH_4 Emission Factor[6]**	**CH_4 Emissions[5]**	**Ce CH_4 Emissions[6]**	**N_2O Emission Factor[7]**	**N_2O Emissions[5]**	**Ce N_2O Emissions[3]**	**Total GHG emissions (MT CO_2e/Mon)**
Description[8]		**Units**	**lb CO_2/VMT**	**Max. MT/hr**	**MT Ce/Yr**	**lb CH_4/VMT**	**kg/yr**	**MT Ce/Yr**	**lb N_2O/VMT**	**kg/yr**	**MT Ce/Yr**	**(MT CO_2e/Yr)**
On-Road Vehicles - Product Shipment Emission Sources												
Tanker Trucks (Product)	10,200	50	4.211	23.16	34490.6	0.000142	1163.07	29.077	1.07E-04	878.31	261.74	
Truck Driver Commute Veh.	20,400	100	1.10678	12.17	18130.4	0.0000562	920.62	23.016	2.82E-05	461.69	137.58	
			SUBTOTALS	35.3	52621.0		2083.7	52.1		1340.0	399.3	53072.4

NOTES:
[1]No Action Alternative assumes that the South Project is constructed and operates without the utility corridors. Involves truck shipment of product and additional commute for drivers.
[2]Assumed average speed on the road for trucks and commuter vehicles, used only to estimate hourly emission rates.
[3]Maximum annual emissions assume that product shipment by tanker truck may occur up to 365 days per year.
[4]Vehicle Miles Traveled (VMT) per day based on 201 truck trips, of 100 miles round trip for product shipment. Drivers assumed to operate in 2, 12-hour shifts and travel daily round trips of 100 miles to Vernal, UT. Total emissions of CH_4 and NO2 take into
[5]Peak unit count of equipment is estimated from the number of daily trips required, and used only to determine maximum hourly emissions.
[6]Gaseous emission factors for tanker trucks (heavy trucks) and commuter vehicles (light trucks) obtained from CARB EMFAC11, updated 2013 (CARB 2013).
[7]Hourly and Annual emission rates calculated for 24 hour per day tanker truck operation, and 2 shifts of up to 100 drivers.
[8]The description of the vehicle types obtained from Enefit project description.

Table E-11
Criteria Pollutant Emission Estimation - Corridor Construction Commuter Vehicles[1]

							Days Operation[2]	**2nd Mobilization: 216 1st Mobilization: 84**		
Construction Activity Description[3]	**Tailpipe NO_X Emissions**		**Tailpipe CO Emissions[4]**		**Tailpipe VOC Emissions**		**Tailpipe SO_2 Emissions**		**Total PM_{10}**	
	Max. lb/day[5]	**Ton/Activity[6]**	**Max. lb/day[5]**	**Ton/Activity[6]**	**Max. lb/day[5]**	**Ton/Activity[6]**	**Max. lb/day[5]**	**Ton/Activity[6]**	**Max. lb/day[4, 5]**	**Ton/Activity[6]**
On-Road Vehicles - Corridor Construction Commuters										
Water Line Constr	14.815	0.62	2.006	0.08	0.432	0.018	0.031	0.001	2.222	0.093
Transmission Line 1	21.164	0.89	2.866	0.12	0.617	0.026	0.044	0.002	3.175	0.133
Subtotal Mobilization 1	36.0	1.5	4.9	0.2	1.049	0.044	0.075	0.003	5.397	0.227
Natural Gas/Product Lines	21.164	2.29	2.866	0.31	0.617	0.067	0.044	0.005	3.175	0.343
Transmission Line 2	21.16	2.29	2.87	0.31	0.617	0.067	0.044	0.005	3.175	0.343
Switchyard	4.23	0.46	0.57	0.06	0.123	0.013	0.009	0.001	0.635	0.069
Subtotal Mobilization 2	46.561	5.029	6.305	0.681	1.357	0.147	0.097	0.010	6.985	0.754

NOTES:
[1]Corridor Construction consists of 2 Mobilizations, number of days per Mobilization obtained from Enefit project description (Chapter 2).
[2]Total days of operation for both Mobilizations obtained from Enefit project description (Chapter 2).
[3]The Construction activities comprise the activities for each Mobilization as described in the Enefit Project Description (Chapter 2).
[4]The PM_{10} emissions include tailpipe emissions based on EMFAC11 model (CARB 2013), plus paved road dust entrainment estimated from USEPA Document AP-42, Section 12.3 Paved Roads (EPA 1995).
[5]Daily emissions assume peak commuter count present during the mobilization, with VMT assuming 100 mile round trip to Vernal, UT. Emissions factors for light-duty trucks from EMFAC11 model (CARB 2013).
[6]Total emissions for each activity during a Mobilization are the peak daily emissions times the total days per Mobilization.

Table E-12
Greenhouse Gas Emission Estimation - Corridor Construction Commuter Vehicles[1]

Construction Activity Description[3]	CO_2 Emission Factor[4]	Ce CO_2 Emissions[5]	CH_4 Emission Factor[4, 6]	CH_4 Emissions[5]	Ce CH_4 Emissions[5]	N_2O Emission Factor[4, 6]	N_2O Emissions[4]	Ce N_2O Emissions[5]	Total GHG emissions
	Est lb/day	MT/Activity	lb CH_4/day	Est kg/Activity	MT/Activity	lb N_2O/day	Est kg/Activity	MT/Activity	(MT CO_2e/Mobil.)
Days Operation[2]: 2nd Mobilization: 216; 1st Mobilization: 84									
On-Road Vehicles - Product Shipment Emission Sources									
Water Line Constr	1,148	212.2	0.0641	11.844	0.296	2.92E-02	5.402	1.61	
Transmission Line 1	1,640	303.1	0.0916	16.920	0.423	4.18E-02	7.718	2.30	
Subtotal Mobilization 1		515.2		28.8	0.7		13.1	3.9	519.9
Natural Gas/Product Lines	1,640	779.3	0.0916	16.920	1.088	4.18E-02	7.718	5.91	
Transmission Line 2	1,640	779.3	0.0916	16.920	1.088	4.18E-02	7.718	5.91	
Switchyard	328	155.9	0.0183	3.384	0.218	8.35E-03	1.544	1.18	
Subtotal Mobilization 2		1,714.5		37.2	2.4		17.0	13.0	1729.9
Total Corridor Construction GHG Emissions									2249.8

NOTES:
[1]Corridor Construction consists of 2 Mobilizations, number of days per Mobilization obtained from Enefit project description (Chapter 2).
[2]Total days of operation for both Mobilizations obtained from Enefit project description (Chapter 2).
[3]The Construction activities comprise the activities for each Mobilization as described in the Enefit Project Description (Chapter 2).
[4]Daily emissions assume peak commuter count present during the mobilization, with VMT assuming 100 mile round trip to Vernal, UT. Emissions factors from EMFAC11 model (CARB 2013).
[5]Total emissions for each activity during a Mobilization are the peak daily emissions times the total days per Mobilization. Total CH_4 and NO2 emissions include the greenhouse warming potential factors of 25 for CH_4 and 298 for NO2 to obtain CO_2 equivalent emissions.
[6]GHG emission factors for CH_4 and N_2O derived from the CO_2 factor from EMFAC11, scaled by the ratio of the factors for CH_4 and N_2O relative to CO_2 in USEPA, Emission Factors for Greenhouse Gas Emissions (April 2014 version)

Table E-13
Criteria Pollutant Emission Estimation - Corridor Construction Delivery Trucks[1]

Construction Activity Description[3]	Tailpipe NO_X Emissions		Tailpipe CO Emissions[6]		Tailpipe VOC Emissions		Tailpipe SO_2 Emissions		Total PM_{10}	
	Max. lb/day[4]	Ton/Activity[5]	Max. lb/day[4]	Ton/Activity[5]	Max. lb/day[4]	Ton/Activity[5]	Max. lb/day[4]	Ton/Activity[5]	Max. lb/day[4, 6]	Ton/Activity[5]
Days Operation[2]: 2nd Mobilization: 216; 1st Mobilization: 84										
On-Road Vehicles - Corridor Construction Delivery Trucks										
Water Line Constr	3.21	0.13	0.58	0.02	0.093	0.004	0.0088	0.0004	0.317	0.013
Transmission Line 1	4.49	0.19	0.82	0.03	0.130	0.005	0.0123	0.0005	0.173	0.007
Subtotal Mobilization 1	7.69	0.32	1.40	0.06	0.223	0.009	0.0211	0.0009	0.490	0.021
Natural Gas/Product Lines	4.49	0.48	0.82	0.09	0.130	0.014	0.0123	0.0013	0.173	0.019
Transmission Line 2	4.49	0.48	0.82	0.09	0.130	0.014	0.0123	0.0013	0.173	0.019
Switchyard	1.28	0.14	0.23	0.03	0.037	0.004	0.0035	0.0004	0.049	0.005
Subtotal Mobilization 2	10.26	1.11	1.86	0.20	0.297	0.032	0.0281	0.0030	0.395	0.043

NOTES:
[1]Corridor Construction consists of 2 Mobilizations, number of days per Mobilization obtained from Enefit project description (Chapter 2).
[2]Total days of operation for both Mobilizations obtained from Enefit project description (Chapter 2).
[3]The Construction activities comprise the activities for each Mobilization as described in the Enefit Project Description (Chapter 2).
[4]Daily emissions assume peak delivery truck count present during the mobilization, with VMT assuming 100 mile round trip to Vernal, UT. Emissions factors for heavy-duty trucks from EMFAC11 model (CARB 2013).
[5]Total emissions for each activity during a Mobilization are the peak daily emissions times the total days per Mobilization.
[6]The PM_{10} emissions include tailpipe emissions based on EMFAC11 model (CARB 2013), plus paved road dust entrainment estimated from USEPA Document AP-42, Section 12.3 Paved Roads (EPA 1995).

Table E-14
Greenhouse Gas Emission Estimation - Corridor Construction Commuter Vehicles[1]

Days Operation[2] **2nd Mobilization: 216**
1st Mobilization: 84

Construction Activity Description[3]	CO_2 Emission Factor[4]	Ce CO_2 Emissions[5]	CH_4 Emission Factor[4, 6]	CH_4 Emissions[5]	Ce CH_4 Emissions[5]	N_2O Emission Factor[4, 6]	N_2O Emissions[4]	Ce N_2O Emissions[5]	Total GHG emissions
	Est lb/day	MT/Activity	lb CH_4/day	Est kg/Activity	MT/Activity	lb N_2O/day	Est kg/Activity	MT/Activity	(MT CO_2e/Mobil.)
On-Road Vehicles - Product Shipment Emission Sources									
Water Line Constr	242.50	44.8	0.0135	2.502	0.063	6.18E-03	1.141	0.34	
Transmission Line 1	339.5	62.7	0.0190	3.503	0.088	8.65E-03	1.598	0.48	
Subtotal Mobilization 1		107.6		6.0	0.2		2.7	0.8	108.5
Natural Gas/Product Lines		0.0	0.0190	3.503	0.225	8.65E-03	1.598	1.22	
Transmission Line 2		0.0	0.0190	3.503	0.225	8.65E-03	1.598	1.22	
Switchyard		0.0	0.0054	1.001	0.064	2.47E-03	0.456	0.35	
Subtotal Mobilization 2		0.0		8.0	0.5		3.7	2.8	3.3
Total Corridor Construction GHG Emissions									111.8

NOTES:
[1]Corridor Construction consists of 2 Mobilizations, number of days per Mobilization obtained from Enefit project description (Chapter 2).
[2]Total days of operation for both Mobilizations obtained from Enefit project description (Chapter 2).
[3]The Construction activities comprise the activities for each Mobilization as described in the Enefit Project Description (Chapter 2).
[4]Daily emissions assume peak commuter count present during the mobilization, with VMT assuming 100 mile round trip to Vernal, UT. Emissions factors from EMFAC11 model (CARB 2013).
[5]Total emissions for each activity during a Mobilization are the peak daily emissions times the total days per Mobilization. Total CH_4 and NO2 emissions include the greenhouse warming potential factors of 25 for CH_4 and 298 for NO2 to obtain CO_2 equivalent emissions.
[6]GHG emission factors for CH_4 and N_2O derived from the CO_2 factor from EMFAC11, scaled by the ratio of the factors for CH_4 and N_2O relative to CO_2 in USEPA, Emission Factors for Greenhouse Gas Emissions (April 2014 version)

Appendix F
Biological Resources Supporting Data

Appendix F – Biological Resources Supporting Data

Table F-1
Federally Threatened, Endangered, and Candidate Species Identified as Potentially Occurring in the Study Area

Common Name *Species Name*	Status	Habitat Association	Potential for Occurrence Within the Proposed Project Area	Further Analysis (Yes/No)
Threatened, Endangered and Candidate Plant Species				
Uinta Basin hookless cactus *Sclerocactus wetlandicus*	S-ESA (T)	Duchesne River, Green River, and Mancos Formations; salt desert shrub and pinyon-juniper on river benches at 4,500 to 6,600 feet amsl	High. Level 1 Core Conservation Areas and habitat exists within the Project area. No plants were identified.	Yes
Threatened, Endangered and Candidate Mammal Species				
Black-footed Ferret *Euderma maculatum*	S-ESA (E)	This species inhabits semi-arid grasslands and mountain basins. It is found primarily in association with active prairie dog colonies that contain suitable burrow densities and colonies that are of sufficient size.	Low to Moderate. Suitable habitat within prairie-dog colonies and Primary Management Zone for ferrets is crossed by the Project area.	Yes
Threatened, Endangered and Candidate Bird Species				
Greater sage-grouse *Centrocercus urophasianus*	S-ESA (C)	Occupies upland sagebrush habitat in rolling hills and benches. Breeding occurs on open leks (or strutting grounds) and nesting and brooding occurs in upland areas and meadows in proximity to water and generally within a 1-mile radius of the lek. During winter, sagebrush habitats at sub-montane elevations commonly are used. Breeding season: March 1 through June 30.	High. The species is widespread, but declining in Utah. Existing populations are found in Uintah and Duchense Counties. Designated habitat occurs in the Project area.	Yes
Western Yellow-billed cuckoo *Coccyzus americanus*	S-ESA (T)	This riparian obligate species usually occurs in large tracts of cottonwood and willow habitats. Breeding season: late June through July.	Low to moderate. There are no large tracts of potential habit in the Project area.	Yes
Threatened, Endangered and Candidate Fish Species				
Bonytail *Gila elegans*	S-ESA (E)	This species is endemic to the Colorado River system and currently is restricted to the Green River in Utah. Uses main channels of large rivers and favors swift currents.	Moderate. Designated Critical Habitat for this species occurs along a segment of the Green River located approximately nine river miles south of the Project area.	Yes. Water for well construction and production will be taken from tributaries to the Green River. Wells are proposed in the Green River Floodplain.

Table F-1
Federally Threatened, Endangered, and Candidate Species Identified as Potentially Occurring in the Study Area

Common Name ***Species Name***	**Status**	**Habitat Association**	**Potential for Occurrence Within the Proposed Project Area**	**Further Analysis (Yes/No)**
Colorado pikeminnow *Ptychocheilus lucius*	S-ESA (E)	Range is restricted to the Upper Colorado River basin, upstream of Glen canyon Dam. Adult Colorado pikeminnow use a variety of habitat types, but mainly utilize shoreline runs, eddies, backwater habitats, seasonally flooded bottoms, and side canyons. They are most abundant in the upper Green River (between the mouth of the Yampa River and head of Desolation Canyon) and lower Green River (between the Price and San Rafael Rivers). Other concentration areas include the Yampa River, the lower 21 miles of the White River, and the Ruby and Horsethief Canyon area between Westwater, Utah, and Loma, Colorado (USFWS 2002).	Moderate to high. Critical habitat for this species is located along the White River that flows through the Project area.	Yes. Water for well construction and production will be taken from tributaries to the Green River. Wells are proposed in the Green River Floodplain.
Humpback chub *Gila cypha*	S-ESA (E)	Occurs in a wide variety of riverine habitats, especially canyon areas with fast currents, deep pools, and boulder habitat. This species originally inhabited the main stem of the Colorado River from what is now Lake Mead to the canyon areas of the Green and Yampa River Basins. Currently, it appears restricted to the Colorado River at Black Rocks and Westwater Canyon of the Green River, and Yampa Canyon of the Yampa River. Suitable habitat and critical habitat has been designated for this species in the Green River in Uintah County.	Moderate to high. Critical habitat for this species is located along the White River that flows through the Project area.	Yes

Table F-1
Federally Threatened, Endangered, and Candidate Species Identified as Potentially Occurring in the Study Area

Common Name ***Species Name***	**Status**	**Habitat Association**	**Potential for Occurrence Within the Proposed Project Area**	**Further Analysis (Yes/No)**
Razorback sucker *Xyrauchen texanus*	S-ESA (E)	Occurs in a variety of habitats including quiet eddies, pools, and mid-channel runs. Usually found over sand or silt substrate, but occur over gravel and cobble bars. The largest population is known to occur in the upper Green River between the confluence of the Yampa River and the confluence of the Duchesne River. Adults also occur in the Colorado River near Grand Junction, Colorado, although numbers are very low. Critical habitat has been designated for this species in the Green River in Carbon, Duchesne, Emery, Uintah and Grand Counties	Moderate to high. Critical habitat for this species is located along the White River that flows through the Utility Project area.	Yes

NOTES:
BGEPA = protected under the Bald and Golden Eagle Protection Act
CAS = conservation agreement species
WSC = UDWR wildlife species of concern
S-ESA (E) = species listed under the ESA as endangered
S-ESA (T) = species listed under the ESA as threatened
S-ESA (C) = species listed under the ESA as candidate
SS = BLM sensitive species.
SOURCE: Utah Native Plant Society (UNPS) (2003-2015)

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Table F-2
BLM Sensitive Species Identified as Potentially Occurring in the Study Area

Common Name ***Species Name***	**Status[1]**	**Habitat Association**	**Potential for Occurrence Within the Proposed Project Area**	**Further Analysis (Yes/No)**
Special Status Plant Species				
Graham's penstemon *Penstemon grahamii*	BLM-sensitive, conservation agreement	Green River shale talus and ledges; sparse shadscale, desert shrub, and pinyon juniper associate; 4,600 feet amsl	High. Occurs within or near the Utility and South Project areas.	Yes
White River penstemon *Penstemon scariosus var. albifluvis*	BLM-sensitive, conservation agreement	Green River shale slopes and knolls; shadscale, desert scrub, and pinyon-juniper associate at 5,000- to 6,600 feet amsl	High. Occurs within or near the Utility and South Project areas.	Yes
Barneby's catseye *Cryptantha barnebyi*	BLM-sensitive	White shale barrens and knolls of the Green River Formation in shadscale and pinyon-juniper at 6,069 to 7,874 feet amsl. Known to co-occur with *Penstemon grahamii* and *P. scariosus* var. *albifluvis*	High. Individual plants were identified in the South Project area. Formation and associated soils occur in the Project area, but little is known about exact habitat requirements.	Yes
Strigose Easter-daisy *Townsendia strigosa var. prolixa*	BLM-sensitive	Clay badlands in Duchesne and Uintah Counties. Limited information on distributional range or habitat features. Type locality near Chipita Wells	Yes. Individual plants and habitat associated with this species occurs in the Project area.	Yes
Sterile yucca *Yucca sterilis*	BLM-sensitive	Salt desert shrub, sagebrush, and shadscale in sandy soils at 4,790 to 5,800 feet amsl	High. Formation and associated soils occur throughout the Project area.	Yes
Special Status Wildlife Species				
White-tailed prairie-dog *Cynomys leucurus*	WSC; SS	Typically found in open shrublands, semi-desert grasslands, and mountain valleys, in loosely organized colonies that may occupy hundreds of acres on favorable sites. They spend much of their time in underground burrows, often hibernating during the winter.	High. Prairie dog colonies exist in the Utility Project area.	Yes
Spotted bat *Euderma maculatum*	WSC; SS	Inhabits desert shrub, sagebrush-rabbitbrush, Pinyon-juniper woodland, and ponderosa pine and montane forest habitats. In Utah, the species also uses lowland riparian and montane grassland habitats. Suitable cliff habitat appears necessary for roosts and hibernacula. Spotted bats typically do not migrate and use hibernacula that maintain a constant temperature above freezing from September through May. Hibernation (in caves) and winter activity have been documented in southwestern Utah.	Low. The species potentially occurs throughout Utah; however, no occurrence records exist for the extreme northern or western parts of the state. Known occurrences have been reported in northeastern Uintah County.	Yes

Table F-2
BLM Sensitive Species Identified as Potentially Occurring in the Study Area

Common Name ***Species Name***	**Status[1]**	**Habitat Association**	**Potential for Occurrence Within the Proposed Project Area**	**Further Analysis (Yes/No)**
Townsend's big-eared bat *Corynorhinus townsendii*	S-SPC	Found in a wide range of habitats from semi desert shrublands and piñon-juniper woodlands to open montane forests. Roosting occurs in mines and caves, in abandoned buildings, on rock cliffs, and occasionally in tree cavities. Foraging occurs well after dark over water, along margins of vegetation, and over sagebrush.	Low. The species occurs throughout much of Utah including Duchesne and Uintah counties. Relative to the project area, one individual was collected at the Ouray National Wildlife Refuge in 1980.	Yes
Fringed myotis *Myotis thysanodes*	WSC; SS	This small bat species occurs in most of the western United States, in much of Mexico, and part of southwestern Canada. The species is widely distributed throughout Utah, but is not very common in the state. The fringed myotis inhabits caves, mines, and buildings, most often in desert and woodland areas.	Low. Based on the known range and the presence of suitable habitat, this species has the potential to occur in the Project area.	Yes
Big free-tailed bat *Nyctinomops macrotis*	WSC; SS	The species is rare in Utah, occurring primarily in the southern half of the state, although individuals may rarely occur in northern Utah. Prefers rocky and woodland habitats, where roosting occurs in caves, mines, old buildings, and rock crevices.	Low to moderate. Habitat exists within the Project area.	Yes
Special Status Bird Species				
Golden eagle *Aquila chrysaetos*	BGEPA	Cliff and canyon, sagebrush shrubland	High. Nesting and foraging habitat is found throughout the Project area.	Yes
Bald eagle *Haliaeetus leucocephalus*	BGEPA; WSC; SS	This riparian obligate species occurs in large tracts of cottonwood and willow habitats. Breeding season: late June through July.	Moderate to high. Foraging and potential nesting habitat along the White River.	Yes
Short-eared owl *Asio flammeus*	WSC; SS	Inhabits arid grasslands, agricultural areas, marshes, and occasionally open woodlands. In Utah, cold desert shrub and sagebrush-rabbit brush habitats also are utilized. Usually a ground nester. Typical breeding season: April 10 through June 15.	Low. This species breeds in northern Utah and occurs as a migrant potentially throughout the state. Known to occur in Uintah County, with occurrence probable in Duchesne County.	Yes
Burrowing owl *Athene cunicularia*	WSC; SS	Inhabits desert, semi-desert shrubland, grasslands, and agricultural areas. Nesting habitat primarily consists of flat, dry, and relatively open terrain; short vegetation; and abandoned mammal burrows for nesting and shelter. Breeding season: April through July 15.	High. Habitat for this species occurs within the Project area.	Yes

Table F-2
BLM Sensitive Species Identified as Potentially Occurring in the Study Area

Common Name ***Species Name***	**Status[1]**	**Habitat Association**	**Potential for Occurrence Within the Proposed Project Area**	**Further Analysis (Yes/No)**
Ferruginous hawk *Buteo regalis*	WSC; SS	In Utah, this species resides mainly in lowland open desert terrain characterized by barren cliffs and bluffs, piñon-juniper woodlands, sagebrush-rabbit brush, and cold desert shrub. Nesting habitat includes promontory points and rocky outcrops.	High. Habitat for this species occurs within the Project area.	Yes
Lewis's woodpecker *Melanerpes lewis*	WSC; SS	Found in open habitats such as pine forests, riparian areas, and piñon-juniper woodlands. Breeding habitat typically includes ponderosa pines and cottonwoods in stream bottoms and farm areas. In Utah, the species inhabits agricultural lands and urban parks, montane and desert riparian woodlands, and submontane shrub habitats. Breeding season: mid-May through mid-August.	Low. In Utah, the species is widespread, but is an uncommon nester along the Green River. Breeding by this species has been observed in Ouray and Uintah counties, and along Pariette Wash.	Yes
Long-billed curlew *Numenius americanus*	WSC; SS	Inhabits shortgrass prairies, alpine meadows, riparian woodlands, and reservoir habitats. Breeding habitat includes upland areas of shortgrass prairie or grassy meadows with bare ground components, usually near water.	Low. Widespread migrant in Utah. Breeding birds are fairly common but localized, primarily in central and northwestern Utah. Potential nesting has been reported in Uintah County, but has not been confirmed.	Yes. Potential habitat along White River.
Mountain Plover *Charadrius montanus*	SS, SPC	Typically associated with shortgrass prairie habitat composed primarily of blue grama and buffalo grass (*Buchloe dactyloides*). However, habitat characteristics in the Uinta Basin are notably different from shortgrass prairie breeding areas. In Utah, this species has been recorded as a casual migrant in Box Elder, Weber, Salt Lake, and Daggett counties. Six (6) documented historical sightings have occurred in the Uinta Basin. One known breeding population in Utah was located on Myton Bench. The Utah population bred in shrub-steppe habitat among white-tailed prairie dogs and near roadways or oil well pads.	Low to moderate. Habitat for mountain plover exists within the Project area.	Yes

Table F-2
BLM Sensitive Species Identified as Potentially Occurring in the Study Area

Common Name *Species Name*	**Status[1]**	**Habitat Association**	**Potential for Occurrence Within the Proposed Project Area**	**Further Analysis (Yes/No)**
Special Status Fish Species				
Bluehead sucker *Catostomus discobolus*	SS	Occupies a wide range of aquatic habitats ranging from cold, clear mountain streams to warm, turbid rivers. This species occurs in the lower portion of Pariette Draw and in the Green River below the Pariette Draw confluence. Fast flowing streams are important habitat for this species.	Moderate. Suitable habitat for this species occurs along portions of the White River in the Project area.	Yes
Flannelmouth sucker *Catostomus latipinnis*	SS	Adults occur in riffles, runs, and pools in streams and large rivers, with the highest densities usually in pool habitat. Young live in slow to moderately swift waters near the shoreline areas.	Moderate. This species occurs in the main stem Colorado and its large tributaries.	Yes
Roundtail chub *Gila robusta*	SS	Most often found in murky pools near strong currents in the main-stem Colorado River and its large tributaries. Adults inhabit low to high flow areas in the Green River; young occur in shallow areas with minimal flow.	Moderate. Known distribution of this species includes portions of the White River.	Yes

NOTES:
CAS = conservation agreement species
S-ESA (E) = species listed under the ESA as endangered
S-ESA (T) = species listed under the ESA as threatened
S-ESA (C) = species listed under the ESA as candidate
BGEPA = protected under the Bald and Golden Eagle Protection Act
SS = BLM sensitive species
SPC = Species of Conservation Concern (Utah)
WSC = UDWR wildlife species of concern
SOURCE: Utah Native Plant Society (UNPS) (2003-2015)

Appendix G
Key Observation Point Worksheets and Simulation

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

KOP 1

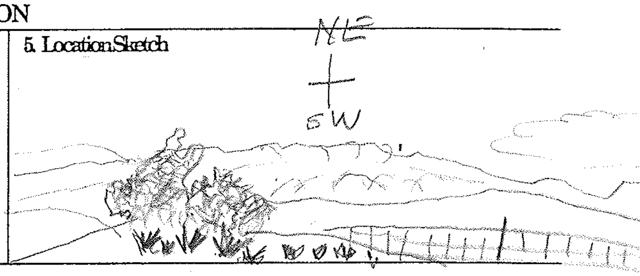
Date May 14, 2013
District Green River
Resource Area Vernal Field Office
Activity (program)

SECTION A. PROJECT INFORMATION

1. Project Name: Enefit
2. Key Observation Point: Atchee Ridge Road
3. VRM Class: VRM III

4. Location
Township 11 S
Range 25 E
Section 31

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	simple, conical domed, convex, horizontal	prominent, rough, solid, high to low, patch	regular, low, square, linear, contrasting
LINE	Butt edge, horizontal undulating, simple, soft	curving, converging	regular, straight, perpendicular, straight
COLOR	tan, brown, off-white	green, black, brown	Rust, black (fence)
TEXTURE	Fine	Coarse	Medium

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER (mine)	2. VEGETATION (mine)	3. STRUCTURES Bulldozers, etc
FORM	Conical, concave, wide high, vertical	geometric, linear	angular, solid, low. (bulldozers, etc)
LINE	bold, diagonal	straight, broken	straight & curving angular
COLOR	tan, reddish-brown, brown, gray	green, black, brown, gray	black, yellow, silver
TEXTURE	fine to coarse	fine to coarse uniform to gradation	fine

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	Land/Water Body (1) Strong	Moderate	Weak	None	Vegetation (2) Strong	Moderate	Weak	None	Structures (3) Strong	Moderate	Weak	None
Form			✓				✓				✓	
Line			✓			✓					✓	
Color			✓				✓				✓	
Texture			✓				✓				✓	

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names	Date
Debby Reber	5-14-13
Jantzen Bruch	

Comments from item 2.

Project area (plant) boundary would be 3.45 miles to the NE.

Unlikely that the project area would be visible due to the nearby hills except for a narrow opening where two hills converge. Even at that point it would be hard to discern the project area except perhaps at night (if lighting is to be used for plant). If it were visible contrasts for line, color, form, and texture would be weak.

Viewshed analysis shows that only the mining area would be visible. Visual simulations are necessary for verification.

Additional Mitigating Measures (See item 3)

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

KOP 2

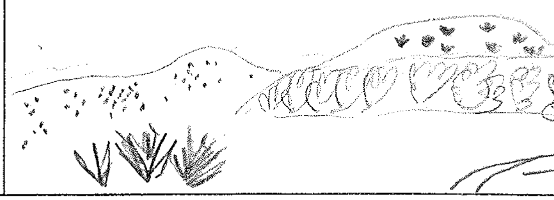
Date May 14, 2013
District Green River
Resource Area Vernal Field office
Activity (program)

SECTION A. PROJECT INFORMATION

1. Project Name: Enefit
2. Key Observation Point: Rainbow Ghost Town
3. VRM Class: VRM III

4. Location
Township 11 S
Range 24 E
Section 24

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES (Sign)
FORM	Rolling, rounded, gentle curving	Definite, rough, solid, regular, numerous	Definite, solid, regular, high, rectangular
LINE	undulating, soft (hills) bold, straight (roads)	continuous, regular	straight, perpendicular
COLOR	tan, green, brown, gray	green, brown, gray,	brown, yellow, green
TEXTURE	smooth to coarse	medium to coarse	smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	conical, concave, wide high, vertical (mining area) tall, linear, vertical (t-line)	geometric, linear (mining) " " (t-line)	tall, linear, vertical (t-line) angular, solid, low (bulldozers etc)
LINE	bold, diagonal (mining area) bold, perpendicular (t-line)	straight, broken (mining) " " (t-line)	straight, perpendicular (t-line) straight curving, angular (bulldozers etc)
COLOR	tan, reddish-brown, brown (mining) gray, gray, silver, black (t-line)	green, gray, black, brown (mining) " " (t-line)	silver, gray (t-line) black, yellow, silver (bulldozer, etc)
TEXTURE	fine to coarse (mining) medium, directional (t-line)	fine to coarse, uniform to gradation (mining) medium to coarse (t-line)	medium to coarse (t-line) fine (bulldozers, etc)

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	Land/Water Body (1) Strong	Moderate	Weak	None	Vegetation (2) Strong	Moderate	Weak	None	Structures (3) Strong	Moderate	Weak	None
Form		✓				✓					✓	
Line			✓			✓					✓	
Color			✓				✓				✓	
Texture			✓				✓				✓	

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No
(Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names: Debby Reber, Jantzen Brueh
Date: 5-14-13

Comments from item 2.

Project would meet visual resource objectives because the project activities may attract attention but would not dominate the view.

Viewshed analysis shows the mining area & t-lines would be visible. However, visual simulations are necessary for verification.

Field survey indicates view of mining area & t-lines would be blocked by hills in the foreground/middle ground.

Additional Mitigating Measures (See item 3)

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Date: May 14, 2013
District: Green River
Resource Area: Vernal Field office
Activity (program):

VISUAL CONTRAST RATING WORKSHEET

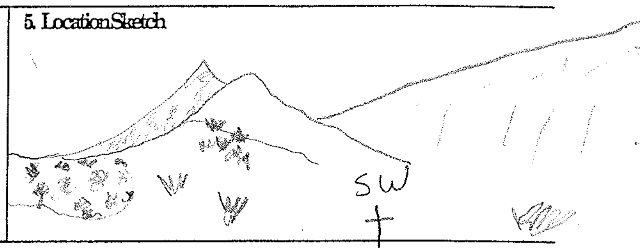
KOP 3

SECTION A. PROJECT INFORMATION

1. Project Name: Enefit
2. Key Observation Point: potential KOP Former 10P (GP5)
3. VRM Class: VRM III

4. Location
Township: 10 S
Range: 25 E
Section: 27

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	promment, angular moderate, triangular	rounded, solid, regular, short, patch	definite, rectangular, solid, regular (sign) →
LINE	Bold, angular converging	rugged, continuous semi-circular	straight, smooth perpendicular
COLOR	tan, brown, gray	green, gray-green, brown	brown (sign)
TEXTURE	Fine	Fine to medium	Fine, smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER (mining)	2. VEGETATION (mining)	3. STRUCTURES earth-moving bulldozers, etc.
FORM	conical, concave, wide, high, vertical	geometric, linear	angular, solid, low
LINE	bold, diagonal	straight, broken	straight & curving, angular
COLOR	tan, reddish-brown, brown, gray	green, black, brown, gray	black, yellow, silver
TEXTURE	fine to coarse	fine to coarse uniform to gradation	fine

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1.

DEGREE OF CONTRAST	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
ELEMENTS	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form			✓				✓				✓	
Line			✓				✓				✓	
Color			✓				✓				✓	
Texture			✓				✓				✓	

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names: Debby Reber, Jantzen Broch
Date: 5-14-13

SECTION D. (Continued)

Comments from item 2.

Project would meet visual resource objectives because the project activities may attract attention but would not dominate the view.

Viewshed analysis indicated that the mining area & t-lines would be visible. However, visual simulations are necessary for verification.

Field survey indicates view of mining area & t-lines would be blocked by hills in the foreground/middle ground.

see tech report

Additional Mitigating Measures (See item 3)

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

KOP 4

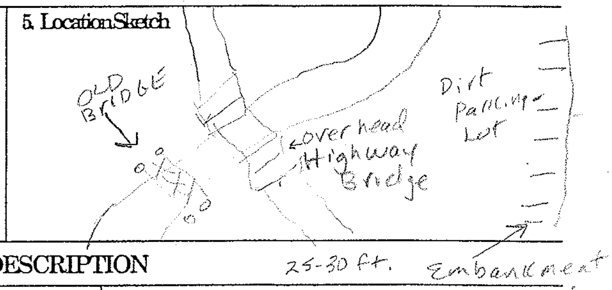
Date: May 14th, 2013
District: Green River
Resource Area: Vernal Field Office
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name: Enefit
2. Key Observation Point: White River haunch
3. VRM Class: VRM II * Actual point not classified

4. Location
Township: 10 S
Range: 24 E
Section: 2

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER (Land -)	2. VEGETATION	3. STRUCTURES
FORM	Flat w/ medium-tall embankments water - smooth, wide, curving	Parallel, narrow, rough definite	Tall, high, linear, rectangular, vertical
LINE	Curving, band, smooth	transitional edge, banded curving, complex, converging	Bold, straight, horizontal geometric, smooth
COLOR	Tan, brown, black, red gray	green, yellow green, brown, gray, black	dull, grayish, monotone (concrete) silver, rust (steel)
TEXTURE	Smooth, rippled Coarse,	medium, dense, ordered directional tamarisk, sage & other riparian species	Concrete abutments supporting overhead highway. Old metal bridge nearby.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER (t-line)	2. VEGETATION (t-line)	3. STRUCTURES (t-line)
FORM	tall, linear, vertical	geometric, linear	tall, linear, vertical
LINE	bold, perpendicular	straight, broken	straight, perpendicular
COLOR	gray, silver, black	green, gray, black, brown	silver, gray
TEXTURE	medium, directional	medium to coarse	medium to coarse

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1.

DEGREE OF CONTRAST	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS: Form				✓			✓				✓	
Line				✓			✓				✓	
Color				✓			✓				✓	
Texture				✓			✓				✓	

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names: Debby Reber, Jantzen Bruch
Date: 5-14-13

Comments from item 2.

Project would meet visual resource objectives because the project activities may be visible (+ lines) but would not attract attention.

see tech report for more info.

Additional Mitigating Measures (See item 3)

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

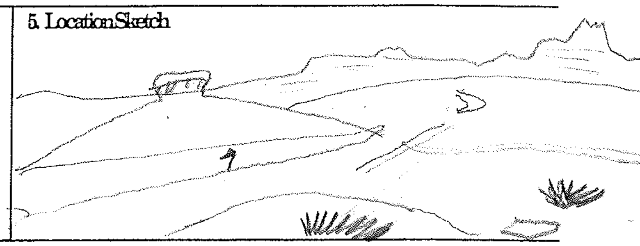
VISUAL CONTRAST RATING WORKSHEET

KOP 5

Date: May 15, 2013
District: Green River
Resource Area: Vernal Field Office
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name: Enefit
2. Key Observation Point: Hwy 45 / Dragon Road
3. VRM Class: VRM III
4. Location
   - Township: 10 S
   - Range: 24 E
   - Section: 12
5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	bold, rugged, irregular, high	rounded, complex, short, numerous	rectangular, indistinct vertical
LINE	bold, irregular, rugged, broken	irregular, complex broken	straight, perpendiclar
COLOR	Reddish-brown, tan buff	light green to dark green, gray	yellow, brown, tan
TEXTURE	fine, contrasty	medium, scattered	smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER (t-line)	2. VEGETATION (t-line)	3. STRUCTURES (t-line)
FORM	tall, linear, vertical	geometric, linear	tall, linear, vertical
LINE	bold, perpendicular	straight, broken	straight, perpendicular
COLOR	gray, silver, black	green, gray, black	silver, gray
TEXTURE	medium, directional	medium to coarse	medium to coarse

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1.

DEGREE OF CONSTRAST	LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
ELEMENTS Form			✓			✓					✓	
Line			✓				✓				✓	
Color			✓				✓				✓	
Texture			✓				✓				✓	

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names: Debby Reber, Jantzen Bloch
Date: 5-5-13

Comments from item 2.

Project would meet visual resource objectives because the project activities (t-line) may attract attention but would not dominate the view.

see tech report for more info.

Additional Mitigating Measures (See item 3)

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DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

KOP 6

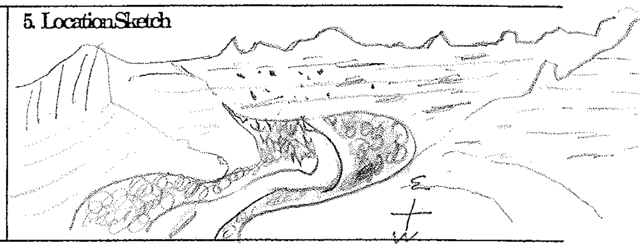
Date May 15, 2013
District Green River
Resource Area Vernal Field Office
Activity (program)

SECTION A. PROJECT INFORMATION

1. Project Name: Enefit
2. Key Observation Point: Goblin City
3. VRM Class: VRM II

4. Location
Township 10 S
Range 23 E
Section 28

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	complex, diverse, steep, rugged, bold	definite to indistinct, rounded	none
LINE	Banded, silhouette, straight, vertical, horizontal, BOLD	diffuse, weak, continuous	none
COLOR	tan, brown, yellow gray, white, rust	green, gray (shrubs) red, yellow, purple, white (flowers)	none
TEXTURE	continuous, directional, fine	fine to medium, even, random	none

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER (mine)	2. VEGETATION (mine)	3. STRUCTURES (bulldozers, etc)
FORM	conical, concave, wide, high, vertical	geometric, linear	angular, solid, low
LINE	bold, diagonal	straight, broken	straight & curving angular
COLOR	tan, reddish-brown, brown, gray	green, black, brown, gray	black, yellow, silver
TEXTURE	fine to coarse	fine to coarse uniform to gradation	fine

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	Land/Water Body (1) Strong	Moderate	Weak	None	Vegetation (2) Strong	Moderate	Weak	None	Structures (3) Strong	Moderate	Weak	None
Form				✓				✓				✓
Line				✓				✓				✓
Color				✓				✓				✓
Texture				✓				✓				✓

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names: Debby Reber, Jantzen Bruch
Date: 5-15-13

* Project would not be visible from this KOP

Comments from item 2.

Project would meet visual resource objectives because the project activities may be visible but would not attract attention.

Field survey indicates that the project would not be visible. Viewshed analysis indicates that the mining area would be visible. However, visual simulations should be conducted for verification. Please see

Additional Mitigating Measures (See item 3) tech report for more details.

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DEPARTMENT OF THE INTERIOR
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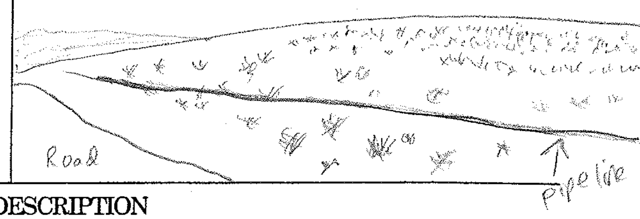
VISUAL CONTRAST RATING WORKSHEET

KOP 7

Date: May 15, 2013
District: Green River
Resource Area: Vernal Field Office
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name: Enefit
2. Key Observation Point: Fidlar/Litte Bonanza
3. VRM Class: VRM IV
4. Location
   - Township: 9 S
   - Range: 23 E
   - Section: 15
5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES linear
FORM	Flat, gentle, simple wide	rough, regular, short patch	prominent, long, low (pipelines) conical, definite, solid (tanks)
LINE	regular, straight horizontal, continuous	regular, circular, weak, simple	bold, regular, parallel (pipe lines) bold, curving & straight (tanks)
COLOR	Subtle, tan, light	grayish-green	Brown
TEXTURE	Fine, smooth	medium, rough, dotted	Fine, matte, ordered

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER (t-line)	2. VEGETATION (t-line)	3. STRUCTURES (t-line)
FORM	tall, linear, vertical	geometric, linear	tall, linear, vertical
LINE	bold, perpendicular	straight, broken	straight, perpendicular
COLOR	gray, silver, black	green, gray, black brown	silver, gray
TEXTURE	medium, directional	medium to coarse	medium to coarse

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				✓			✓				✓	
Line				✓			✓				✓	
Color				✓			✓				✓	
Texture				✓			✓				✓	

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names: Debby Reber, Jantzen Brach
Date: 5-15-13

Comments from item 2.

Project would meet visual resource objectives because the project activities (t-lines) would not attract attention and would not dominate the view.

See tech report for more info

Additional Mitigating Measures (See item 3)

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BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

KOP 8

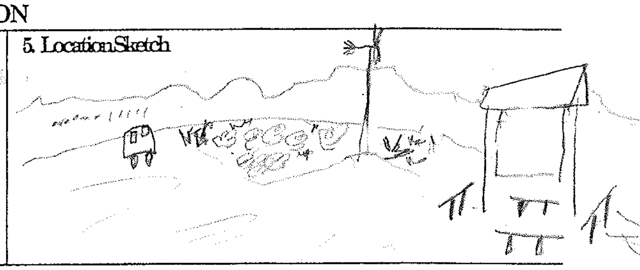
Date: May 15, 2013
District: Green River
Resource Area: Vernal Field Office
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name: Enefit
2. Key Observation Point: Kennedy Wash Kiosk
3. VRM Class: VRM IV

4. Location
Township: 8S
Range: 24E
Section: 18

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat, simple, smooth horizontal	Rough, regular, short, few	Prominent, rectangular (sign) Tall, vertical, irregular (windmill) Rounded, solid, small, ~~geom~~ (trailer)
LINE	Horizontal, undulating	straight to curving	bold, regular, straight vertical
COLOR	reddish-brown, tan	green, gray, black	brown, white, silver, tan
TEXTURE	fine, smooth	medium, patchy	smooth (sign) smooth, directional (windmill)

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER mine / t-line	2. VEGETATION mine / t-line	3. STRUCTURES t-line / bulldozer etc
FORM	conical, concave, wide, high vertical tall, linear, vertical	geometric, linear " "	tall, linear, vertical angular, solid, low
LINE	bold, diagonal bold, perpendicular	straight, broken " "	straight, perpendicular straight & curving, angular
COLOR	gray, tan, reddish-brown, brown gray, silver, black	green, gray, black, brown " " " "	silver, gray black, yellow, silver
TEXTURE	fine to course medium, directional	fine to course, uniform to gradation medium to course	medium to course fine

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	Land/Water Body (1) Strong	Moderate	Weak	None	Vegetation (2) Strong	Moderate	Weak	None	Structures (3) Strong	Moderate	Weak	None
Form				✓			✓				✓	
Line				✓			✓				✓	
Color				✓			✓				✓	
Texture				✓			✓				✓	

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names: Debby Reber, Jantzen Bruch
Date: 5-15-13

Comments from item 2.

* Took 2 series of photos here.
* VRM III lands to the north & east of the kiosk.

Project would meet visual resource objectives because the project activities (mine area, t-lines) would may attract attention but would not dominate the view.

See tech report for details.

Additional Mitigating Measures (See item 3)

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date June 4, 2015

District Vernal

Resource Area Uintah

Activity (program) Oil and Gas

SECTION A. PROJECT INFORMATION

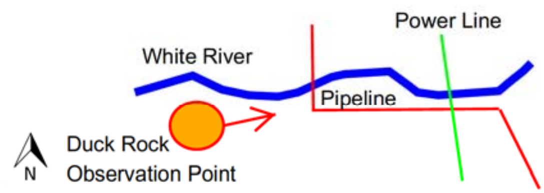
1. Project Name
Enefit American Oil Pipeline Project

2. Key Observation Point
Duck Rock Overlook (KOP #9)

3. VRM Class
Class II

4. Location
Township T10S
Range R24E
Section S12

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Moderate sloped, flat, rounded terrain	Mosaic shrub patterns, dense floodplain	Vertical, simple 2 existing poles suspendin an existing waterline over the White River. Verical, simple (powerpoles)
LINE	Irregular, horizontal and diagonal	Concave, undulating, horizontal	Linear with straight angles
COLOR	Light tan, light brown with reddish brown	Warm. Light to dark green with reds	Grey poles (for waterline) Brown wood (power poles)
TEX-TURE	Smooth to course.	Bare ground to course, sparse vegetation	Smooth curvy line (suspended waterline) Smooth (existing poles)

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Sloped and flat river bottom	Linear and horizontal forms created by pipeline clearing	Vertical, simple (power poles in foreground)
LINE	Sloped and horizontal (pipeline) Horizontal (power line)	Linear lines, edge due to clearing, creating a band	Uniform vertical power poles
COLOR	Light tan	Bare to light green	Light brown
TEX-TURE	Fine to smooth	Sporadic coverage over bare ground	Uniform, fine (power poles) Smooth and curvy (pipe alignment)

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			✓				✓				✓	
Line		✓				✓					✓	
Color		✓				✓					✓	
Texture			✓				✓				✓	

2. Does project design meet visual resource management objectives? ◉ Yes ○ No
(Explain on reverse side)

3. Additional mitigating measures recommended
◉ Yes ○ No (Explain on reverse side)

Evaluator's Names: Jamie Tsandes, PLA

Date: April 30, 2015

Rel. 8-30
1/17/86

Comments from item 2.

The pipeline segment of the project is temporary and is anticipated to restore itself with native vegetation. The construction of the pipeline will work with existing terrain and will be restored to existing elevations.

The power poles are located in the foreground and not easily seen from Duck Rock overlook. The power poles will be colored brown to blend into the landscape and foreground. Power lines are not visible from Duck Rock overlook.

Additional Mitigating Measures (See item 3)

1. Re-seed pipeline disturbance with native seed.
2. Construction vehicles should drive over vegetation within pipe line disturbance wherever possible if no excavation is necessary to allow for existing vegetation to come back within corridor and minimize a clear edge of construction. Partial cutting rather than clear cutting of vegetation.

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KOP #9 - Duck Rock Overlook: Visual Simulations


Figure 1 - Existing Conditions

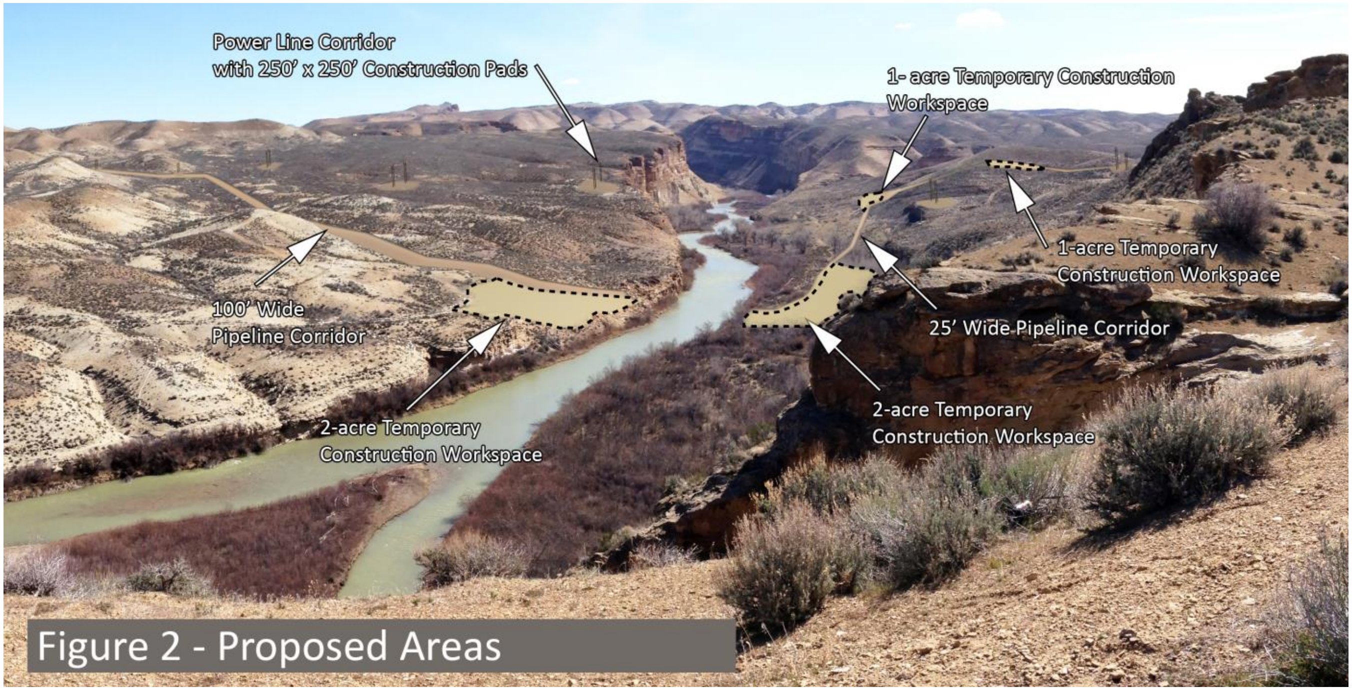

Figure 2 - Proposed Areas


Figure 3 - During Construction


Figure 4 - Post Construction

Figure 5 - Five Years Post Construction

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Appendix H
Interdisciplinary Team Checklist

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INTERDISCIPLINARY TEAM CHECKLIST

Project Title: **Enefit American Oil Utility Corridor Project**

NEPA Log Number: DOI-BLM-UT-G010-2014-0007

File/Serial Number:

Project Leader: Jessica Taylor

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

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for relevant impact that need to be analyzed in detail in the EA
NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

Determination	Resource/Issue	Rationale for Determination	Signature	Date
RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)				
PI	Air Quality and Greenhouse Gas Emissions	Potential impacts to air quality related to short-term substantial emissions and trenching, vehicle operation and earthmoving. Also, indirect impacts from the South Project non-Federal connected action would include emissions of criteria pollutants. Greenhouse gases will be emitted in small amounts during the construction of the utility corridors. Also, indirect impacts from the South Project non-Federal connected action would include emissions of greenhouse gases. However, due to the lack of engineering design of the South Project mine and plant operations, indirect air quality and greenhouse gas effects can only be qualitatively estimated.	Stephanie Howard	1/8/2015
NP	BLM natural areas	No BLM Natural Areas in project area per GIS review.	Bill Civish	1/12/2014
PI	Cultural: Archaeological Resources	Culturally important sites have been identified within the project area including the White River Stage Station, a prehistoric rock shelter, and two historic mining sites.	The final draft of the archaeological report is currently being submitted to the BLM office for review and consultation.	Still Pending
PI	Cultural: Native American Religious Concerns	There is potential for Traditional Cultural Properties to be identified within the project area during government-to-government consultation efforts	Portions of the line are not covered under previous consultation. New consultation will need to be conducted when the final report enters the office.	Still Pending
NP	Designated Areas: Areas of Critical Environmental Concern	No ACECs are crossed by proposed routes for utilities.	Bill Civish	1/12/2015
NP	Designated Areas: Wild and Scenic Rivers	No Wild and Scenic Rivers crossed.	Bill Civish	1/12/2015

Determination	Resource/Issue	Rationale for Determination	Signature	Date
PI	Environmental Justice	Minority or economically disadvantaged communities or populations are present near the area and it will need to be evaluated whether the Utility Corridor or South Projects will have disproportionate adverse impacts on these populations.	Stephanie Howard	1/8/2015
NP	Farmlands (prime/unique)	No prime or unique farmlands, as identified by the NRCS, are present in the project area.	Stephanie Howard	1/8/2015
NI	Fuels/Fire Management	There are no hazardous fuels projects planned for this area in the near future. Disturbance in Wyoming big sagebrush vegetation type could increase the amount of invasive plants, specifically Bromus tectorum. The increase of Bromus tectorum could lead to an increase in fire frequency and rate of spread. Applying the Green River District Reclamation Guidelines should prevent additional hazardous fuels. Fire Management would recommend seeding species that are fire tolerant.	Blaine Tarbell	1/14/2015
PI	Geology / Minerals / Energy Production	No known geology impact expected. This is a known gilsonite leasing area. There are known leases within the proposed area with American Gilsonite Company (AGC). The proposed water and trans line may encounter the AGC Bonanza vein (T9S R24E Sec 17). Coordination with AGC will be required. Also, if gilsonite is encountered during construction/reclamation, the depth from surface and width needs to be reported to BLM VFO. Power lines should avoid going directly over well pads to avoid conflicts with future work over rigs. Facility avoidance as well.	Rick Goshen	1/8/2015
PI	Invasive Plants / Noxious Weeds / Soils / Vegetation	IP/ NW: Potential for noxious weeds and other invasive plant species to establish in disturbed areas and spread throughout the project area. Potential for noxious weeds and invasive plants to adversely affect threatened and endangered plant and wildlife species. Analysis of Field Office GIS layers show that the following noxious weed species are present within the project area: Russian knapweed (*Acroptilon repens*), Canada thistle (*Cirsium arvense*), field bindweed *(Convolvulus arvense),* black henbane (*Hyoscyamus niger*), broadleaved pepperweed (*Lepidium latifolium*), Scotch thistle (*Onopordum acanthium*), Russian olive (*Eleaganus angustifolia*), and saltcedar (*Tamarix ramosissimum*). Halogeton (*Halogeton glomeratus*) and cheatgrass (*Bromus tectorum*) are found throughout the Vernal Field Office and are likely to occur within the project area. Soils: The current proposed action has the potential to impact soils within the identified areas. The soils in the area are variable and will be impacted depending on the level of dirt work	IP/Noxious Weeds: Jessi Brunson Soils: James Hereford II Vegetation: Jessi Brunson	1/14/2015 12/15/2014 1/14/2015

Determination	Resource/Issue	Rationale for Determination	Signature	Date
		that takes place. Care should take place when constructing these pipelines so that topsoil resources are not being lost due to poor soil management. All soils removed should be put back in place and reclaimed to the Green River District Reclamation Guidelines. Vegetation: The proposed project will permanently disturb approximately 780 acres of vegetation, and create an as-yet unknown amount of temporary vegetation disturbance.		
PI	Lands/Access	The proposed project area is located within the VFO RMP/ROD area, which allows for oil and gas development with associated road, pipeline and power line rights-of-way. Current Land uses, within the area identified in the proposed action, and adjacent lands, consist of existing oil and gas development, wildlife habitat, recreational use, and sheep and cattle ranching. Master Title Plats have been checked for conflicts with Public Water Reserves. There are no PWR's in the project area. Numerous ROWs are within the project area. ROW holders would need to be notified of the proposed action.	Margo Roberts	1/8/2015
NP	Lands with Wilderness Characteristics	The project takes place in inventoried areas that have been determined not to meet the size, naturalness, and the outstanding solitude and/or the primitive and unconfined recreation criteria.	Bill Civish	1/12/2015
PI	Livestock Grazing & Rangeland Health Standards	The proposed project crosses through Bonanza, Hells Hole and Watson BC sheep grazing allotments. All three of these allotments are composed of private State and Public lands. Forage or Animal Unit Months (AUMs) forage is calculated based on all three lands owned on all three allotments. The proposed project will create additional ground disturbance and fragmentation of the allotment, which may impact livestock operations as well as the fundamentals of rangeland health. Due to the lack of successful reclamation in the area, the disturbed areas may never be productive forage areas for livestock grazing	Craig Newman	12/15/14

Determination	Resource/Issue	Rationale for Determination	Signature	Date
PI	Paleontology	Scientifically important fossils were found in **T9S R24E** SW, S/2SE Sec 7 and in N/2NE, SENE Sec 18; in **T10S R24E** NESE, NE Sec 12 and N/2SE, SESE Sec 18; and in **T10S R25E** W/2NE**,** N/2NW, SENW Sec 18, S/2SE, N/2SE Sec 20, SWNW, SW Sec 28 and NW Sec 33. A BLM-permitted paleontologist must monitor any ground disturbing activities in these areas. No scientifically important fossils were found in T8S R23E, T9S R23E, and T9S R25E.	Betty Gamber	12/12/2014
PI	Plants: BLM Sensitive	BLM-sensitive species present in the project area: Graham's beardtongue (*Penstemon grahamii*), White River beardtongue (*Penstemon scariosus* var. *albifluvis*), Barneby's cat's-eye (*Cryptantha barnebyi*), and strigose townsendia (*Townsendia strigosa* var. *prolixa*). Sterile yucca (*Yucca sterilis*) has the potential to occur in the project area, but surveys in 2013 did not find any populations of this species.	Jessi Brunson	1/14/2015
PI	Plants: Threatened, Endangered, Proposed, or Candidate	Uinta Basin hookless cactus (*Sclerocactus wetlandicus*) is present within the Enefit Project Area.	Jessi Brunson	1/14/2015
PI	Plants: Wetland/Riparian	No wetlands exist within the project area. The proposed project crosses riparian areas along the White River and Evacuation Creek.	Jessi Brunson	1/14/2015
PI	Recreation	Alternative Alignment approximately 143' away from Duck Rock Information Kiosk (Vernal Recreation data)	Bill Civish	1/12/2015
PI	Socio-Economics	The Utility project is anticipated to have a minor positive impact on the local counties. However, the South Project is anticipated to have positive indirect economic impact in terms of jobs, income and tax revenues. However, some areas in the study area (such as Rio Blanco County) may experience strains on public services, education and housing if a large proportion of the workforce lives in Rangely, Colorado (closest community to the project site).	Stephanie Howard	1/8/2015
PI	Visual Resources	The proposed project crosses VRM Class II lands. Potential impacts on scenery associated with the White River (Class A) and other landscapes. Potential impacts on views from recreation areas and travel routes. The operator has committed to reclaiming the project area according to the Green River District Reclamation Guidelines, and has prepared a reclamation plan, which would help protect the scenic quality.	Bill Civish	1/12/2015
PI	Wastes (hazardous/solid)	Hazardous Waste*:* No chemicals subject to reporting under the Superfund Amendments and Reauthorization Act Title III in an amount equal to or greater than 10,000 pounds annually would be used, produced, stored, transported, or disposed of in association with the construction of the Utility Corridor Project. No extremely hazardous substances in threshold planning quantities, as defined in 40 CFR Part 355, would be used in association with the Utility Corridor Project. Any	Stephanie Howard	1/8/2015

Determination	Resource/Issue	Rationale for Determination	Signature	Date
		potentially hazardous materials that would be used for construction would be trucked offsite to various State of Utah-approved disposal facilities. Anticipated indirect impacts, *if any*, from hazardous waste associated with the South Project would have to be qualitatively estimated due to lack of engineering design of the South Project plant and mine operations. <u>Solid Wastes</u>*:* Solid waste materials generated by the Utility Corridor Project (e.g. discarded matter, human waste, trash, garbage, refuse, filters, welding rods, etc.) would be promptly disposed of offsite at a permitted solid waste disposal site. Portable toilets would be provided and cleaned/removed regularly. Disposal of all solid waste produced during construction of the ROW would be done in an approved manner so it would not impact air quality, soils, water quality, vegetation, or wildlife.		
PI	Water: Floodplains	The current proposed action will take place within sections of the White River and Evacuation Creek 100 year floodplains. The White River floodplain is considered an active floodplain, while the Evacuation Creek floodplain is only active during high precipitation events or extreme high mountain runoff. The proposed Construction, operation, and maintenance activities have the potential to alter the function and the quality of these floodplains.	James Hereford II	12/15/2014
PI	Water: Groundwater Quality	There is potential impact to groundwater resources due to spills or leaks during construction, operation, and maintenance activities. Ground water is likely present at over 50 to 100 feet below ground surface.	Betty Gamber	12/12/2014
PI	Water: Hydrologic Conditions (stormwater)	The proposed project has the potential to affect a number of dry ephemeral channels and some perennial drainage channels in the area. The White River, Coyote Wash, and Evacuation Creek all have the potential to be impacted by the current proposed action. Mitigation should be in place to prevent any undue degradation from occurring in these and any other drainage that feeds into this system.	James Hereford II	12/15/2014
PI	Water: Surface Water Quality	The current proposed action has the potential to affect the White River and its tributaries. The company should identify source(s) and amount of water available for use, along with the amount of water needed for construction, operation, and maintenance of the utility project. Erosion and sedimentation could impact water quality. Increased salinity in water ways due to saline soils.	Surface: James Hereford II	12/15/2014
PI	Water: Waters of the U.S.	The proposed project has the potential to affect Waters of the U.S. within the area. The White River is being crossed by one of the proposed pipelines. Consultation with Army Corp of Engineers should take place in relation to section	James Hereford II	12/15/2014

Determination	Resource/Issue	Rationale for Determination	Signature	Date
		404 of the Clean Water Act. Mitigations should be applied to reduce any chance of contaminants from reaching the White River, which flows into the Green River.		
NI	Wild Horses	The project crosses the Bonanza Herd Area in the VFO; however, horses are not currently managed for AML on this HA. Through a legal settlement; horses were removed that were considered under the jurisdiction of the BLM. Horses that remained would fall to the jurisdiction of the County Animal Control Special Services District. The County and BLM cooperatively work to resolve issues with the present animals as they occur. Therefore, for the scope of this project no Wild and Free Roaming Horses would be impacted.	Dusty Carpenter	1/26/15
PI	Wildlife: Migratory Birds (including raptors)	Migratory birds, including raptors, are located within the project area. The BLM has identified raptor nests within the project area. Mountain plover and burrowing owl have also been documented within the project area. The project area is located within crucial habitat for deer (fawning/winter habitats).	Brandon McDonald	12/07/2014
PI	Wildlife: Non-USFWS Designated	The project area is located within active white-tailed prairie dog colonies. In addition, designated habitat for bluehead sucker, flannelmouth sucker, and roundtail chub occur within the White River.	Brandon McDonald	12/7/2014
PI	Wildlife: Threatened, Endangered, Proposed or Candidate	Critical Habitat for bonytail, Colorado pikeminnow, humpback chub, and razorback sucker occur within the White River. There is no Critical Habitat for yellow-billed cuckoo; however, potential habitat occurs within the project area along the White River. In 2013, the BLM identified two yellow-billed cuckoos' upstream of the project area while completing presence/absence surveys. The project area is located within occupied habitat for greater sage-grouse. The project will conform to WO-IM-2012-043. In addition, the project area is located within the Black-footed Ferret Primary Management Zone.	Brandon McDonald	12/07/2014
NP	Woodlands/Forestry	No forest resources in the project area. Per review of GIS	David Palmer	12/12/2014

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments
Environmental Coordinator			
Authorized Officer			